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PHYSICS · EAPCET (EAMCET)

Kinematics

Previous Year Questions with answers

463 questions · **149** papers · **2010–2026** · newest paper first

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What is in this PDF: every Kinematics question we hold from past AP and TS EAPCET (called EAMCET until 2020 in Andhra Pradesh and 2023 in Telangana) papers, with its options and answer. Where an answer comes from a source other than the official final key, it says so next to the answer.

Step-by-step solutions for every question are free in the EdLoop EAPCET app (Google Play) and on app.edloop.in. More chapters: pyq.edloop.in/free-pdfs/

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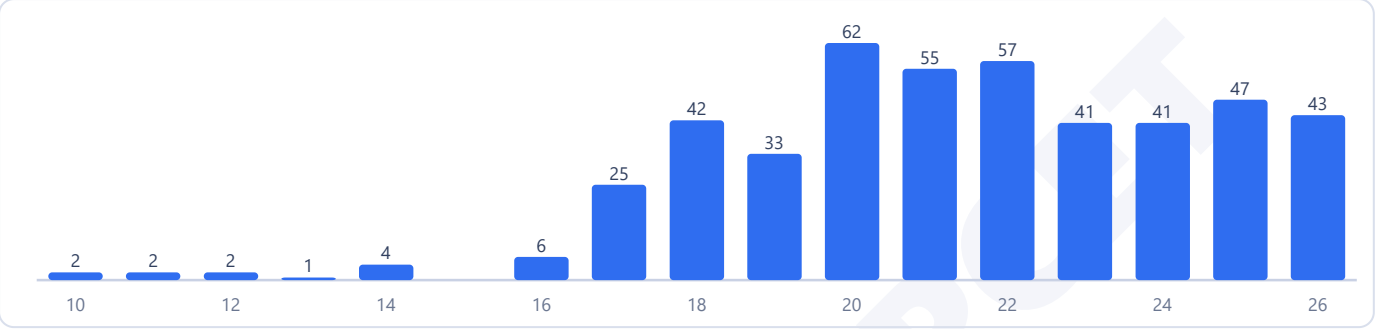
Chapter at a glance

7.4%	463	77 of 77	463 / 0
of Physics questions, 2022–2026	questions, 2010–2026	papers asked it, 2022–2026	MCQ / numerical, 2010–2026

Trend. Steady: 2.8 questions per paper in 2024–2026 against 3.2 in 2022–2023.

Questions per year



Counts are the questions we hold: 463 in 149 papers. 2 questions in this chapter came back in more than one paper.

Most-asked topics in this chapter (2010–2026)

Motion in a Straight Line	162
Projectile Motion	150
Vectors	56
Circular Motion (Kinematics)	38
Relative Motion	37

How often it comes up

Kinematics stands as the single heaviest chapter in EAPCET Physics. Across the papers we hold from 2022 to 2026, it produced **229 questions in 77 papers**, averaging **3.0 questions per paper**. Remarkably, the chapter appeared in every paper in that five-year window (77 out of 77 papers). It holds the **1st rank among all 28 Physics chapters** by question share, representing 7.4% of every Physics question asked over these sessions.

Across the wider 2010 to 2026 archive, our set contains 463 questions from all 149 papers, maintaining an average of 3.1 questions per paper and a 7.8% share of the subject. In the early testing era from 2010 to 2021, kinematics carried an even higher weight with 234 questions in 72 papers (appearing in 72 papers, 3.3 per paper, 8.1% share). During the recent three-year period from 2024 to 2026, it provided 131 questions in 46 papers (appearing in 46 papers, 2.8 per paper, 7.1% share). Comparing the early era to the last three years, the chapter's share has fallen, whereas comparing the full recent window to the last three years, it has stayed about the same. Every year since 2022 has delivered multiple kinematics questions in every shift.

The chapter features prominently in both states. From 2022 to 2026, AP EAPCET papers included 149 questions across 48 papers (appearing in 48 papers, 3.1 per paper, 7.8% share), while TS EAPCET papers included 80 questions across 29 papers (appearing in 29 papers, 2.8 per paper, 6.9% share). It is part of the Class 11 Intermediate syllabus and establishes the foundational framework for mechanics.

Most-asked topics

In the papers we hold from 2022 to 2026, questions split into five main topic branches:

- **Motion in a Straight Line**: 82 questions. Across all years from 2010 to 2026, this topic leads with 162 questions.

- **Projectile Motion**: 76 questions recently, and 150 questions across the full archive.
- **Vectors**: 32 questions in the recent five years, with 56 questions historically.
- **Relative Motion**: 16 questions recently, totalling 37 questions across all papers.
- **Circular Motion (Kinematics)**: 15 questions in recent papers, with 38 questions overall.

All five areas were tested in 2026, showing that students must prepare each aspect of linear and planar motion thoroughly.

What the questions look like

Straight-line motion problems regularly test non-uniform acceleration through calculus relationships where acceleration depends on velocity or position. Another regular set-up involves multi-stage journeys where an object accelerates uniformly from rest, cruises at constant velocity, and finally decelerates to a stop. Questions frequently ask for average speed over intervals involving varying speeds or segmented displacements.

Projectile motion problems emphasize oblique projection from ground level as well as horizontal projection from an elevated height. Typical calculations involve finding the trajectory equation, time of flight, horizontal range, and the velocity vector at a specific instant or altitude. A recurring scenario asks for the speed of a projectile when its velocity vector becomes perpendicular to the initial launch direction.

Vector problems test dot and cross products, angle determination between vectors, and component resolution along specified directions. You will frequently be asked to find a unit vector perpendicular to two given vectors or determine an unknown component given the magnitude of the resultant.

Relative motion questions center on river-boat crossing problems, rain-umbrella orientation, and two vehicles overtaking or approaching each other on parallel tracks.

How to practise it

Start with basic vector algebra, ensuring you can quickly calculate scalar and vector products and find projections of one vector onto another. Because vectors underpin planar motion, speed here pays dividends across subsequent topics.

Next, focus on one-dimensional motion under constant acceleration, mastering the standard kinematic relations along with the nth-second displacement formula. Practise drawing and interpreting displacement-time and velocity-time graphs, as graphical questions appear regularly and can be answered rapidly by reading slopes and areas.

For projectile motion, break every vector into horizontal and vertical components immediately. Work through problems where projectiles land on inclined planes or are fired horizontally from cliffs. For relative velocity, adopt a standard vector subtraction approach for rain and river-boat situations rather than relying on intuitive shortcuts that often lead to sign errors.

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Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

A Car travels first half of the distance with a velocity 'V' and second half of the distance with a velocity '$3V$', then the average velocity is

(A) $2.0\,V$
(B) $3.0\,V$
(C) $4.0\,V$
(D) $1.5\,V$

Answer: (D) $1.5\,V$ · The council's preliminary key

Q2 AP EAPCET 2026 · 18 May · Shift 1 MCQ

Rain is falling vertically with a speed of $2\ ms^{-1}$. A boy from rest starts moving with a constant acceleration of $2\ ms^{-2}$ along a straight road holding umbrella. For the rain to be always parallel to the axis of umbrella, the rate at which the angle of axis of umbrella with the vertical should be changed with time 't' is

(A) $\frac{1+t^2}{t^3}$
(B) $\frac{1}{1+t^2}$
(C) $\frac{t^2}{1+t^4}$
(D) $\frac{t}{1+t^3}$

Answer: (B) $\frac{1}{1+t^2}$ · The council's preliminary key

Q3 AP EAPCET 2026 · 18 May · Shift 1 MCQ

A cricketer can throw a ball with a speed of V_0. If he throws the ball, while running with a speed V_0 , at an angle 'α' with the horizontal, then the range of the ball will be maximum when 'α' is

(A) 45°
(B) 30°
(C) 60°
(D) 53°

Answer: (C) 60° · The council's preliminary key

Q4 AP EAPCET 2026 · 18 May · Shift 2 MCQ

A velocity-time graph is drawn for two different objects. They make 30^0 and 45^0 with the time axis. Then the ratio of their accelerations, $a_1 : a_2$ is

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(A) $1:2$
(B) $2:3$
(C) $\sqrt{3}:1$
(D) $1:\sqrt{3}$

Answer: (D) $1:\sqrt{3}$ · The council's preliminary key

Q5 AP EAPCET 2026 · 18 May · Shift 2 MCQ

An object is projected with an angle of 60^0 with horizontal with a velocity V. During the path, when it makes 30^0 with horizontal, its velocity becomes $10\ \mathrm{ms}^{-1}$, then V is

(A) $10\sqrt{3}\ \mathrm{ms}^{-1}$
(B) $\sqrt{30}\ \mathrm{ms}^{-1}$
(C) $3\sqrt{10}\ \mathrm{ms}^{-1}$
(D) $\sqrt{3}\ \mathrm{ms}^{-1}$

Answer: (A) $10\sqrt{3}\ \mathrm{ms}^{-1}$ · The council's preliminary key

Q6 AP EAPCET 2026 · 18 May · Shift 2 MCQ

Two bodies projected with same velocity at different angles attain same range. If the time of flights of the bodies are T_1 and T_2 respectively, then $\frac{T_1}{T_2}$ is

(A) $\mathrm{Tan}\,\theta$
(B) $\mathrm{Tan}^2\,\theta$
(C) $\cot\theta$
(D) $\cot^2\theta$

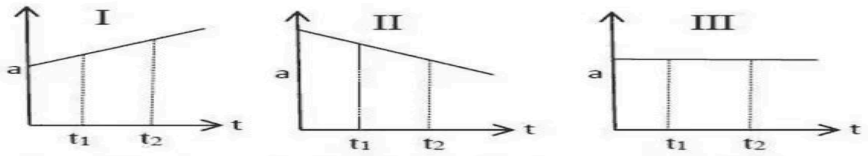
Answer: (A) $\mathrm{Tan}\,\theta$ · The council's preliminary key

Q7 AP EAPCET 2026 · 15 May · Shift 1 MCQ

The three graphs represent acceleration Vs time for objects that have positive velocity at time t_1. Which graphs show the objects that move with increasing velocity for the entire time interval between t_1 and t_2?

(see the figure above)

The three graphs represent acceleration Vs time for objects that have positive velocity at time t_1. Which graphs show the objects that move with increasing velocity for the entire time interval between t_1 and t_2?



t_1 వద్ద ధన వేగం గల మూడు వస్తువుల త్వరణం–కాలము గ్రాఫులు క్రింద ఇవ్వబడినవి. వాటిలో ఏవి t_1 మరియు t_2 కాలవ్యవధుల మధ్య నిరంతరం పెరిగే వేగంతో చలించే వస్తువుని సూచిస్తాయి?

Options :

1. I only
   I మాత్రమే
2. I and II only
   I మరియు II మాత్రమే
3. III only
   III మాత్రమే
4. I, II and III
   I, II మరియు III

(A) I only
(B) I and II only
(C) III only
(D) I, II and III

Answer: (D) I, II and III · The council's preliminary key

Q8 AP EAPCET 2026 · 15 May · Shift 1 MCQ

Two objects A and B are projected with same velocity at angles θ and $90-\theta$ respectively with the horizontal. Then the ratio of maximum heights they reached, $\frac{H_A}{H_B}$ is

(A) $\text{Tan}\,\theta$
(B) $\text{Tan}^2\,\theta$
(C) $2\,\text{Tan}\,\theta$
(D) $\text{Cot}^2\,\theta$

Answer: (B) $\text{Tan}^2\,\theta$ · The council's preliminary key

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Q9 AP EAPCET 2026 · 15 May · Shift 1 MCQ

A particle has initial velocity $2\hat{i}+3\hat{j}\ ms^{-1}$ and acceleration $0.8\hat{i}+0.6\hat{j}\ ms^{-2}$. Its velocity after 5 sec is (in ms^{-1})

(A) $6\sqrt{2}$
(B) 6
(C) $7\sqrt{2}$
(D) 7

Answer: (A) $6\sqrt{2}$ · The council's preliminary key

Q10 AP EAPCET 2026 · 15 May · Shift 2 MCQ

Acceleration varies as $a = 6t$, starting from rest, velocity after $t = 2\ s$

(A) $6\ ms^{-1}$
(B) $12\ ms^{-1}$
(C) $18\ ms^{-1}$
(D) $24\ ms^{-1}$

Answer: (B) $12\ ms^{-1}$ · The council's preliminary key

Q11 AP EAPCET 2026 · 15 May · Shift 2 MCQ

A projectile is projected from a moving truck. Its range depends on

(A) Truck velocity only
(B) Projectile velocity with respect to truck only
(C) Projectile velocity with respect to ground
(D) Projectile mass

Answer: (C) Projectile velocity with respect to ground · The council's preliminary key

Q12 AP EAPCET 2026 · 15 May · Shift 2 MCQ

An object is projected from the top of a tower of height 'H' at angle θ with horizontal. It strikes the ground at P lying at a distance D from the foot of the tower. Calculate the maximum height attained by the object

(see the figure above)

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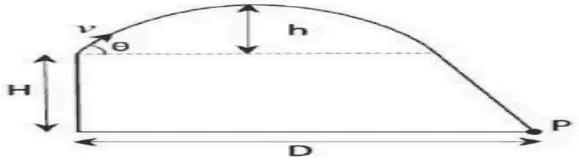
An object is projected from the top of a tower of height 'H' at angle θ with horizontal. It strikes the ground at P lying at a distance D from the foot of the tower. Calculate the maximum height attained by the object

H ఎత్తు గల ఒక గోపురం నుండి, క్షితిజ సమాంతరంనకు θ కోణంతో ఒక వస్తువును ప్రక్షేపము చేశారు. అది గోపురం పాదం నుండి D దూరంలో భూమిపై ఉన్న ఒక P బిందువును తాకినది. ఆ వస్తువు చేరిన గరిష్ఠ ఎత్తు ఎంత



Options :

1. $\frac{v^2 sin^2\theta}{2g}$
2. $H + \frac{D^2 tan^2\theta}{4\,(H + D\,tan\theta)}$
3. $H + D\,tan\theta$
4. $H + \frac{D^2}{v\,cos\theta}$

(A) $\frac{v^2 \sin^2\theta}{2g}$

(B) $H + \frac{D^2 \tan^2\theta}{4(H + D\tan\theta)}$

(C) $H + D\tan\theta$

(D) $H + \frac{D^2}{v\cos\theta}$

Answer: (B) $H + \frac{D^2 \tan^2\theta}{4(H + D\tan\theta)}$ · The council's preliminary key

Q13 AP EAPCET 2026 · 14 May · Shift 1 MCQ

A body is falling freely under gravity from a height of 200 m. The total displacement of the body during the second half-second, fourth half-second and sixth half-second of its motion is (acceleration due to gravity = $10\ \mathrm{m\,s^{-2}}$)

(A) 26.25 m

(B) 32.50 m

(C) 37.25 m

(D) 42.25 m

Answer: (A) 26.25 m · The council's preliminary key

Q14 AP EAPCET 2026 · 14 May · Shift 1 MCQ

If the minimum velocity of a projectile during its motion is $40\ ms^{-1}$ and the ratio of its vertical and horizontal displacements at a time of 2s is 1:2, then the angle of projection of the projectile is (Acceleration due to gravity = $10\ ms^{-2}$)

(A) $\sin^{-1}(0.6)$
(B) $\cos^{-1}(0.6)$
(C) $\tan^{-1}(0.6)$
(D) $\sec^{-1}(0.6)$

Answer: (A) $\sin^{-1}(0.6)$ · The council's preliminary key

Q15 AP EAPCET 2026 · 14 May · Shift 1 MCQ

A body is projected with a velocity of $15\sqrt{3}\ \mathrm{ms}^{-1}$ at an angle of 60^0 with the horizontal and another body is projected simultaneously from the same point in the same vertical plane with a velocity of 40 ms^{-1} at an angle of 30^0 with the horizontal. The time at which the velocity vector of the two bodies will be in the same direction is (Acceleration due to gravity = 10 ms^{-2})

(A) 3.2 s
(B) 2.4 s
(C) 1.2 s
(D) 3.6 s

Answer: (B) 2.4 s · The council's preliminary key

Q16 AP EAPCET 2026 · 14 May · Shift 2 MCQ

A balloon is raising vertically upwards with a velocity of $10\ ms^{-1}$. When the balloon is at a height of 40 m from the ground, a stone is dropped from it. The time taken by the stone to reach the ground is (Acceleration due to gravity = 10 ms^{-2})

(A) 10 s
(B) 6 s
(C) 8 s
(D) 4 s

Answer: (D) 4 s · The council's preliminary key

Q17 AP EAPCET 2026 · 14 May · Shift 2 MCQ

A swimmer can swim at $5\ ms^{-1}$ in still water. River flows at $3\ ms^{-1}$. To cross the river in shortest time, the angle with respect to perpendicular to the flow is

(A) 0°
(B) $sin^{-1}(3/5)$
(C) $tan^{-1}(3/5)$
(D) 90°

Answer: (A) 0° · The council's preliminary key

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Q18 AP EAPCET 2026 · 14 May · Shift 2 MCQ

If $a = -kv$ represents the variation of acceleration of a particle with velocity, time taken to reduce the velocity from v to $v/2$ is

(A) $\frac{\ln 2}{k}$
(B) $\frac{1}{2k}$
(C) $\frac{\ln 2}{2k}$
(D) $\frac{2}{k}$

Answer: (A) $\frac{\ln 2}{k}$ · The council's preliminary key

Q19 AP EAPCET 2026 · 13 May · Shift 1 MCQ

Cars X and Y begin the race simultaneously with velocities $8\ \mathrm{ms}^{-1}$ and $4\ \mathrm{ms}^{-1}$, moving in a straight line with uniform accelerations $2\ \mathrm{ms}^{-2}$ and $4\ \mathrm{ms}^{-2}$ respectively. If they reach final point at the same instant, then the length of the path is

(A) $24\ \mathrm{m}$
(B) $48\ \mathrm{m}$
(C) $32\ \mathrm{m}$
(D) $16\ \mathrm{m}$

Answer: (B) $48\ \mathrm{m}$ · The council's preliminary key

Q20 AP EAPCET 2026 · 13 May · Shift 1 MCQ

A projectile is thrown into space so that it attains a maximum possible range of 200 m. Taking the point of projection as origin, the coordinates of the point where the velocity of projectile is minimum is

(A) $(100, 50)$
(B) $(200, 100)$
(C) $(100, 200)$
(D) $(50, 100)$

Answer: (A) $(100, 50)$ · The council's preliminary key

Q21 AP EAPCET 2026 · 13 May · Shift 1 MCQ

A bike race is conducted on a circular track of radius 60 m. If the slowest bike, weighing 120 kg, moved around the track at a constant speed of 108 kmph, then the time taken by it to complete one lap and its acceleration are respectively

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(A) 3.49 s, $1.11\ \mathrm{ms}^{-2}$
(B) 12.56 s, $15\ \mathrm{ms}^{-2}$
(C) 3.49 s, $0\ \mathrm{ms}^{-2}$
(D) 2 s, $9.8\ \mathrm{ms}^{-2}$

Answer: (B) 12.56 s, $15\ \mathrm{ms}^{-2}$ · The council's preliminary key

Q22 AP EAPCET 2026 · 13 May · Shift 2 MCQ

A body travels 100 m in the nth second and 125 m in the $(n+3)^{\mathrm{th}}$ second. Then the acceleration of body is

(A) $8.33\ \mathrm{ms}^{-2}$
(B) $7.21\ \mathrm{ms}^{-2}$
(C) $6.0\ \mathrm{ms}^{-2}$
(D) $2.5\ \mathrm{ms}^{-2}$

Answer: (A) $8.33\ \mathrm{ms}^{-2}$ · The council's preliminary key

Q23 AP EAPCET 2026 · 13 May · Shift 2 MCQ

The resultant magnitude of two vectors is equal to magnitude of both the vectors separately, then the angle between the two vectors is

(A) 60°
(B) 80°
(C) 120°
(D) 45°

Answer: (C) 120° · The council's preliminary key

Q24 AP EAPCET 2026 · 13 May · Shift 2 MCQ

A ball is projected upwards from the top of a tower with a velocity $50\ ms^{-1}$ making an angle 30° with the horizontal. The height of tower is $70\ m$. After how many seconds from the instant of throwing, will the ball reach the ground? ($g = 10\ ms^{-2}$)

(A) $7\ s$
(B) $9\ s$
(C) $5\ s$
(D) $2\ s$

Answer: (A) $7\ s$ · The council's preliminary key

Q25 AP EAPCET 2026 · 12 May · Shift 1 MCQ

If $t = Px^2 + Qx$ is the relation between time (t) and distance (x), where $P$and Q are constants, the acceleration is

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(A) $\frac{2P}{x+Q}$

(B) $\frac{-2P}{(2Px+Q)^3}$

(C) $(2Px+Q)^3$

(D) $-2P(2Px+Q)^3$

Answer: (B) $\frac{-2P}{(2Px+Q)^3}$ · The council's preliminary key

Q26 AP EAPCET 2026 · 12 May · Shift 1 MCQ

Two bodies are projected from the same point at angles 15° and 45° with respect to the horizontal. If they attain the same horizontal range, the ratio of their initial velocities

(A) $1:\sqrt{2}$

(B) $\sqrt{2}:1$

(C) $1:2$

(D) $2:1$

Answer: (B) $\sqrt{2}:1$ · The council's preliminary key

Q27 AP EAPCET 2026 · 12 May · Shift 1 MCQ

To a person going towards east in a car with a velocity of 25 kmph, a train appears to move towards north with a velocity of $25\sqrt{3}$ kmph. The actual velocity of the train will be

(A) 25 kmph

(B) 50 kmph

(C) 5 kmph

(D) 53 kmph

Answer: (B) 50 kmph · The council's preliminary key

Q28 AP EAPCET 2026 · 12 May · Shift 2 MCQ

A motorist completes half revolution on a circular path of 60 m radius in one minute. His average speed

(A) $1\ ms^{-1}$

(B) $2\ ms^{-1}$

(C) $3.14\ ms^{-1}$

(D) $4.14\ ms^{-1}$

Answer: (C) $3.14\ ms^{-1}$ · The council's preliminary key

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Q29 AP EAPCET 2026 · 12 May · Shift 2 MCQ

If the vertical displacement of a body projected at an angle with the horizontal during the first second of its motion is 15 m, then the maximum height reached by it is
(acceleration due to gravity = $10\ \mathrm{ms}^{-2}$)

(A) 80 m
(B) 60 m
(C) 40 m
(D) 20 m

Answer: (D) 20 m · The council's preliminary key

Q30 AP EAPCET 2026 · 12 May · Shift 2 MCQ

If the resultant of three vectors $\overline{A} = -\hat{i} + 2\hat{j} + 3\hat{k}$, $\overline{B} = -2\hat{i} - \hat{j} - 4\hat{k}$ and $\overline{C}$ is a vector in the positive z -direction with a magnitude of 2 units, then the vector $\overline{C} =$

(A) $3\hat{i} - \hat{j} + 3\hat{k}$
(B) $3\hat{i} - 2\hat{j} - 3\hat{k}$
(C) $2\hat{i} - 3\hat{j} + 2\hat{k}$
(D) $2\hat{i} + 3\hat{j} - 2\hat{k}$

Answer: (A) $3\hat{i} - \hat{j} + 3\hat{k}$ · The council's preliminary key

Q31 TS EAPCET 2026 · 11 May · Shift 1 MCQ

Two balls P and Q are thrown vertically upwards simultaneously from the ground with velocities $20\ \mathrm{ms}^{-1}$ and $35\ \mathrm{ms}^{-1}$ respectively. The distance between the two balls when the velocity of the ball P becomes zero is

(Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

(A) 30 m
(B) 20 m
(C) 50 m
(D) 70 m

Answer: (A) 30 m · The council's preliminary key

Q32 TS EAPCET 2026 · 11 May · Shift 1 MCQ

If a body is projected from the ground at an angle of 45° with the horizontal, then the ratio of the velocities of the body at maximum height and at half of the maximum height is

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(A) $\sqrt{3} : \sqrt{7}$
(B) $\sqrt{2} : \sqrt{3}$
(C) $\sqrt{2} : \sqrt{5}$
(D) $\sqrt{3} : \sqrt{5}$

Answer: (B) $\sqrt{2} : \sqrt{3}$ · The council's preliminary key

Q33 TS EAPCET 2026 · 11 May · Shift 2 MCQ

A boy can swim with a speed of 18 kmph in still water. If the speed of the water in a river is 10.8 kmph, then the average speed of the boy in travelling downstream for a distance of 120 m and upstream for a distance of 90 m in the river is

(A) $3\ \text{ms}^{-1}$
(B) $3.5\ \text{ms}^{-1}$
(C) $4\ \text{ms}^{-1}$
(D) $4.5\ \text{ms}^{-1}$

Answer: (B) $3.5\ \text{ms}^{-1}$ · The council's preliminary key

Q34 TS EAPCET 2026 · 11 May · Shift 2 MCQ

A body is projected from a point which is at a height of 5 m from the ground with a velocity of $28\ \text{ms}^{-1}$ at an angle of 30° above the horizontal. The horizontal distance travelled by the body when it reaches a point which is at a height of 2 m from the ground is

(Acceleration due to gravity $= 10\ \text{ms}^{-2}$)

(A) $126\sqrt{3}$ m
(B) $21\sqrt{3}$ m
(C) $42\sqrt{3}$ m
(D) $28\sqrt{3}$ m

Answer: (C) $42\sqrt{3}$ m · The council's preliminary key

Q35 TS EAPCET 2026 · 10 May · Shift 1 MCQ

For a body thrown vertically upwards from the ground, if the time interval between the two instances when the body is at a height of 60 m is 4 s, then the maximum height reached by the body is

(Acceleration due to gravity $= 10\ \text{ms}^{-2}$)

(A) 150 m
(B) 90 m
(C) 120 m
(D) 80 m

Answer: (D) 80 m · The council's preliminary key

Q36 TS EAPCET 2026 · 10 May · Shift 1 MCQ

A stone of mass 10 g is attached to a string of length 80 cm and is rotated in a horizontal circle at height of 'h' from the ground with a centripetal acceleration of $125\,\mathrm{ms}^{-2}$. At a moment the string breaks and the stone strikes the ground at a horizontal distance of 10 m. Then the value of 'h' is (Acceleration due to gravity $= 10\,\mathrm{ms}^{-2}$)

(A) 10 m
(B) 5 m
(C) 15 m
(D) 20 m

Answer: (B) 5 m · The council's preliminary key

Q37 TS EAPCET 2026 · 10 May · Shift 2 MCQ

A body is allowed to fall freely from a height of 120 m from the ground and at the same moment another ball is thrown vertically upwards from the ground such that it reaches a maximum height of 180 m. The time taken for the two bodies to meet is
(Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

(A) $5\ \mathrm{s}$
(B) $4\ \mathrm{s}$
(C) $2\ \mathrm{s}$
(D) $3\ \mathrm{s}$

Answer: (C) $2\ \mathrm{s}$ · The council's preliminary key

Q38 TS EAPCET 2026 · 10 May · Shift 2 MCQ

The time taken by a projectile to reach the maximum height is 4 s. If the horizontal distance between the positions of the projectile at times 3 s and 5 s is 60 m, then its velocity of projection is

(Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

(A) $50\ \mathrm{ms}^{-1}$
(B) $35\ \mathrm{ms}^{-1}$
(C) $40\ \mathrm{ms}^{-1}$
(D) $30\ \mathrm{ms}^{-1}$

Answer: (A) $50\ \mathrm{ms}^{-1}$ · The council's preliminary key

Q39 TS EAPCET 2026 · 10 May · Shift 2 MCQ

The time taken by a body projected vertically upwards from the ground to reach 75% of the maximum height it can reach is 2 s. The ratio of the kinetic energy of the body at a time $t = 2$ s and the potential energy of the body at a time $t = 3$ s is

(Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

(A) $2:15$
(B) $4:15$
(C) $2:5$
(D) $4:5$

Answer: (B) $4:15$ · The council's preliminary key

Q40 TS EAPCET 2026 · 9 May · Shift 1 MCQ

Two trains A and B are moving in the same direction with velocities V_A and V_B respectively and a third train C is moving in opposite direction to A and B. If velocity of C with respect to B is twice the velocity of A with respect to B, then the velocity of A with respect to C is

(A) $3(V_A - V_B)$
(B) $2(V_A - V_B)$
(C) $\frac{(V_A - V_B)}{3}$
(D) $\frac{(V_A - V_B)}{2}$

Answer: (A) $3(V_A - V_B)$ · The council's preliminary key

Q41 TS EAPCET 2026 · 9 May · Shift 1 MCQ

A flag on a boat at rest is fluttering in the south-east direction when the wind is blowing at a speed of 72 kmph. If the boat starts moving towards south with a speed of $36\sqrt{2}$ kmph, then the direction of the flag on the boat is

(A) South
(B) West
(C) North
(D) East

Answer: (D) East · The council's preliminary key

Q42 TS EAPCET 2026 · 9 May · Shift 2 MCQ

A body is thrown vertically upwards from the surface of the earth with a velocity of $60\ \mathrm{ms}^{-1}$. The ratio of the displacements of the body during first, second and third seconds of its upward motion is (Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

(A) $1:3:5$
(B) $11:9:7$
(C) $1:1:1$
(D) $1:2:3$

Answer: (B) $11:9:7$ · The council's preliminary key

Q43 TS EAPCET 2026 · 9 May · Shift 2 MCQ

If the minimum velocity of a projectile is $15\ \mathrm{ms}^{-1}$ and the maximum height reached by it is $20\ \mathrm{m}$, then the velocity of projection of the projectile is
(Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

(A) $35\ \mathrm{ms}^{-1}$
(B) $30\ \mathrm{ms}^{-1}$
(C) $20\ \mathrm{ms}^{-1}$
(D) $25\ \mathrm{ms}^{-1}$

Answer: (D) $25\ \mathrm{ms}^{-1}$ · The council's preliminary key

Q44 AP EAPCET 2025 · 27 May · Shift 1 MCQ

If the displacement (s in metre) of a moving particle in terms of time (t in second) is $s = t^3 - 6t^2 + 18t + 9$, then the minimum velocity attained by the particle is

(A) $29\ \mathrm{m\,s}^{-1}$
(B) $5\ \mathrm{m\,s}^{-1}$
(C) $6\ \mathrm{m\,s}^{-1}$
(D) $12\ \mathrm{m\,s}^{-1}$

Answer: (C) $6\ \mathrm{m\,s}^{-1}$ · The council's preliminary key

Q45 AP EAPCET 2025 · 27 May · Shift 1 MCQ

If two bodies A and B are projected with same velocity but with different angles θ_1 and θ_2 respectively with the horizontal such that both will have same range, then the ratio of times of flight of the bodies A and B is

(A) $\sin\theta_2$
(B) $\sin\theta_1$
(C) $\tan\theta_2$
(D) $\tan\theta_1$

Answer: (D) $\tan\theta_1$ · The council's preliminary key

Q46 AP EAPCET 2025 · 26 May · Shift 1 MCQ

A ball projected vertically upwards with a velocity 'v' passes through a point P in its upward journey in a time of 'x' seconds. From there, the time in which the ball again passes through the same point P is

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(A) $\frac{v}{2g}$
(B) $\frac{2v}{g} - x$
(C) $\frac{v}{2g} - x$
(D) $2\left(\frac{v}{g} - x\right)$

Answer: (D) $2\left(\frac{v}{g} - x\right)$ · The council's preliminary key

Q47 AP EAPCET 2025 · 26 May · Shift 1 MCQ

Three vectors each of magnitude $3\sqrt{1.5}$ units are acting at a point. If the angle between any two vectors is $\frac{\pi}{3}$, then the magnitude of the resultant vector of the three vectors is

(A) $9\sqrt{3}$ units
(B) 9 units
(C) $\sqrt{6}$ units
(D) 3 units

Answer: (B) 9 units · The council's preliminary key

Q48 AP EAPCET 2025 · 26 May · Shift 1 MCQ

A vector perpendicular to the vector $(4\hat{i} - 3\hat{j})$ is

(A) $4\hat{i} + 3\hat{j}$
(B) $6\hat{i}$
(C) $3\hat{i} - 4\hat{j}$
(D) $7\hat{k}$

Answer: (D) $7\hat{k}$ · The council's preliminary key

Q49 AP EAPCET 2025 · 26 May · Shift 2 MCQ

The displacement (x) and time (t) graph of a particle moving along a straight line is shown in the figure. The average velocity of the particle in the time of 10 s is

(see the figure above)

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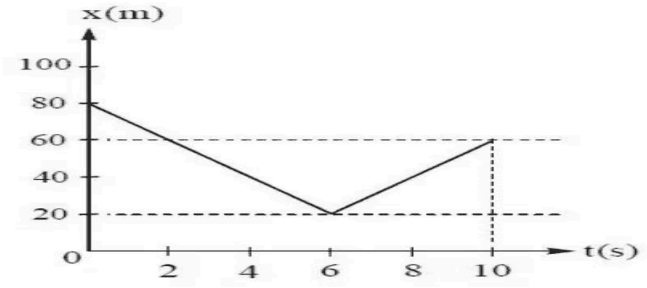
The displacement (x) and time (t) graph of a particle moving along a straight line is shown in the figure. The average velocity of the particle in the time of 10 s is

ఒక సరళరేఖ వెంబడి గమనంలో ఉన్న కణం యొక్క స్థానభ్రంశం (x) మరియు కాలం (t) ల గ్రాఫ్ పటంలో చూపబడినది. 10 సెకనుల కాలంలో ఆ కణం సగటు వేగం



Options :

1. $2\ \mathrm{m\ s^{-1}}$
2. $4\ \mathrm{m\ s^{-1}}$
3. $6\ \mathrm{m\ s^{-1}}$
4. $8\ \mathrm{m\ s^{-1}}$

(A) $2\ \mathrm{m\,s^{-1}}$

(B) $4\ \mathrm{m\,s^{-1}}$

(C) $6\ \mathrm{m\,s^{-1}}$

(D) $8\ \mathrm{m\,s^{-1}}$

Answer: (A) $2\ \mathrm{m\,s^{-1}}$ · The council's preliminary key

Q50 AP EAPCET 2025 · 26 May · Shift 2 MCQ

If the horizontal range of a body projected with a velocity 'u' is 3 times the maximum height reached by it, then the range of the body is
(g - acceleration due to gravity)

(A) $\frac{2u^2}{3g}$

(B) $\frac{4u^2}{5g}$

(C) $\frac{12u^2}{13g}$

(D) $\frac{24u^2}{25g}$

Answer: (D) $\frac{24u^2}{25g}$ · The council's preliminary key

Q51 AP EAPCET 2025 · 26 May · Shift 2 MCQ

If the velocity at the maximum height of a projectile projected at an angle of 45° is $20\ \mathrm{m\ s^{-1}}$, then the maximum height reached by the projectile is (Acceleration due to gravity $= 10\ \mathrm{m\ s^{-2}}$)

(A) $10\ \mathrm{m}$
(B) $20\ \mathrm{m}$
(C) $30\ \mathrm{m}$
(D) $40\ \mathrm{m}$

Answer: (B) $20\ \mathrm{m}$ · The council's preliminary key

Q52 AP EAPCET 2025 · 24 May · Shift 1 MCQ

A body starts from rest with uniform acceleration and its velocity at a time of 'n' seconds is 'v'. The total displacement of the body in the nth and $(n-1)^{th}$ seconds of its motion is

(A) $\frac{v(n+1)}{n}$
(B) $\frac{2v(n+1)}{n}$
(C) $\frac{2v(n-1)}{n}$
(D) $\frac{v(n-1)}{n}$

Answer: (C) $\frac{2v(n-1)}{n}$ · The council's preliminary key

Q53 AP EAPCET 2025 · 24 May · Shift 1 MCQ

If the range of a body projected with a velocity of $60\ \mathrm{m\,s^{-1}}$ is $180\sqrt{3}\ \mathrm{m}$, then the angle of projection of the body is
(Acceleration due to gravity = $10\ \mathrm{m\,s^{-2}}$)

(A) 30° or 60°
(B) 37° or 53°
(C) 20° or 70°
(D) 15° or 75°

Answer: (A) 30° or 60° · The council's preliminary key

Q54 AP EAPCET 2025 · 24 May · Shift 1 MCQ

If the height of a projectile at a time of 2 s from the beginning of motion is 60 m, then the time of flight of the projectile is
(Acceleration due to gravity = $10\ \mathrm{m\,s^{-2}}$)

(A) 12 s
(B) 4 s
(C) 6 s
(D) 8 s

Answer: (D) 8 s · The council's preliminary key

Q55 AP EAPCET 2025 · 23 May · Shift 1 MCQ

If the distance travelled by a freely falling body in the last but one second of its motion is 5 m, then the last second is
(Acceleration due to gravity = $10\ \mathrm{m\ s^{-2}}$)

(A) 1st
(B) 2nd
(C) 3rd
(D) 4th

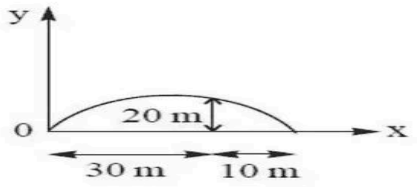
Answer: (B) 2nd · The council's preliminary key

Q56 AP EAPCET 2025 · 23 May · Shift 1 MCQ

The angle of projection of a projectile whose path is shown in the given figure is

(see the figure above)

The angle of projection of a projectile whose path is shown in the given figure is
ఇవ్వబడిన పటంలో చూపిన పథం గల ఒక ప్రక్షేపకం యొక్క ప్రక్షిప్త కోణం



Options :
1. $\tan^{-1}(1)$
2. $\tan^{-1}\left(\frac{8}{3}\right)$
3. $\tan^{-1}\left(\frac{4}{3}\right)$
4. $\tan^{-1}\left(\frac{5}{3}\right)$

(A) $\tan^{-1}(1)$
(B) $\tan^{-1}\left(\frac{8}{3}\right)$
(C) $\tan^{-1}\left(\frac{4}{3}\right)$
(D) $\tan^{-1}\left(\frac{5}{3}\right)$

Answer: (B) $\tan^{-1}\left(\frac{8}{3}\right)$ · The council's preliminary key

Q57 AP EAPCET 2025 · 23 May · Shift 1 MCQ

If the equation of motion of a projectile is $y = Ax - Bx^2$, then the ratio of the maximum height reached and the range of the projectile is

(A) $\frac{A}{4}$
(B) $\frac{A}{B}$
(C) $\frac{B}{4}$
(D) $\frac{A^2}{B}$

Answer: (A) $\frac{A}{4}$ · The council's preliminary key

Q58 AP EAPCET 2025 · 23 May · Shift 2 MCQ

If a stone thrown vertically upwards from a bridge with an initial velocity of $5\ \mathrm{m\ s^{-1}}$, strikes the water below the bridge in a time of 3 s, then the height of the bridge above the water surface is

(Acceleration due to gravity = $10\ \mathrm{m\ s^{-2}}$)

(A) 10 m
(B) 26 m
(C) 30 m
(D) 18 m

Answer: (C) 30 m · The council's preliminary key

Q59 AP EAPCET 2025 · 23 May · Shift 2 MCQ

If α, β and γ are the angles made by a vector with x, y and z axes respectively, then $\sin^2\alpha + \sin^2\beta =$

(A) $\sin^2\gamma$
(B) $\cos^2\gamma$
(C) $1 + \cos^2\gamma$
(D) $1 + \sin^2\gamma$

Answer: (C) $1 + \cos^2\gamma$ · The council's preliminary key

Q60 AP EAPCET 2025 · 23 May · Shift 2 MCQ

A particle moving along a straight line covers the first half of the distance with a speed of $3\ \mathrm{m\ s^{-1}}$, the other half of the distance is covered in two equal time intervals with speeds of $4.5\ \mathrm{m\ s^{-1}}$ and $7.5\ \mathrm{m\ s^{-1}}$ respectively, then the average speed of particle during the motion is

(A) $4.0\ \mathrm{m\ s^{-1}}$
(B) $5.0\ \mathrm{m\ s^{-1}}$
(C) $5.5\ \mathrm{m\ s^{-1}}$
(D) $4.8\ \mathrm{m\ s^{-1}}$

Answer: (A) $4.0\ \mathrm{m\ s^{-1}}$ · The council's preliminary key

Q61 AP EAPCET 2025 · 22 May · Shift 1 MCQ

The ratio of the displacements of a freely falling body during second and fifth seconds of its motion is

(A) $1:1$
(B) $2:5$
(C) $4:25$
(D) $1:3$

Answer: (D) $1:3$ · The council's preliminary key

Q62 AP EAPCET 2025 · 22 May · Shift 1 MCQ

The magnitudes of two vectors are A and B (A>B). If the maximum resultant magnitude of the two vectors is 'n' times their minimum resultant magnitude, then $\frac{A}{B} =$

(A) $\frac{n}{n-1}$
(B) $\frac{n+1}{n}$
(C) $\frac{n^2+1}{n-1}$
(D) $\frac{n+1}{n-1}$

Answer: (D) $\frac{n+1}{n-1}$ · The council's preliminary key

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Q63 AP EAPCET 2025 · 22 May · Shift 1 MCQ

A particle crossing the origin at time $t = 0$, moves in the xy-plane with a constant acceleration 'a' in y-direction. If the equation of motion of the particle is $y = bx^2$ (where b is a constant), then its velocity component in the x-direction is

(A) $\sqrt{\frac{2b}{a}}$
(B) $\sqrt{\frac{a}{2b}}$
(C) $\sqrt{\frac{a}{b}}$
(D) $\sqrt{\frac{b}{a}}$

Answer: (B) $\sqrt{\frac{a}{2b}}$ · The council's preliminary key

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Q64 AP EAPCET 2025 · 22 May · Shift 1 MCQ

A body is projected at an angle of 60° with the horizontal. If the initial kinetic energy of the body is X, then its kinetic energy at the highest point is

(A) X
(B) $2X$
(C) $\frac{X}{2}$
(D) $\frac{X}{4}$

Answer: (D) $\frac{X}{4}$ · The council's preliminary key

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Q65 AP EAPCET 2025 · 22 May · Shift 2 MCQ

If the displacement 'x' of a body in motion in terms of time 't' is given by $x = A\sin(\omega t + \theta)$, then the minimum time at which the displacement becomes maximum is

(A) $\left[\frac{\pi}{2\omega} - \frac{\theta}{\omega}\right]$
(B) $\left[\frac{2\omega}{\pi} - \frac{\omega}{\theta}\right]$
(C) $\left[\frac{\pi}{\omega} - \frac{1}{\omega}\right]$
(D) $\left[\frac{\omega}{\pi} - \frac{\omega}{\pi^2}\right]$

Answer: (A) $\left[\frac{\pi}{2\omega} - \frac{\theta}{\omega}\right]$ · The council's preliminary key

Q66 AP EAPCET 2025 · 22 May · Shift 2 MCQ

If the magnitude of a vector $\bar{p}$ is 25 units and its y-component is 7 units, then its x-component is

(A) 24 units
(B) 18 units
(C) 32 units
(D) 16 units

Answer: (A) 24 units · The council's preliminary key

Q67 AP EAPCET 2025 · 22 May · Shift 2 MCQ

The height of ceiling in an auditorium is 30 m. A ball is thrown with a speed of $30\ \mathrm{m\,s^{-1}}$ from the entrance such that it just moves very near to the ceiling without touching it and then it reaches the ground at the end of the auditorium. Then the length of auditorium is
[Acceleration due to gravity = $10\ \mathrm{m\,s^{-2}}$]

(A) $60\sqrt{2}$ m
(B) $30\sqrt{2}$ m
(C) $70\sqrt{2}$ m
(D) $100\sqrt{2}$ m

Answer: (A) $60\sqrt{2}$ m · The council's preliminary key

Q68 AP EAPCET 2025 · 21 May · Shift 1 MCQ

If a car travels 40% of the total distance with a speed v_1 and the remaining distance with a speed v_2, then average speed of the car is

(A) $\frac{1}{2}\sqrt{v_1 v_2}$
(B) $\frac{v_1+v_2}{2}$
(C) $\frac{2v_1v_2}{v_1+v_2}$
(D) $\frac{5v_1v_2}{3v_1+2v_2}$

Answer: (D) $\frac{5v_1v_2}{3v_1+2v_2}$ · The council's preliminary key

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Q69 AP EAPCET 2025 · 21 May · Shift 1 MCQ

If bullets are fired in all possible directions from same point with equal velocity of $10\ \mathrm{m\ s^{-1}}$ and with an angle of projection 45°, then the area covered by the bullets on the ground is nearly (Acceleration due to gravity $10\ \mathrm{m\ s^{-2}}$)

(A) $628\ \mathrm{m^2}$
(B) $314\ \mathrm{m^2}$
(C) $157\ \mathrm{m^2}$
(D) $79\ \mathrm{m^2}$

Answer: (B) $314\ \mathrm{m^2}$ · The council's preliminary key

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Q70 AP EAPCET 2025 · 21 May · Shift 1 MCQ

A ball is projected from a point with a speed V_0 at certain angle with the horizontal. From the same point and at the same instant, a person starts running with a constant speed $0.5V_0$ to catch the ball. If the person catches the ball after some time, then the angle of projection of the ball is

(A) 60^0
(B) 30^0
(C) 45^0
(D) 53^0

Answer: (A) 60^0 · The council's preliminary key

Q71 AP EAPCET 2025 · 21 May · Shift 2 MCQ

If a ball projected vertically upwards with certain intitial velocity from the ground crosses a point at a height of 25 m twice in a time interval of 4 s, then the initial velocity of the ball is

(Acceleration due to gravity = 10 m s^{-2})

(A) $20\ \mathrm{m\,s^{-1}}$
(B) $30\ \mathrm{m\,s^{-1}}$
(C) $40\ \mathrm{m\,s^{-1}}$
(D) $25\ \mathrm{m\,s^{-1}}$

Answer: (B) $30\ \mathrm{m\,s^{-1}}$ · The council's preliminary key

Q72 AP EAPCET 2025 · 21 May · Shift 2 MCQ

A car is moving with a velocity of $4\ \mathrm{m\,s^{-1}}$ towards east. After a time of $4\ \mathrm{s}$, if it is heading north-east with a velocity of $4\sqrt{2}\ \mathrm{m\,s^{-1}}$, then the average velocity of the car is

(A) $2\sqrt{5}\ \mathrm{ms^{-1}}$
(B) $3\sqrt{5}\ \mathrm{ms^{-1}}$
(C) $4\sqrt{3}\ \mathrm{ms^{-1}}$
(D) $5\sqrt{3}\ \mathrm{ms^{-1}}$

Answer: (A) $2\sqrt{5}\ \mathrm{ms^{-1}}$ · The council's preliminary key

Q73 AP EAPCET 2025 · 21 May · Shift 2 MCQ

Ratio of angular velocity of hour hand of a watch and the angular velocity of rotation of earth is

(A) $1:1$
(B) $2:1$
(C) $4:1$
(D) $1:2$

Answer: (B) $2:1$ · The council's preliminary key

Q74 TS EAPCET 2025 · 4 May · Shift 1 MCQ

The relation between the displacement 'x' (in metre) and the time 't' (in second) of a particle is $t = 2x^2 + 3x$. If the displacement of the particle is 25 cm from the origin ($x = 0$), then the acceleration of the particle is

(A) $+\frac{1}{16}\ \mathrm{ms^{-2}}$
(B) $-\frac{1}{16}\ \mathrm{ms^{-2}}$
(C) $+\frac{1}{8}\ \mathrm{ms^{-2}}$
(D) $-\frac{1}{8}\ \mathrm{ms^{-2}}$

Answer: (B) $-\frac{1}{16}\ \mathrm{ms^{-2}}$ · The council's preliminary key

Q75 TS EAPCET 2025 · 4 May · Shift 1 MCQ

A body projected at certain angle ($\neq 90^\circ$) from the ground crosses a point in its path at a time of 2.3 s and from there it reaches the ground after a time of 5.7 s. The maximum height reached by the body is
(Acceleration due to gravity $= 10\ \mathrm{ms^{-2}}$)

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(A) 80 m
(B) 120 m
(C) 40 m
(D) 160 m

Answer: (A) 80 m · The council's preliminary key

Q76 TS EAPCET 2025 · 4 May · Shift 2 MCQ

For a particle moving along a straight line path, the displacements in third and fifth seconds of its motion are 10 m and 18 m respectively. The speed of the particle at time $t = 4\,\text{s}$ is

(A) $32\ \text{ms}^{-1}$
(B) $8\ \text{ms}^{-1}$
(C) $12\ \text{ms}^{-1}$
(D) $16\ \text{ms}^{-1}$

Answer: (D) $16\ \text{ms}^{-1}$ · The council's preliminary key

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Q77 TS EAPCET 2025 · 4 May · Shift 2 MCQ

The vertical displacement (y in metre) of a projectile in terms of its horizontal displacement (x in metre) is given by $y = \left(\sqrt{3}x - 0.2x^2\right)$. The time of flight of the projectile is
(Acceleration due to gravity $= 10\ \text{ms}^{-2}$)

(A) $5\sqrt{3}\,\text{s}$
(B) $\sqrt{3}\,\text{s}$
(C) $0.2\,\text{s}$
(D) $0.2\sqrt{3}\,\text{s}$

Answer: (B) $\sqrt{3}\,\text{s}$ · The council's preliminary key

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Q78 TS EAPCET 2025 · 3 May · Shift 1 MCQ

A particle initially at rest is moving along a straight line with an acceleration of $2\,\text{ms}^{-2}$. At a time of 3 s after the beginning of motion, the direction of acceleration is reversed. The time from the beginning of the motion in which the particle returns to its initial position is

(A) $(3 + \sqrt{3})\,\text{s}$
(B) $(2 + \sqrt{2})\,\text{s}$
(C) $3(2 + \sqrt{2})\,\text{s}$
(D) $2(3 + \sqrt{3})\,\text{s}$

Answer: (C) $3(2 + \sqrt{2})\,\text{s}$ · The council's preliminary key

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Q79 TS EAPCET 2025 · 3 May · Shift 1 MCQ

If a body projected with a velocity of $19.6\,\mathrm{ms}^{-1}$ reaches a maximum height of 9.8 m, then the range of the projectile is
(Neglect air resistance)

(A) $19.6\,\mathrm{m}$
(B) $39.2\,\mathrm{m}$
(C) $78.4\,\mathrm{m}$
(D) $9.8\,\mathrm{m}$

Answer: (B) $39.2\,\mathrm{m}$ · The council's preliminary key

Q80 TS EAPCET 2025 · 3 May · Shift 2 MCQ

A person wearing a parachute jumps off a plane from a height of 2 km from the ground and falls freely for 20 m before his parachute opens. After his parachute opens if he continues to move uniformly with the velocity attained due to his freefall, the total time taken by the person to reach the ground is

(Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

(A) 99 s
(B) 100 s
(C) 101 s
(D) 102 s

Answer: (C) 101 s · The council's preliminary key

Q81 TS EAPCET 2025 · 3 May · Shift 2 MCQ

A ball projected at an angle of 45° with the horizontal crosses two points at equal heights separated by a distance at times 2 s and 8 s respectively. The horizontal distance between the two points is

(Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

(A) 300 m
(B) 400 m
(C) 500 m
(D) 600 m

Answer: (A) 300 m · The council's preliminary key

Q82 TS EAPCET 2025 · 3 May · Shift 2 MCQ

Due to the presence of air resistance, if a body dropped from a height of 20 m reaches the ground with a speed of $18\,\mathrm{ms}^{-1}$, then the time taken by the body to reach the ground is nearly

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(A) 1.8 s
(B) 2.2 s
(C) 2 s
(D) 2.5 s

Answer: (B) 2.2 s · The council's preliminary key

Q83 TS EAPCET 2025 · 2 May · Shift 1 MCQ

The driver of a bus moving with a velocity of 72 kmph observes a boy walking across the road at a distance of 50 m in front of the bus and decelerates the bus at $5\ \mathrm{ms}^{-2}$ by applying brakes and is just able to avoid an accident. The reaction time of the driver is

(A) 4 s
(B) 3.5 s
(C) 0.5 s
(D) 4.5 s

Answer: (C) 0.5 s · The council's preliminary key

Q84 TS EAPCET 2025 · 2 May · Shift 1 MCQ

A helicopter flying horizontally with a velocity of 288 kmph drops a bomb. If the line joining the point of dropping the bomb, and the point where bomb hits the ground makes an angle 45° with the horizontal, then the height at which the bomb was dropped is (Acceleration due to gravity = $10\ \mathrm{ms}^{-2}$)

(A) 1320 m
(B) 1280 m
(C) 320 m
(D) 640 m

Answer: (B) 1280 m · The council's preliminary key

Q85 TS EAPCET 2025 · 2 May · Shift 1 MCQ

The initial and final velocities of a body projected vertically from the ground are $20\ \mathrm{ms}^{-1}$ and $18\ \mathrm{ms}^{-1}$ respectively. The maximum height reached by the body is (Acceleration due to gravity = $10\ \mathrm{ms}^{-2}$)

(A) 20 m
(B) 16.2 m
(C) 19 m
(D) 18.1 m

Answer: (D) 18.1 m · The council's preliminary key

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Q86 TS EAPCET 2025 · 2 May · Shift 1 MCQ

A particle is acted upon by a force of constant magnitude such that its velocity and acceleration are always perpendicular to each other, then its

(A) linear momentum is constant
(B) kinetic energy is constant
(C) velocity is constant
(D) acceleration is constant

Answer: (B) kinetic energy is constant · The council's preliminary key

Q87 TS EAPCET 2025 · 2 May · Shift 2 MCQ

The ratio of times taken by a freely falling body to travel first 5m, second 5m, third 5m distances is

(A) $1 : \sqrt{2} : \sqrt{3}$
(B) $1 : \sqrt{2-1} : \sqrt{3-2}$
(C) $1 : \sqrt{3} : \sqrt{5}$
(D) $1 : \sqrt{2}-1 : \sqrt{3}-\sqrt{2}$

Answer: (D) $1 : \sqrt{2}-1 : \sqrt{3}-\sqrt{2}$ · The council's preliminary key

Q88 TS EAPCET 2025 · 2 May · Shift 2 MCQ

Two bodies are projected from the same point with the same initial velocity 'u' making angles 'θ' and $(90^\circ - \theta)$ with the horizontal in opposite directions. The horizontal distance between their positions when the bodies are at their maximum heights is

(A) $\frac{u^2}{2g}(\sin^2\theta - \cos^2\theta)$
(B) $\frac{u^2 \sin 2\theta}{2g}$
(C) $\frac{u^2}{g}$
(D) $\frac{u^2 \sin 2(90^\circ-\theta)}{g}$

Answer: (D) $\frac{u^2 \sin 2(90^\circ-\theta)}{g}$ · The council's preliminary key

Q89 TS EAPCET 2025 · 2 May · Shift 2 MCQ

If the component of the vector $\vec{A}$ along the vector $\vec{B}$ is twice the component of $\vec{B}$ along $\vec{A}$, then the ratio of magnitudes of vectors $\vec{A}$ and $\vec{B}$ is

(A) 1:2
(B) 3:2
(C) 2:1
(D) 3:1

Answer: (C) 2:1 · The council's preliminary key

Q90 TS EAPCET 2025 · 2 May · Shift 2 MCQ

A body projected vertically up with an initial speed of $10\,\mathrm{ms}^{-1}$ reaches the point of projection after sometime with a speed of $8\,\mathrm{ms}^{-1}$. The maximum height reached by the body is

(Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

(A) 5 m
(B) 3.2 m
(C) 4.1 m
(D) 4.5 m

Answer: (C) 4.1 m · The council's preliminary key

Q91 AP EAPCET 2024 · 23 May · Shift 1 MCQ

A diving board is at a height of $'h'$ from the water surface. A swimmer standing on this board thrown a stone vertically upward with a velocity $16\ \mathrm{ms}^{-1}$. It reaches the water surface in a time of $5\ \mathrm{s}$. In the next $0.2\mathrm{s}$, the diver can hear the sound from water surface. The speed of sound is (acceleration due to gravity $g = 10\ \mathrm{ms}^{-2}$)

(A) $450\ \mathrm{ms}^{-1}$
(B) $225\ \mathrm{ms}^{-1}$
(C) $200\ \mathrm{ms}^{-1}$
(D) $275\ \mathrm{ms}^{-1}$

Answer: (B) $225\ \mathrm{ms}^{-1}$ · The council's preliminary key

Q92 AP EAPCET 2024 · 23 May · Shift 1 MCQ

Path of projectile is given by the equation $Y = Px - Qx^2$, match the following accordingly (acceleration due to gravity=g)

a Range	i $\frac{P}{Q}$
b Maximum height	ii P
c Time of flight	iii $\frac{P^2}{4Q}$
d Tangent of projection	iv $\left(\sqrt{\frac{2}{gQ}}\right) P$

(A) a-i, b-iii, c-iv, d-ii
(B) a-i, b-iii, c-ii, d-iv
(C) a-iii, b-i, c-iv, d-ii
(D) a-iv, b-ii, c-iii, d-i

Answer: (A) a-i, b-iii, c-iv, d-ii · The council's preliminary key

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Q93 AP EAPCET 2024 · 23 May · Shift 1 MCQ

A bowling machine placed at a height h above the earth surface releases different balls with different angles but with same velocity $10\sqrt{3}\ \mathrm{ms}^{-1}$. All these balls landing velocities make angles 30° or more with horizontal. Then the height 'h' (in meters)

(acceleration due to gravity = $10\ \mathrm{m\,s}^{-2}$)

(A) 15
(B) 12
(C) 10
(D) 5

Answer: (D) 5 · The council's preliminary key

Q94 AP EAPCET 2024 · 23 May · Shift 1 MCQ

A person walks up a stalled escalator in 90s. When standing on the same moving escalator, he reached in 60s. The time it would take him to walk up the moving escalator will be.

(A) 36 s
(B) 72 s
(C) 18 s
(D) 27 s

Answer: (A) 36 s · The council's preliminary key

Q95 AP EAPCET 2024 · 22 May · Shift 1 MCQ

A body thrown vertically upwards from the ground reaches a maximum height 'H'. The ratio of the velocities of the body at heights $\frac{3H}{4}$ and $\frac{8H}{9}$ from the ground is

(A) $4:9$
(B) $27:32$
(C) $3:2$
(D) $3:8$

Answer: (C) $3:2$ · The council's preliminary key

Q96 AP EAPCET 2024 · 22 May · Shift 1 MCQ

The angle made by the resultant vector of two vectors $2\bar{i}+3\bar{j}+4\bar{k}$ and $2\bar{i}-7\bar{j}-4\bar{k}$ with x-axis is

(A) 60°
(B) 45°
(C) 90°
(D) 120°

Answer: (B) 45° · The council's preliminary key

Q97 AP EAPCET 2024 · 22 May · Shift 1 MCQ

The relation between the horizontal displacement x (in metre) and the vertical displacement y (in metre) of a projectile is $y = 3x - 0.8x^2$. The time of flight of the projectile is (Acceleration due to gravity = $10\ \mathrm{ms}^{-2}$)

(A) 1.5 s
(B) 3 s
(C) 2 s
(D) 2.5 s

Answer: (A) 1.5 s · The council's preliminary key

Q98 AP EAPCET 2024 · 22 May · Shift 1 MCQ

A 100 kg gun fires a ball of 1 kg horizontally from a cliff of height 500 m. It falls on the ground at a distance of 400 m from the bottom of the cliff. The recoil velocity of the gun is (Acceleration due to gravity = $10\ \mathrm{ms}^{-2}$)

(A) $0.6\ \mathrm{ms}^{-1}$
(B) $0.8\ \mathrm{ms}^{-1}$
(C) $0.2\ \mathrm{ms}^{-1}$
(D) $0.4\ \mathrm{ms}^{-1}$

Answer: (D) $0.4\ \mathrm{ms}^{-1}$ · The council's preliminary key

Q99 AP EAPCET 2024 · 22 May · Shift 1 MCQ

A boy weighing 50 kg finished long jump at a distance of 8 m. Considering that he moved along a parabolic path and his angle of jump is 45°, his initial KE is

(A) 960 J
(B) 1560 J
(C) 2460 J
(D) 1960 J

Answer: (D) 1960 J · The council's preliminary key

EdLoop EAPCET

Q100 AP EAPCET 2024 · 22 May · Shift 2 MCQ

A particle starts from rest and moves in a straight line. It travels a distance 2L with uniform acceleration and then moves with a constant velocity a further distance of L. Finally, it comes to rest after moving a distance of 3L under uniform retardation. Then the ratio of average speed to the maximum speed $\left(\frac{\overline{V}}{V_m}\right)$ of the particle is

(A) $\frac{6}{11}$
(B) $\frac{7}{11}$
(C) $\frac{5}{11}$
(D) $\frac{2}{11}$

Answer: (A) $\frac{6}{11}$ · The council's preliminary key

Q101 AP EAPCET 2024 · 22 May · Shift 2 MCQ

A boy throws a ball with a velocity 'V_o' at an angle 'α' to the ground. At the same time he starts running with uniform velocity to catch the ball before it hits the ground. To achieve this, he should run with a velocity of

(A) $V_o \cos\alpha$
(B) $V_o \sin\alpha$
(C) $V_o \tan\alpha$
(D) $\sqrt{V_o^2 \tan\alpha}$

Answer: (A) $V_o \cos\alpha$ · The council's preliminary key

Q102 AP EAPCET 2024 · 22 May · Shift 2 MCQ

A ball at point 'O' is at a horizontal distance of 7 m from a wall. On the wall a target is set at point 'C'. If the ball is thrown from 'O' at an angle 37° with horizontal aiming the target 'C'. But it hits the wall at point 'D' which is at a vertical distance 'y_0' below C. If the initial velocity of the ball is $15\ \mathrm{ms}^{-1}$. Find y_0 (given $\cos 37^\circ = \frac{4}{5}$)

(see the figure above)

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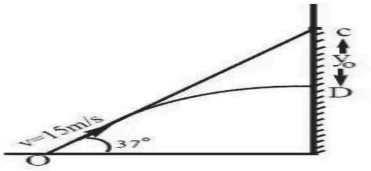
Time : 0

A ball at point 'O' is at a horizontal distance of 7 m from a wall. On the wall a target is set at point 'C'. If the ball is thrown from 'O' at an angle 37° with horizontal aiming the target 'C'. But it hits the wall at point 'D' which is at a vertical distance 'y_0' below C. If the initial velocity of the ball is 15 ms^{-1}. Find y_0 (given $\cos 37° = \frac{4}{5}$)

'O' అనే బిందువు వద్ద నున్న బంతికి గోడకు మధ్య దూరం 7 m. గోడపై 'C' బిందువు వద్ద లక్ష్యాన్ని నిర్ణయించారు. బంతిని 'O' బిందువు నుండి క్షితిజ సమాంతరం తో 37° కోణంలో విసిరిన అది లక్ష్యాన్ని 'C' తాకకుండా y_0 మీటర్ల క్రిందగల 'D' బిందువును తాకింది. బంతి తొలి వేగం 15 ms^{-1} అయిన, y_0 విలువ $(\cos 37° = \frac{4}{5})$



Options :

1. 2 m
2. 1.7 m
3. 1.5 m
4. 3 m

(A) 2 m
(B) 1.7 m
(C) 1.5 m
(D) 3 m

Answer: (B) 1.7 m · The council's preliminary key

Q103 AP EAPCET 2024 · 21 May · Shift 1 MCQ

An object projected upwards from the foot of a tower. The object crosses the top of the tower twice with an interval of 8 s and the object reaches foot after 16 s. The height of the tower is $[g = 10\ ms^{-2}]$

(A) 220 m
(B) 240 m
(C) 640 m
(D) 80 m

Answer: (B) 240 m · The council's preliminary key

Q104 AP EAPCET 2024 · 21 May · Shift 1 MCQ

The centripetal acceleration of a particle in uniform circular motion is $18\ ms^{-2}$. If the radius of the circular path is 50 cm, the change in velocity of the particle in a time of $\frac{\pi}{18}$ s is

(A) $9\ \mathrm{ms}^{-1}$
(B) $2\ \mathrm{ms}^{-1}$
(C) $3\ \mathrm{ms}^{-1}$
(D) $6\ \mathrm{ms}^{-1}$

Answer: (C) $3\ \mathrm{ms}^{-1}$ · The council's preliminary key

Q105 AP EAPCET 2024 · 21 May · Shift 1 MCQ

The horizontal range of a projectile projected at an angle of 45° with the horizontal is 50 m. The height of the projectile when its horizontal displacement is 20 m is

(A) 18 m
(B) 36 m
(C) 12 m
(D) 24 m

Answer: (C) 12 m · The council's preliminary key

Q106 AP EAPCET 2024 · 21 May · Shift 2 MCQ

The velocity of a particle is given by the equation $v(x) = 3x^2 - 4x$, where 'x' is the distance covered by the particle. The expression for its acceleration is

(A) $(6x - 4)$
(B) $6(3x^2 - 4x)$
(C) $(3x^2 - 4x)(6x - 4)$
(D) $(6x - 4)^2$

Answer: (C) $(3x^2 - 4x)(6x - 4)$ · The council's preliminary key

Q107 AP EAPCET 2024 · 21 May · Shift 2 MCQ

The acceleration of a particle which moves along the positive x-axis varies with its position as shown in the figure. If the velocity of the particle is $0.8\ \mathrm{ms}^{-1}$ at $x = 0$, then its velocity at $x = 1.4\ m$ is (in ms^{-1})

(see the figure above)

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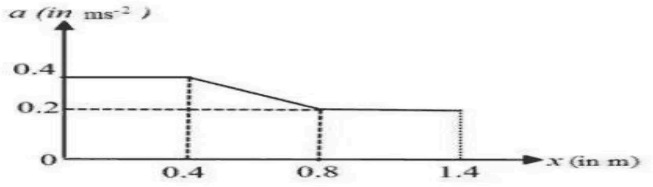
The acceleration of a particle which moves along the positive x-axis varies with its position as shown in the figure. If the velocity of the particle is $0.8\ ms^{-1}$ at $x = 0$, then its velocity at $x = 1.4\ m$ is (in ms^{-1})

ధన x-అక్షం వెంబడి ప్రయాణించే కణం యొక్క త్వరణం, దాని స్థానంతో పటంలో చూపిన విధంగా మారుతుంది. $x = 0$ వద్ద కణం యొక్క వేగం $0.8\ ms^{-1}$ అయితే $x = 1.4m$ వద్ద దాని వేగం (ms^{-1} లలో)



Options :

1. 1.6
2. 1.2
3. 1.4
4. 0.8

(A) 1.6
(B) 1.2
(C) 1.4
(D) 0.8

Answer: (B) 1.2 · The council's preliminary key

Q108 AP EAPCET 2024 · 21 May · Shift 2 MCQ

The maximum height attained by projectile is increased by 10% by keeping the angle of projection constant. What is the percentage increase in the time of flight?

(A) 5 %
(B) 10 %
(C) 20 %
(D) 40 %

Answer: (A) 5 % · The council's preliminary key

Q109 AP EAPCET 2024 · 20 May · Shift 1 MCQ

A body starting from rest moving with an acceleration of $\frac{5}{4}\ ms^{-2}$. The distance travelled by the body in the third second is:

(A) $\frac{15}{8}$ m
(B) $\frac{25}{8}$ m
(C) $\frac{25}{4}$ m
(D) $\frac{12}{7}$ m

Answer: (B) $\frac{25}{8}$ m · The council's preliminary key

Q110 AP EAPCET 2024 · 20 May · Shift 1 MCQ

A projectile can have the same range (R) for two angles of projection. Their initial velocities are same. If T_1 and T_2 are times of flight in two cases, then the product of two times of flight is directly proportional to

(A) $\frac{1}{R}$
(B) R^3
(C) R^2
(D) R

Answer: (D) R · The council's preliminary key

Q111 AP EAPCET 2024 · 20 May · Shift 1 MCQ

If $|\overline{P}+\overline{Q}|=|\overline{P}|=|\overline{Q}|$ then the angle between $\overline{P}$ and $\overline{Q}$ is

(A) 0°
(B) 120°
(C) 60°
(D) 90°

Answer: (B) 120° · The council's preliminary key

Q112 AP EAPCET 2024 · 20 May · Shift 2 MCQ

The relation between time 't' and displacement 'x' is $t=\alpha x^2+\beta x$ where α and β are constants. If 'v' is the velocity, the retardation is

(A) $2\alpha v^3\beta^2$
(B) $2\alpha\beta v^3$
(C) $-2\beta v^3$
(D) $2\alpha v^3$

Answer: (D) $2\alpha v^3$ · The council's preliminary key

Q113 AP EAPCET 2024 · 20 May · Shift 2 MCQ

If two stones are projected at angle 'θ' and $(90-\theta)$ respectively with horizontal with a speed of $20\ \mathrm{ms}^{-1}$. If second stone rises 10 m higher than the first stone, then the angle of projection 'θ' is (acceleration due to gravity = $10\ \mathrm{ms}^{-2}$)

(A) 45°
(B) 30°
(C) 60°
(D) 20°

Answer: (B) 30° · The council's preliminary key

Q114 AP EAPCET 2024 · 20 May · Shift 2 MCQ

A particle revolving in a circular path travels the first half of the circumference in 4 s and the next half in 2 s. What is its average angular velocity?

(A) $4\pi/9$ rad/s
(B) $\pi/6$ rad/s
(C) $2\pi/3$ rad/s
(D) $\pi/3$ rad/s

Answer: (D) $\pi/3$ rad/s · The council's preliminary key

Q115 AP EAPCET 2024 · 19 May · Shift 2 MCQ

A car travelling at 80 kmph can be stopped at a distance of 60 m by applying brakes. If the same car travels at 160 kmph and the same braking force is applied, the stopping distance is

(A) 240 m
(B) 170 m
(C) 360 m
(D) 480 m

Answer: (A) 240 m · The council's preliminary key

Q116 AP EAPCET 2024 · 19 May · Shift 2 MCQ

A 2 kg ball thrown vertically upward and another 3 kg ball projected with certain angle ($\theta \neq 90$) both will have same time of flight, then the ratio of their maximum heights is

(A) $2:3$
(B) $3:2$
(C) $\sqrt{3}:2$
(D) $1:1$

Answer: (D) $1:1$ · The council's preliminary key

Q117 AP EAPCET 2024 · 19 May · Shift 2 MCQ

In a sport event a disc is thrown such that it reaches its maximum range of 80 m, the distance travelled in first 3 s is ($g = 10 ms^{-2}$)

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(A) 80 m
(B) 60 m
(C) 72 m
(D) 74 m

Answer: (B) 60 m · The council's preliminary key

Q118 AP EAPCET 2024 · 18 May · Shift 1 MCQ

An object is projected such that it has to attain maximum range, another body is projected to reach maximum height. If both the objects reached the same maximum height, then the ratio initial velocities

(A) $2:1$
(B) $\sqrt{2}:1$
(C) $1:\sqrt{2}$
(D) $1:2$

Answer: (B) $\sqrt{2}:1$ · The council's preliminary key

Q119 AP EAPCET 2024 · 18 May · Shift 1 MCQ

A ball is projected at an angle of 45° with the horizontal. It passes through a wall of height 'h' at a horizontal distance d_1 from the point of projection and strikes the ground at a distance $d_1 + d_2$ from the point of projection, then 'h' is

(A) $h = \dfrac{2d_1d_2}{d_1+d_2}$
(B) $h = \dfrac{d_1d_2}{d_1+d_2}$
(C) $h = \dfrac{\sqrt{2}\,d_1d_2}{d_1+d_2}$
(D) $h = \dfrac{d_1d_2}{2(d_1+d_2)}$

Answer: (B) $h = \dfrac{d_1d_2}{d_1+d_2}$ · The council's preliminary key

Q120 AP EAPCET 2024 · 18 May · Shift 1 MCQ

One second after projection, a projectile is travelling in a direction inclined at 45° to horizontal. After two more seconds it is travelling horizontally. Then the magnitude of velocity of the projectile is ($g = 10\ ms^{-2}$)

(A) $10\sqrt{13}\ \mathrm{ms}^{-1}$
(B) $11\ \mathrm{ms}^{-1}$
(C) $10\sqrt{2}\ \mathrm{ms}^{-1}$
(D) $20\ \mathrm{ms}^{-1}$

Answer: (A) $10\sqrt{13}\ \mathrm{ms}^{-1}$ · The council's preliminary key

Q121 TS EAPCET 2024 · 11 May · Shift 1 MCQ

The position x (in metre) of a particle moving along a straight line is given by $x = t^3 - 12t + 3$, where 't' is time (in second). The acceleration of the particle when its velocity becomes $15\ \mathrm{ms}^{-1}$ is

(A) $15\,\mathrm{ms}^{-2}$
(B) $24\,\mathrm{ms}^{-2}$
(C) $18\,\mathrm{ms}^{-2}$
(D) $12\,\mathrm{ms}^{-2}$

Answer: (C) $18\,\mathrm{ms}^{-2}$ · The council's preliminary key

Q122 TS EAPCET 2024 · 11 May · Shift 1 MCQ

The maximum horizontal range of a ball projected from the ground is 32 m. If the ball is thrown with the same speed horizontally from the top of a tower of height 25 m, the maximum horizontal distance covered by the ball is

(Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

(A) 40 m
(B) 57 m
(C) 60 m
(D) 75 m

Answer: (A) 40 m · The council's preliminary key

Q123 TS EAPCET 2024 · 10 May · Shift 1 MCQ

A body moving with uniform acceleration, travels a distance of 25 m in the fourth second and 37 m in the sixth second. The distance covered by the body in the next two seconds is

(A) 63 m
(B) 84 m
(C) 49 m
(D) 92 m

Answer: (D) 92 m · The council's preliminary key

Q124 TS EAPCET 2024 · 10 May · Shift 1 MCQ

A body is projected from the ground at an angle of $\tan^{-1}(\sqrt{7})$ with the horizontal. At half of the maximum height, the speed of the body is 'n' times the speed of projection. The value of 'n' is

(A) 2
(B) $\frac{1}{2}$
(C) $\frac{4}{3}$
(D) $\frac{3}{4}$

Answer: (D) $\frac{3}{4}$ · The council's preliminary key

Q125 TS EAPCET 2024 · 10 May · Shift 1 MCQ

The relation between the current i (in ampere) in a conductor and the time t (in second) is $i = 12t + 9t^2$. The charge passing through the conductor between the times $t = 2$ s and $t = 10$ s is

(A) 3720 C
(B) 3648 C
(C) 3600 C
(D) 3552 C

Answer: (D) 3552 C · The council's preliminary key

Q126 TS EAPCET 2024 · 10 May · Shift 2 MCQ

A body is thrown vertically upwards with a velocity of $35\ \text{ms}^{-1}$ from the ground. The ratio of the speeds of the body at times 3 s and 4 s of its motion is

(Acceleration due to gravity $= 10\ \text{ms}^{-2}$)

(A) $3:4$
(B) $1:1$
(C) $2:1$
(D) $3:2$

Answer: (B) $1:1$ · The council's preliminary key

Q127 TS EAPCET 2024 · 10 May · Shift 2 MCQ

From a height of 'h' above the ground, a ball is projected up at an angle 30° with the horizontal. If the ball strikes the ground with a speed of 1.25 times its initial speed of $40\ \text{ms}^{-1}$, the value of 'h' is

(acceleration due to gravity = $10\ \text{ms}^{-2}$)

(A) 75 m
(B) 60 m
(C) 30 m
(D) 45 m

Answer: (D) 45 m · The council's preliminary key

Q128 TS EAPCET 2024 · 9 May · Shift 1 MCQ

A body is falling freely from the top of a tower of height 125 m. The distance covered by the body during the last second of its motion is x % of the height of the tower. Then x is

(Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

(A) 9
(B) 36
(C) 25
(D) 49

Answer: (B) 36 · The council's preliminary key

Q129 TS EAPCET 2024 · 9 May · Shift 1 MCQ

A body P is projected at an angle of 30° with the horizontal and another body Q is projected at angle of 30° with the vertical. If the ratio of the horizontal ranges of the bodies P and Q is $1:2$, then the ratio of the maximum heights reached by the bodies P and Q is

(A) $1:4$
(B) $1:6$
(C) $2:3$
(D) $1:1$

Answer: (B) $1:6$ · The council's preliminary key

Q130 TS EAPCET 2024 · 9 May · Shift 2 MCQ

A stone is thrown vertically up from the top end of a window of height 1.8 m with a velocity of $8\ \mathrm{ms}^{-1}$. The time taken by the stone to cross the window during its downward journey is

(Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

(A) 0.8 s
(B) 1.6 s
(C) 1.0 s
(D) 0.2 s

Answer: (D) 0.2 s · The council's preliminary key

Q131 TS EAPCET 2024 · 9 May · Shift 2 MCQ

A cannon placed on a cliff at a height of 375 m fires a cannon ball with a velocity of $100\ \mathrm{ms}^{-1}$ at an angle of 30° above the horizontal. The horizontal distance between the cannon and the target is (Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

(A) $750\sqrt{3}\ \mathrm{m}$
(B) $500\sqrt{3}\ \mathrm{m}$
(C) $250\sqrt{3}\ \mathrm{m}$
(D) $750\ \mathrm{m}$

Answer: (A) $750\sqrt{3}\ \mathrm{m}$ · The council's preliminary key

Q132 AP EAPCET 2023 · 19 May · Shift 1 MCQ

The velocity (v) of a particle starting from rest increases linearly with time (t) as $v = 4t$, where v is in ms^{-1} and t is in second. The distance covered by the particle in the first 4 seconds is

(A) 16 m
(B) 32 m
(C) 8 m
(D) 64 m

Answer: (B) 32 m · The council's preliminary key

Q133 AP EAPCET 2023 · 19 May · Shift 1 MCQ

The time taken by a boat to travel upstream to a certain distance and return back is 14 hours. If the velocity of boat in still water is $35\ \mathrm{kmh}^{-1}$ and velocity of the stream is $5\ \mathrm{kmh}^{-1}$, the distance travelled by the boat before it returns is

(A) 100 km
(B) 240 km
(C) 120 km
(D) 180 km

Answer: (B) 240 km · The council's preliminary key

Q134 AP EAPCET 2023 · 19 May · Shift 1 MCQ

If the angle between two unit vectors $\vec{A}$ and $\vec{B}$ is θ, then $|\vec{A} + \vec{B}|$ is

(A) $2\cos\frac{\theta}{2}$

(B) $2\sin\frac{\theta}{2}$

(C) 0

(D) $\cos\frac{\theta}{2}$

Answer: (A) $2\cos\frac{\theta}{2}$ · The council's preliminary key

Q135 AP EAPCET 2023 · 18 May · Shift 1 MCQ

If the engine of a long train moving with constant acceleration crosses a tree with velocity 'u' and the last compartment of the train crosses the same tree with velocity 'v', then the velocity with which the middle compartment crosses the same tree is

(A) $\frac{(v+u)}{2}$

(B) $\frac{2uv}{(u+v)}$

(C) $\sqrt{\frac{(v^2+u^2)}{2}}$

(D) $\sqrt{2(u^2+v^2)}$

Answer: (C) $\sqrt{\frac{(v^2+u^2)}{2}}$ · The council's preliminary key

Q136 AP EAPCET 2023 · 18 May · Shift 1 MCQ

A swimmer wants to cross a river which is flowing at a speed 'v'. If the swimmer can swim in still water at speed 'V', the direction he should swim to cross the river in least time is

(A) Along the flow of river

(B) Opposite to the flow of river

(C) Perpendicular to the flow of river

(D) 45° to the flow of river

Answer: (C) Perpendicular to the flow of river · The council's preliminary key

Q137 AP EAPCET 2023 · 18 May · Shift 1 MCQ

The resultant magnitude of two vectors of same magnitude is equal to magnitude of either. The angle between the two vectors is

(A) 30°

(B) 60°

(C) 90°

(D) 120°

Answer: (D) 120° · The council's preliminary key

Q138 AP EAPCET 2023 · 18 May · Shift 2 MCQ

A car is travelling at $30\ \mathrm{ms}^{-1}$ speed on a circular road of radius $300\ \mathrm{m}$. If its speed is increasing at the rate of $4\ \mathrm{ms}^{-2}$, then its acceleration is

(A) $2.7\ \mathrm{ms}^{-2}$
(B) $3\ \mathrm{ms}^{-2}$
(C) $4\ \mathrm{ms}^{-2}$
(D) $5\ \mathrm{ms}^{-2}$

Answer: (D) $5\ \mathrm{ms}^{-2}$ · The council's preliminary key

Q139 AP EAPCET 2023 · 18 May · Shift 2 MCQ

Which of the following statements is true regarding the vector product of two vectors?

(A) The vector product of two vectors changes sign under reflection.
(B) Vector product is commutative.
(C) Vector product of two parallel vectors is a null vector.
(D) Vector product of two vectors is a scalar.

Answer: (C) Vector product of two parallel vectors is a null vector. · The council's preliminary key

Q140 AP EAPCET 2023 · 17 May · Shift 1 MCQ

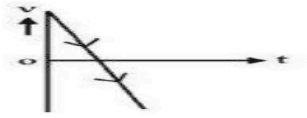
Among the following, velocity (v) – time (t) graph representing the motion of a vertically projected body is

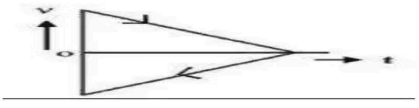
Among the following, velocity (v) – time (t) graph representing the motion of a vertically projected body is

క్రింది వాటిలో, వేగం (v) – కాలం (t) గ్రాఫ్ లలో నిట్ట నిలువుగా ప్రక్షిప్తం చేసిన వస్తువు గమనాన్ని సూచించునది

Options :

1. 

2. 

3. 

4. 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (B) · The council's preliminary key

Q141 AP EAPCET 2023 · 17 May · Shift 1 MCQ

The resultant of two vectors $\vec{A}$ and $\vec{B}$ is perpendicular to vector $\vec{A}$ and the resultant magnitude is equal to half of the magnitude of $\vec{B}$, then the angle between $\vec{A}$ and $\vec{B}$ is

(A) 30°
(B) 60°
(C) 150°
(D) 120°

Answer: (C) 150° · The council's preliminary key

Q142 AP EAPCET 2023 · 17 May · Shift 1 MCQ

At any instant 't' the vertical distance 'Y' and horizontal distance 'X' of a projectile are given by $2Y = 6t - gt^2$ and $X = 4t$. The initial velocity of projectile is

(X and Y are in metre and t is in second)

(A) $3\ \text{ms}^{-1}$
(B) $4\ \text{ms}^{-1}$
(C) $5\ \text{ms}^{-1}$
(D) $6\ \text{ms}^{-1}$

Answer: (C) $5\ \text{ms}^{-1}$ · The council's preliminary key

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Q143 AP EAPCET 2023 · 17 May · Shift 2 MCQ

If a person moving along a straight line path covers first half distance with velocity 'V_1' and the next half distance with velocity 'V_2', then the average velocity of the person is

(A) $\frac{V_1+V_2}{2}$
(B) $\frac{(V_1+V_2)}{2\sqrt{V_1V_2}}$
(C) $\frac{2}{\frac{1}{V_1}+\frac{1}{V_2}}$
(D) $\frac{V_1V_2}{V_1+V_2}$

Answer: (C) $\frac{2}{\frac{1}{V_1}+\frac{1}{V_2}}$ · The council's preliminary key

EdLoop EAPCET

Q144 AP EAPCET 2023 · 17 May · Shift 2 MCQ

A body is moving with a uniform speed of $20\ \mathrm{ms}^{-1}$ on a horizontal circle. The change in velocity of the body in half revolution is

(A) $20\ \mathrm{ms}^{-1}$
(B) $10\ \mathrm{ms}^{-1}$
(C) $40\ \mathrm{ms}^{-1}$
(D) $\frac{20}{\sqrt{2}}\ \mathrm{ms}^{-1}$

Answer: (C) $40\ \mathrm{ms}^{-1}$ · The council's preliminary key

Q145 AP EAPCET 2023 · 16 May · Shift 1 MCQ

A person walks up a stalled escalator in 80 sec. When standing on the same escalator, now moving, he is carried up in 20 s. The time taken by him to walk up the moving escalator is

(A) 4 s
(B) 8 s
(C) 12 s
(D) 16 s

Answer: (D) 16 s · The council's preliminary key

Q146 AP EAPCET 2023 · 16 May · Shift 1 MCQ

A car moving with uniform acceleration covers the distance of 200 m in first 2 seconds and the distance of 220 m in next 4 seconds. The velocity of the car after 7 seconds is

(A) $10\ \mathrm{ms}^{-1}$
(B) $20\ \mathrm{ms}^{-1}$
(C) $15\ \mathrm{ms}^{-1}$
(D) $30\ \mathrm{ms}^{-1}$

Answer: (A) $10\ \mathrm{ms}^{-1}$ · The council's preliminary key

Q147 AP EAPCET 2023 · 16 May · Shift 1 MCQ

A flywheel is rotating at a rate of 150 rev/minute. If it slows at constant retardation of π rads^{-2}, then the time required for the wheel to come to rest is

(A) 2.5 s
(B) 5 s
(C) 4 s
(D) 6 s

Answer: (B) 5 s · The council's preliminary key

EdLoop EAPCET

Q148 AP EAPCET 2023 · 16 May · Shift 1 MCQ

A force, $\vec{F} = \left(4\hat{i} + 3\hat{j} - 5\hat{k}\right)$ N is acting on a body making an angle θ with the horizontal. Then the angle 'θ' is

(A) $\cos^{-1}\left(\frac{2\sqrt{2}}{5}\right)$

(B) $\cos^{-1}\left(\frac{\sqrt{2}}{5}\right)$

(C) $\cos^{-1}\left(\frac{5\sqrt{2}}{9}\right)$

(D) $\cos^{-1}\left(\frac{3}{5\sqrt{2}}\right)$

Answer: (A) $\cos^{-1}\left(\frac{2\sqrt{2}}{5}\right)$ · The council's preliminary key

Q149 AP EAPCET 2023 · 16 May · Shift 2 MCQ

If the velocity of a particle moving along a straight line with uniform acceleration, is given by $V = \left(\sqrt{196 - 16X}\right)$ ms^{-1}, then its acceleration is

(x is displacement of the particle)

(A) $8\ \text{ms}^{-2}$

(B) $14\ \text{ms}^{-2}$

(C) $-8\ \text{ms}^{-2}$

(D) $-16\ \text{ms}^{-2}$

Answer: (C) $-8\ \text{ms}^{-2}$ · The council's preliminary key

Q150 AP EAPCET 2023 · 16 May · Shift 2 MCQ

The sum of the magnitudes of two vectors acting at a point is 18 and the magnitude of their resultant is 12. If the resultant is at 90° with the vector of smaller magnitude, then the magnitudes of the vectors are

(A) 5, 13

(B) 2, 16

(C) 6, 12

(D) 8, 10

Answer: (A) 5, 13 · The council's preliminary key

Q151 AP EAPCET 2023 · 16 May · Shift 2 MCQ

Two bodies of masses 'm_1' and 'm_2' are dropped from two different heights h_1 and h_2 respectively. The ratio of the times taken by the two masses to touch the ground is (neglect air resistance)

(A) $\frac{h_1}{h_2}$
(B) $\frac{m_1 h_1}{m_2 h_2}$
(C) $\frac{m_1 h_2}{m_2 h_1}$
(D) $\sqrt{\frac{h_1}{h_2}}$

Answer: (D) $\sqrt{\frac{h_1}{h_2}}$ · The council's preliminary key

Q152 AP EAPCET 2023 · 15 May · Shift 1 MCQ

The time of flight of a vertically projected stone is 8 s. The position of the stone after 6 s from the ground is

(Acceleration due to gravity = $10\ \mathrm{ms}^{-2}$)

(A) 20 m
(B) 60 m
(C) 75 m
(D) 40 m

Answer: (B) 60 m · The council's preliminary key

Q153 AP EAPCET 2023 · 15 May · Shift 1 MCQ

A stone thrown with velocity 'u' at angles 'θ' and (90°-θ) with the horizontal reaches to maximum heights H_1 and H_2 respectively. Its horizontal range is

(A) $4\sqrt{H_1 H_2}$
(B) $2\,H_1 H_2$
(C) $2\sqrt{H_1 H_2}$
(D) $4\sqrt{\frac{H_1}{H_2}}$

Answer: (A) $4\sqrt{H_1 H_2}$ · The council's preliminary key

Q154 AP EAPCET 2023 · 15 May · Shift 1 MCQ

Two vectors of same magnitude act at a point. Twice the product of the magnitudes of two vectors is equal to the square of the magnitude of their resultant.The angle between the two vectors is

(A) 60°
(B) 30°
(C) 90°
(D) 120°

Answer: (C) 90° · The council's preliminary key

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Q155 AP EAPCET 2023 · 15 May · Shift 2 MCQ

A truck moving with a constant velocity $12\ \mathrm{ms}^{-1}$ crosses a car moving from rest with uniform acceleration $2\ \mathrm{ms}^{-2}$. The distance the car has to travel from the starting point to cross the truck again is

(A) $50\ \mathrm{m}$
(B) $60\ \mathrm{m}$
(C) $144\ \mathrm{m}$
(D) $120\ \mathrm{m}$

Answer: (C) $144\ \mathrm{m}$ · The council's preliminary key

Q156 AP EAPCET 2023 · 15 May · Shift 2 MCQ

If $\vec{F} = (4\hat{i} - 10\hat{j})\ \mathrm{N}$ and $\vec{r} = (-5\hat{i} - 3\hat{j})\ \mathrm{m}$, then $(\vec{r} \times \vec{F})$ is

(A) $(-20\hat{i} + 3\hat{j})\ \mathrm{Nm}$
(B) $62\hat{k}\ \mathrm{Nm}$
(C) $10\sqrt{13}\ \mathrm{Nm}$
(D) $38\ \mathrm{Nm}$

Answer: (B) $62\hat{k}\ \mathrm{Nm}$ · The council's preliminary key

Q157 AP EAPCET 2023 · 15 May · Shift 2 MCQ

Two forces whose magnitudes are in the ratio 5:3 are acting at a point at an angle 60° simultaneously. If the resultant of the two forces is 35 N, then the magnitudes of two forces respectively are

(A) 3N, 5N
(B) 25 N, 9N
(C) 25 N, 15 N
(D) 12 N, 20 N

Answer: (C) 25 N, 15 N · The council's preliminary key

Q158 TS EAMCET 2023 · 14 May · Shift 1 MCQ

The acceleration of a vertically projected body at its highest reaching position is

(A) 0
(B) Equal to acceleration due to gravity at the place
(C) Infinity
(D) $-1\ \mathrm{ms}^{-2}$

Answer: (B) Equal to acceleration due to gravity at the place · The council's preliminary key

Q159 TS EAMCET 2023 · 14 May · Shift 1 MCQ

A player can throw a ball to a maximum horizontal distance of 80 m. If he throws the ball vertically with the same velocity, then the maximum height reached by the ball is

(A) 160 m
(B) 60 m
(C) 20 m
(D) 40 m

Answer: (D) 40 m · The council's preliminary key

Q160 TS EAMCET 2023 · 14 May · Shift 1 MCQ

The velocity of a particle having magnitude of 10 ms^{-1} in the direction of 60^0 with positive X-axis is

(A) $5\hat{i} - 5\sqrt{3}\hat{j}$
(B) $5\sqrt{3}\hat{i} - 5\hat{j}$
(C) $5\sqrt{3}\hat{i} + 5\hat{j}$
(D) $5\hat{i} + 5\sqrt{3}\hat{j}$

Answer: (D) $5\hat{i} + 5\sqrt{3}\hat{j}$ · The council's preliminary key

Q161 TS EAMCET 2023 · 14 May · Shift 2 MCQ

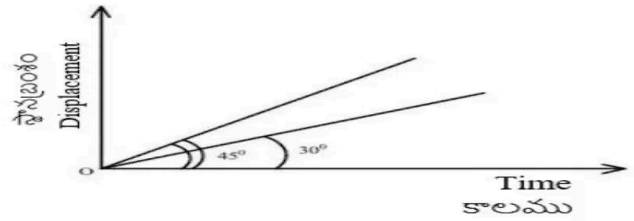
The displacement-time graphs of two moving particles make angles of $30°$ and $45°$ with the time axis. The ratio of their velocities is

(see the figure above)

Correct Marks : 1 Wrong Marks : 0

The displacement-time graphs of two moving particles make angles of 30° and 45° with the time axis. The ratio of their velocities is

రెండు కదులుతున్న కణాల స్థానభ్రంశము – కాలము గ్రాఫ్ లు కాలం అక్షంతో 30° మరియు 45° ల కోణాలను చేశాయి. వాటి వేగాల నిష్పత్తి



Options :

1. $\sqrt{3}:2$
2. $1:1$
3. $1:2$
4. $1:\sqrt{3}$

(A) $\sqrt{3} : 2$
(B) $1 : 1$
(C) $1 : 2$
(D) $1 : \sqrt{3}$

Answer: (D) $1 : \sqrt{3}$ · The council's preliminary key

Q162 TS EAMCET 2023 · 14 May · Shift 2 MCQ

A projectile is given an initial velocity of $\hat{i} + 2\hat{j}\ \mathrm{ms}^{-1}$. The cartesian equation of its path is (x and y are in metres and $g = 10\ \mathrm{ms}^{-1}$)

(A) $y = x - 5x^2$
(B) $y = 2x - 5x^2$
(C) $y = 2x - 15x^2$
(D) $y = 2x - 25x^2$

Answer: (B) $y = 2x - 5x^2$ · The council's preliminary key

Q163 TS EAMCET 2023 · 14 May · Shift 2 MCQ

The angle between force $\vec{F} = 3\hat{i} + 4\hat{j} - 5\hat{k}$ and displacement $\vec{d} = 5\hat{i} + 4\hat{j} + 3\hat{k}$ is

(A) $\cos^{-1}(0.16)$
(B) $\cos^{-1}(0.32)$
(C) $\cos^{-1}(0.24)$
(D) $\cos^{-1}(0.64)$

Answer: (B) $\cos^{-1}(0.32)$ · The council's preliminary key

Q164 TS EAMCET 2023 · 13 May · Shift 1 MCQ

A body starts from rest with uniform acceleration. If its velocity after n^{th} second (last second) is 'V' then its displacement in the last two seconds is

(A) $\frac{2V(n+1)}{n}$
(B) $\frac{V(n+1)}{n}$
(C) $\frac{V(n-1)}{n}$
(D) $\frac{2V(n-1)}{n}$

Answer: (D) $\frac{2V(n-1)}{n}$ · The council's preliminary key

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Q165 TS EAMCET 2023 · 13 May · Shift 1 MCQ

A stone projected from the ground with a velocity $50\ \mathrm{ms}^{-1}$ at an angle of 30° with the horizontal crosses a wall after a time of 3 s. Then the horizontal distance beyond the wall that the stone strikes the ground is
(acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

(A) 90.2 m
(B) 89.6 m
(C) 86.6 m
(D) 70.2 m

Answer: (C) 86.6 m · The council's preliminary key

Q166 TS EAMCET 2023 · 13 May · Shift 2 MCQ

A bird flies with a velocity $(t-2)\ \mathrm{ms}^{-1}$ along a straight line, where t is the time in seconds. The distance covered by it in a time of 4 seconds is

(A) $2\ \mathrm{m}$
(B) $4\ \mathrm{m}$
(C) $6\ \mathrm{m}$
(D) $8\ \mathrm{m}$

Answer: (B) $4\ \mathrm{m}$ · The council's preliminary key

Q167 TS EAMCET 2023 · 13 May · Shift 2 MCQ

A car is travelling with linear velocity 'V' on a circular road of radius 'r'. If its velocity is increasing at a rate of 'a' ms^{-2}, then the resultant acceleration will be

(A) $\sqrt{\left(\frac{V^2}{r^2}-a^2\right)}$
(B) $\sqrt{\left(\frac{V^4}{r^2}+a^2\right)}$
(C) $\sqrt{\left(\frac{V^4}{r^2}-a^2\right)}$
(D) $\sqrt{\left(\frac{V^2}{r^2}+a^2\right)}$

Answer: (B) $\sqrt{\left(\frac{V^4}{r^2}+a^2\right)}$ · The council's preliminary key

Q168 TS EAMCET 2023 · 12 May · Shift 1 MCQ

The relation between time t and distance x of a particle is $t = ax^2 + bx$, where a *and* b are constants. If v is the velocity of the particle, then its acceleration is

(A) $-2abv^2$
(B) $2bv^3$
(C) $-2av^3$
(D) $2av^2$

Answer: (C) $-2av^3$ · The council's preliminary key

Q169 TS EAMCET 2023 · 12 May · Shift 1 MCQ

A bomb is dropped on an enemy post on the ground by an aeroplane flying horizontally with a velocity of $60\ \mathrm{kmh}^{-1}$ at a height of $490\ \mathrm{m}$. At the time of dropping the bomb, the horizontal distance of the aeroplane from the enemy post so that the bomb hits the target is

(A) $\left(\frac{400}{3}\right)\ \mathrm{m}$
(B) $\left(\frac{500}{3}\right)\ \mathrm{m}$
(C) $\left(\frac{1700}{3}\right)\ \mathrm{m}$
(D) $498\ \mathrm{m}$

Answer: (B) $\left(\frac{500}{3}\right)\ \mathrm{m}$ · The council's preliminary key

Q170 TS EAMCET 2023 · 12 May · Shift 1 MCQ

The angular speed of a particle moving in a circular path is doubled. Then, the centripetal acceleration of the particle is

(A) 4 times the initial centripetal acceleration
(B) halved
(C) doubled
(D) unchanged

Answer: (A) 4 times the initial centripetal acceleration · The council's preliminary key

Q171 TS EAMCET 2023 · 12 May · Shift 2 MCQ

The ratio of the displacements of a freely falling body during first, second and third seconds of its motion is

(A) $1:1:1$
(B) $1:3:5$
(C) $1:2:3$
(D) $1:4:9$

Answer: (B) $1:3:5$ · The council's preliminary key

Q172 TS EAMCET 2023 · 12 May · Shift 2 MCQ

A person walks in such a way that he covers equal distance in each step. The person takes 2 steps forward towards east, then takes a right turn and walks 4 steps towards south, then takes a right turn

and walks 6 steps towards west and then takes a right turn and walks further. The direction of his final position after a total of 20 steps walk with respect to his initial position is

(A) North-West
(B) 60° West of South
(C) 60° South of West
(D) South-East

Answer: (A) North-West · The council's preliminary key

Q173 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

A ball projected up passes the same height H at 2 s and 10 s. The value of H is [Use g = 9.8 m/s^2]

(A) 102 m
(B) 100 m
(C) 98 m
(D) 9.8 m

Answer: (C) 98 m · The council's preliminary key

Q174 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

Two towns X and Y are connected by a regular bus service. A bus leaves in either direction at every $t = T$ minutes. A man moving with some speed in the direction X to Y finds that a bus goes past him every $t = t_1$ minutes in the direction of his motion, and every $t = t_2$ minutes in the opposite direction. Then T is given by

(A) $\frac{2t_1t_2}{t_1+t_2}$
(B) $\frac{(t_1-t_2)t_1}{t_1+t_2}$
(C) $\frac{2t_2(t_1+t_2)}{|t_1-t_2|}$
(D) $\frac{t_1t_2}{|t_1-t_2|}$

Answer: (A) $\frac{2t_1t_2}{t_1+t_2}$ · The council's preliminary key

Q175 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

Statement (I) : An object subjected to velocities $\vec{v_1}$ and $\vec{v_2}$ has a resultant velocity with magnitude $|\vec{v}| = |\vec{v_1}| + |\vec{v_2}|$.
Statement (II) : The magnitude of displacement is either less or equal to the path length of an object between two points.
Statement (III) : The instantaneous acceleration is the limiting value of the average acceleration as the time interval approaches zero.
Which of the following is correct?

(A) Statements I, II, III are true
(B) Statements I, II are true, but statement III is false
(C) Statements II, III are true, but statement I is false
(D) Statements I, II, III are false

Answer: (C) Statements II, III are true, but statement I is false · The council's preliminary key

Q176 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

For a projectile if α is the angle of projection, R is the range, h is the maximum height, T is the time of flight then

(A) $\tan\alpha = \frac{R}{2h},\ h = \frac{gT^2}{8}$
(B) $\tan\alpha = \frac{R}{4h},\ h = \frac{gT^2}{8}$
(C) $\tan\alpha = \frac{4h}{R},\ h = \frac{gT^2}{8}$
(D) $\tan\alpha = \frac{4h}{R},\ h = \frac{gT^2}{4}$

Answer: (C) $\tan\alpha = \frac{4h}{R},\ h = \frac{gT^2}{8}$ · The council's preliminary key

Q177 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

A car starts at time $t = 0$ from an initial speed of $10\ \mathrm{m/s}$ and accelerates uniformly with $2\ \mathrm{m/s^2}$ on a straight road for time $0 \le t \le 10s$. Let S_1 and S_2 be the distance covered by the car in time $3 \le t \le 4s$ and $4 \le t \le 5s$ respectively. The ratio $\frac{S_2}{S_1}$ is

(A) 1
(B) $\frac{19}{17}$
(C) $\frac{9}{7}$
(D) $\frac{5}{3}$

Answer: (B) $\frac{19}{17}$ · The council's preliminary key

Q178 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

Particle A (which was located at the origin at time t = 0) is moving along the x – axis with a constant speed of 1 m/s. Location of particle B which is moving along the y – axis is given by $y = ct^2$, where $c = 1\ \mathrm{m/s^2}$. Find the speed of particle A relative to particle B at t = 1 sec.

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(A) $\sqrt{5}$ m/s
(B) 2 m/s
(C) 1 m/s
(D) 0 m/s

Answer: (A) $\sqrt{5}$ **m/s** · The council's preliminary key

Q179 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

A particle is moving in xy – plane as $\vec{x} = (4t + t^2)\hat{i},\ \vec{y} = \left(2t + \frac{t^2}{2}\right)\hat{j}$ where $\vec{x}$ & $\vec{y}$ are displacements measured along x and y axes respectively in meters and t in seconds. What is the velocity of the particle?

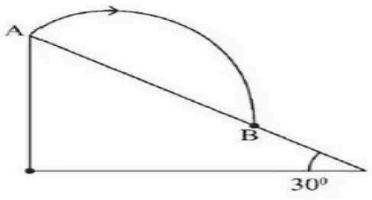
(A) $\vec{v} = (4 + t)\hat{i} + (2 + t)\hat{j}$
(B) $\vec{v} = (4 + 2t)\hat{i} + (2 + t)\hat{j}$
(C) $\vec{v} = (4 + 2t)\hat{i} + \left(2 + \frac{t}{2}\right)\hat{j}$
(D) $\vec{v} = (4 + t)\hat{i} + \left(2 + \frac{t}{2}\right)\hat{j}$

Answer: (B) $\vec{v} = (4 + 2t)\hat{i} + (2 + t)\hat{j}$ · The council's preliminary key

Q180 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

The surface of a hill inclined at an angle 30° to the horizontal. A stone is thrown from the summit of the hill (point A) at an initial speed 10 m/s at angle 60° to the vertical. If the stone strikes the hill at point B as shown in the figure, the distance between A and B is
(Take $g = 10\ \mathrm{m/s^2}$)
(see the figure above)

The surface of a hill inclined at an angle 30° to the horizontal. A stone is thrown from the summit of the hill (point A) at an initial speed 10 m/s at angle 60° to the vertical. If the stone strikes the hill at point B as shown in the figure, the distance between A and B is
(Take g = 10 m/s²)



Options :

1. 10 m
2. 15 m
3. 20 m
4. 30 m

(A) 10 m
(B) 15 m
(C) 20 m
(D) 30 m

Answer: (C) 20 m · The council's preliminary key

Q181 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

A cyclist is riding with a speed of 36 km/h. As he approaches a circular turn on the road of radius 50 m, he applies brakes and reduces his speed at the constant rate of 0.5 m/s every second. The magnitude and direction of the net acceleration of the cyclist on the circular turn respectively are

(A) $\frac{\sqrt{3}}{2}\,\mathrm{m/s^2},\ \mathrm{Tan}^{-1}(4)$
(B) $\frac{\sqrt{3}}{2}\,\mathrm{m/s^2},\ \mathrm{Tan}^{-1}\left(\frac{1}{4}\right)$
(C) $\sqrt{17}\,\mathrm{m/s^2},\ \mathrm{Tan}^{-1}\left(\frac{1}{4}\right)$
(D) $\frac{\sqrt{17}}{2}\,\mathrm{m/s^2},\ \mathrm{Tan}^{-1}(4)$

Answer: (D) $\frac{\sqrt{17}}{2}\,\mathrm{m/s^2},\ \mathrm{Tan}^{-1}(4)$ · The council's preliminary key

Q182 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

A particle moves along a straight line such that its displacement 'x' varies with time 't' as $x = \alpha t^3 + \beta t^2 + \gamma$, where α, β, γ are constants. V_1 is the average velocity of the particle during its journey between $t = 1\,\mathrm{s}$ and $t = 3\,\mathrm{s}$. V_2 is the instantaneous velocity of the particle at $t = 3\,\mathrm{s}$. The ratio $\frac{\mathrm{V}_1}{\mathrm{V}_2}$ is

(A) $\frac{27\alpha + 9\beta}{26\alpha + 6\beta}$
(B) $\frac{9\alpha + 3\beta}{18\alpha + 4\beta}$
(C) $\frac{13\alpha + 4\beta}{27\alpha + 6\beta}$
(D) $\frac{26\alpha + 8\beta}{9\alpha + 3\beta}$

Answer: (C) $\frac{13\alpha + 4\beta}{27\alpha + 6\beta}$ · The council's preliminary key

Q183 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

A man walking along a straight line with a velocity 6 km/h encounters rain falling vertically down with a velocity $6\sqrt{3}$ km/h. At what angle the man should hold his umbrella so that he can protect himself from rain

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(A) 30° with respect to ground
(B) 30° with respect to vertical
(C) 45° with respect to ground
(D) 60° with respect to vertical

Answer: (B) 30° with respect to vertical · The council's preliminary key

Q184 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

A merry - go - round rotating at a constant angular speed completes 9 rotations in 18 seconds. What is its angular speed?

(A) $\pi/2$ rad/s
(B) π rad/s
(C) 2π rad/s
(D) 3π rad/s

Answer: (B) π rad/s · The council's preliminary key

Q185 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

A rocket moves straight upward with zero initial velocity and with an acceleration $20\ \mathrm{m/s^2}$. It runs out of fuel and stops accelerating at the end of 5th sec. It reaches a maximum height and falls back to the earth. The speed when it hits the ground is (Take $g = 10\ \mathrm{m/s^2}$)

(A) $100\sqrt{2}\ \mathrm{m/s}$
(B) $150\sqrt{3}\ \mathrm{m/s}$
(C) $50\sqrt{6}\ \mathrm{m/s}$
(D) $75\ \mathrm{m/s}$

Answer: (C) $50\sqrt{6}\ \mathrm{m/s}$ · The council's preliminary key

Q186 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

Two cars, at a certain instant, are 50 km apart on a line running from south to north. The one farther north is moving west at 25 km/hr. The other is moving towards north at 25 km/hr. How long do they take to reach their distance of closest approach?

(A) 30 min
(B) 60 min
(C) 85 min
(D) 90 min

Answer: (B) 60 min · The council's preliminary key

Q187 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

A particle initially at origin starts moving in xy-plane has velocity component $\vec{V} = (6+2t)\hat{i} + \left(4+2\sqrt{3}t\right)\hat{j}$ m/s. Acceleration of the particle in $\mathrm{m/s^2}$ is [x, y are measured in meters, t in seconds, respectively]

(A) $(6+2t)\hat{i} + \left(4+2\sqrt{3}t\right)\hat{j}$
(B) $(6+2t)\hat{i} + 2\sqrt{3}\,\hat{j}$
(C) $2\hat{i} + 2\sqrt{3}\,\hat{j}$
(D) $2\hat{i} + 2\sqrt{3}\,\hat{k}$

Answer: (C) $2\hat{i} + 2\sqrt{3}\,\hat{j}$ · The council's preliminary key

Q188 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

A bullet is fired at time $t = 0$ with velocity $20\ m/s$ and at an initial angle of 30° with the horizontal. The tan angle between the displacement vector and the horizontal after time $0.1\ s$ is (Assume $g = 10\ m/s^2$)

(A) $\frac{38}{20\sqrt{3}}$
(B) $\frac{19}{20\sqrt{3}}$
(C) $\frac{19}{20}$
(D) $\frac{19\sqrt{3}}{20}$

Answer: (B) $\frac{19}{20\sqrt{3}}$ · The council's preliminary key

Q189 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

A body starts from the rest and acquires a velocity of 10 m/s in 2s. What is the acceleration of the body and the distance travelled

(A) $5\ \mathrm{m/s^2}$ and $10\ \mathrm{m}$
(B) $5\ \mathrm{m/s^2}$ and $5\ \mathrm{m}$
(C) $5\ \mathrm{m/s^2}$ and $6\ \mathrm{m}$
(D) $6\ \mathrm{m/s^2}$ and $5\ \mathrm{m}$

Answer: (A) $5\ \mathrm{m/s^2}$ and $10\ \mathrm{m}$ · The council's preliminary key

Q190 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

A bullet fired into a target losses one-third of its velocity after travelling a distance x meter into the target. If the bullet comes to rest by travelling a further distance x', then the ratio $\frac{x'}{x}$ is

(A) $\frac{2}{3}$
(B) $\frac{1}{3}$
(C) $\frac{4}{5}$
(D) $\frac{4}{9}$

Answer: (C) $\frac{4}{5}$ · The council's preliminary key

Q191 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

An ant starts from the origin and crawls 10 cm along the x - axis and then 20 cm along the y - axis. The dot product of the ant's displacement vector with the position vector of a point that makes 45° with the x - axis and has a magnitude of $\sqrt{2}$ cm is

(A) $30\ \text{cm}$
(B) $30\sqrt{2}\ \text{cm}$
(C) $\frac{30}{\sqrt{2}}\ \text{cm}$
(D) $15\ \text{cm}$

Answer: (A) $30\ \text{cm}$ · The council's preliminary key

Q192 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

A projectile is launched with an initial speed of 40 m/s at an angle 30° above the ground. The projectile lands on a hillside 2.0 s later. The net displacement from where the projectile was launched to where it hits the target is
(Take g = 10 m/s^2)

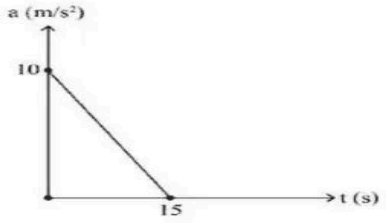
(A) $20\sqrt{3}\ \text{m}$
(B) $30\sqrt{2}\ \text{m}$
(C) $40\ \text{m}$
(D) $20\sqrt{13}\ \text{m}$

Answer: (D) $20\sqrt{13}\ \text{m}$ · The council's preliminary key

Q193 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

A particle starts from rest. Its acceleration (a) versus time (t) is as shown in the figure. The maximum speed of the particle will be
(see the figure above)

A particle starts from rest. Its acceleration (a) versus time (t) is as shown in the figure. The maximum speed of the particle will be



Options :

1. 150 m/s
2. 75 m/s
3. 37.5 m/s
4. 45 m/s

(A) 150 m/s
(B) 75 m/s
(C) 37.5 m/s
(D) 45 m/s

Answer: (B) 75 m/s · The council's preliminary key

Q194 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

Assertion(A): The zero velocity of a particle at any instant always implies zero acceleration at that instant
Reason(R) : A body is momentarily at rest when reverses its direction of motion.
The correct option among the following is

(A) (A) is true, (R) is true and (R) is the correct explanation for (A)
(B) (A) is true, (R) is true but (R) is not the correct explanation for (A)
(C) (A) is true but (R) is false
(D) (A) is false but (R) is true

Answer: (D) (A) is false but (R) is true · The council's preliminary key

Q195 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

A river has a steady speed of 'v'. A man swims upstream at a distance of 'd' and swims back to the starting point in total time 't'. The man can swim at a speed of '2v' in still water. If the time taken by the man in still water is't_0' to complete the same length of swim, then $\frac{t}{t_0}$ is

(A) $\frac{1}{2}$
(B) $\frac{3}{2}$
(C) $\frac{3}{4}$
(D) $\frac{4}{3}$

Answer: (D) $\frac{4}{3}$ · The council's preliminary key

Q196 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

A projectile is given an initial velocity of $(3\hat{i}+4\hat{j})\,m/s$ where, $\hat{i}$ is along the ground and $\hat{j}$ is along the vertical. Assuming g = 10 m/s^2, if the equation of its trajectory can be written as $\frac{1}{9}\left[\beta x+\gamma x^2\right]$, then the value of γ is

(A) -8
(B) -5
(C) -6
(D) -12

Answer: (B) -5 · The council's preliminary key

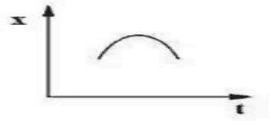
Q197 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

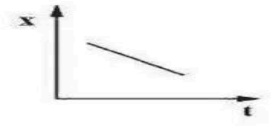
The correct position (x) – time (t) graph for a particle moving with negative acceleration is

The correct position (x) – time (t) graph for a particle moving with negative acceleration is

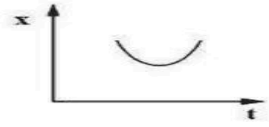
ఋణ త్వరణముతో చలిస్తున్న ఒక కణము యొక్క సరియైన స్థానం (x) – కాలం (t) గ్రాఫు

Options :

1. 

2. 

3. 

4. 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (A) · The council's preliminary key

Q198 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

A ball is thrown upward from the top of a building at angle of 30° to the horizontal with an initial speed of $15\ \mathrm{ms}^{-1}$. If the ball hits the ground after 3 s, then the height of building is (acceleration due to gravity $= 10\ \mathrm{m\,s}^{-2}$)

(A) $30\ \mathrm{m}$
(B) $12.5\ \mathrm{m}$
(C) $25.5\ \mathrm{m}$
(D) $22.5\ \mathrm{m}$

Answer: (D) $22.5\ \mathrm{m}$ · The council's preliminary key

Q199 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

A particle moving in $x-y$ plane starts from the origin at $t=0$ with an initial velocity $(-\hat{i}+\hat{j})\ \mathrm{ms}^{-1}$ and undergoes an acceleration of $(6\hat{i}+4\hat{j})\ \mathrm{ms}^{-2}$. It's displacement after 2 s is

(A) $17.32\ \mathrm{m}$
(B) $14.14\ \mathrm{m}$
(C) $12.42\ \mathrm{m}$
(D) $10\ \mathrm{m}$

Answer: (B) $14.14\ \mathrm{m}$ · The council's preliminary key

Q200 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

A ball is dropped from a tower of height 80 m. The time it takes to cover the last 50% of its fall is (acceleration due to gravity = $10\ \mathrm{ms}^{-2}$)

(A) $2\sqrt{2}\ \mathrm{s}$
(B) $1.17\ \mathrm{s}$
(C) $4\ \mathrm{s}$
(D) $2.0\ \mathrm{s}$

Answer: (B) $1.17\ \mathrm{s}$ · The council's preliminary key

Q201 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

A vector $\vec{P}$ directed along the x-axis is added to vector $\vec{Q}$ which has a magnitude of 10 m. The resultant vector is directed along the y-axis, with a magnitude that is 2 times that of $\vec{P}$. The

magnitude of $\vec{P}$ is

(A) $\sqrt{10}\,\mathrm{m}$
(B) $5\sqrt{2}\,\mathrm{m}$
(C) $6\,\mathrm{m}$
(D) $2\sqrt{5}\,\mathrm{m}$

Answer: (D) $2\sqrt{5}\,\mathrm{m}$ · The council's preliminary key

Q202 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

In the projectile motion of an object, the object reaches its maximum height where its speed is half of initial speed. Then the ratio between range and maximum height of projectile is

(A) $4\sqrt{3}$
(B) $\frac{\sqrt{3}}{4}$
(C) $\frac{4}{\sqrt{3}}$
(D) $\frac{2}{\sqrt{3}}$

Answer: (C) $\frac{4}{\sqrt{3}}$ · The council's preliminary key

Q203 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

A biker travels $\frac{1}{3}$ of the distance L with speed v_1 and $\frac{2}{3}$ of the distance with speed v_2. Then the average speed is

(A) $\frac{v_1 v_2}{v_1 + v_2}$
(B) $\frac{3v_1 v_2}{2v_1 + v_2}$
(C) $\frac{3v_1 v_2}{v_1 + 2v_2}$
(D) $\frac{v_1 + v_2}{v_1 v_2}$

Answer: (B) $\frac{3v_1 v_2}{2v_1 + v_2}$ · The council's preliminary key

Q204 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

A ball is projected from ground into the air. At the height of 5 m, its velocity is $\vec{V} = (5\hat{i} + 5\hat{j})\,\mathrm{m\,s^{-1}}$. The maximum height reached by the ball is (Acceleration due to gravity = $10\,\mathrm{m\,s^{-2}}$)

(A) 8.75 m
(B) 5.50 m
(C) 6.25 m
(D) 10 m

Answer: (C) 6.25 m · The council's preliminary key

Q205 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

A particle is moving along x-axis with velocity $v = e^{-\beta x}$. At time $t = 0$, the particle is located at $x = 0$. The displacement of the particle as function of time is

(A) $e^{-\beta t}$
(B) $\frac{1}{\beta} e^{(1-\beta t)}$
(C) $\frac{1}{\beta} \log[1 - \beta t]$
(D) $\frac{1}{\beta} \log[1 + \beta t]$

Answer: (D) $\frac{1}{\beta} \log[1 + \beta t]$ · The council's preliminary key

Q206 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

A car is moving along a straight line is brought to a stop within a distance of 200 m and in time 10 s. The initial speed of the car is

(A) $25\ \mathrm{m\,s^{-1}}$
(B) $50\ \mathrm{m\,s^{-1}}$
(C) $75\ \mathrm{m\,s^{-1}}$
(D) $40\ \mathrm{m\,s^{-1}}$

Answer: (D) $40\ \mathrm{m\,s^{-1}}$ · The council's preliminary key

Q207 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

A ball is thrown upward from the top of a building at an angle of 30° to the horizontal and with an initial speed of $20\ \mathrm{m\,s^{-1}}$. If the ball strikes the ground after 3 s, then the height of the building is (acceleration due to gravity = $10\ \mathrm{m\,s^{-2}}$)

(A) 10 m
(B) 15 m
(C) 20 m
(D) 25 m

Answer: (B) 15 m · The council's preliminary key

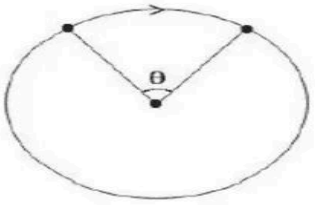
Q208 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

A particle is moving on a circular path with a constant speed v. It's change of velocity as it moves from A to B in the figure is

(see the figure above)

A particle is moving on a circular path with a constant speed v. It's change of velocity as it moves from A to B in the figure is

ఒక కణం సమవడి v తో వృత్తాకార మార్గంలో చలిస్తున్నది. పటంలో చూపినట్లు ఆ కణం A నుండి B కి చేరిన దాని వేగములో కలిగే మార్పు



Options :

1. $2v\sin\frac{\theta}{2}$
2. $v\sin\theta$
3. $\frac{v\sin 2\theta}{2}$
4. $2v\sin\theta$

(A) $2v\sin\frac{\theta}{2}$

(B) $v\sin\theta$

(C) $\frac{v\sin 2\theta}{2}$

(D) $2v\sin\theta$

Answer: (A) $2v\sin\frac{\theta}{2}$ · The council's preliminary key

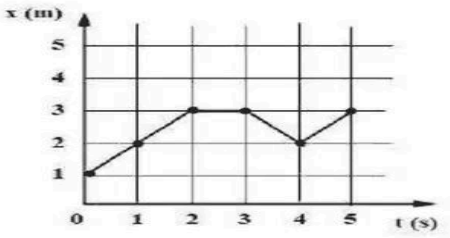
Q209 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

A particle moves along a straight line along the x - axis. Its position (x) versus time (t) graph is shown in the figure [x in meters and t in seconds]. It's average speed during this motion is

(see the figure above)

A particle moves along a straight line along the x – axis. Its position (x) versus time (t) graph is shown in the figure [x in meters and t in seconds]. It's average speed during this motion is

ఒక సరళ రేఖ వెంబడి x- దిశలో చలనంలో ఉన్న ఒక కణం యొక్క స్థానభ్రంశం (x) – కాలము (t) గ్రాఫు పటములో చూపబడినది. ఇక్కడ (x మీటర్లలో, t – సెకెండ్లలో). ఈ చలనంలో ఆ కణం సగటు వడి



Options :

1. $0.4\ ms^{-1}$
2. $1.0\ ms^{-1}$
3. $0.8\ ms^{-1}$
4. $0.6\ ms^{-1}$

(A) $0.4\ \text{ms}^{-1}$

(B) $1.0\ \text{ms}^{-1}$

(C) $0.8\ \text{ms}^{-1}$

(D) $0.6\ \text{ms}^{-1}$

Answer: (C) $0.8\ \text{ms}^{-1}$ · The council's preliminary key

Q210 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

In a sports competition, a javelin is thrown at an angle 45°, which recorded a range of 90 m. The maximum height reached by the javelin is

(Neglect air resistance and acceleration due to gravity = $10\ \text{ms}^{-2}$)

(A) 45 m

(B) 30 m

(C) 22.5 m

(D) $30\sqrt{2}$ m

Answer: (C) 22.5 m · The council's preliminary key

Q211 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

The equation for the trajectory of a projectile is $y = \left(\frac{x}{\sqrt{3}} - \frac{x^2}{60}\right)$ m. The velocity of projection of the projectile is

(Acceleration due to gravity = $10\ \text{ms}^{-2}$)

(A) $8\ \mathrm{ms}^{-1}$
(B) $40\ \mathrm{ms}^{-1}$
(C) $16\ \mathrm{ms}^{-1}$
(D) $20\ \mathrm{ms}^{-1}$

Answer: (D) $20\ \mathrm{ms}^{-1}$ · The council's preliminary key

Q212 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

A body of mass 0.6 kg is moving along a circular path of radius 1 m. If the body moves with $\frac{900}{\pi}$ revolutions per minute, its kinetic energy is

(A) 120 J
(B) 270 J
(C) 360 J
(D) 240 J

Answer: (B) 270 J · The council's preliminary key

Q213 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

Two position vectors are given by $\vec{r_1} = (1, 1, 1)$ and $\vec{r_2} = (1, -1, 1)$. The unit vector in the direction of $\vec{r_1} \times \vec{r_2}$

(A) $\frac{\hat{i}}{\sqrt{2}} - \frac{\hat{k}}{\sqrt{2}}$
(B) $-\frac{\hat{i}}{\sqrt{2}} - \frac{\hat{k}}{\sqrt{2}}$
(C) $\frac{\hat{i}}{\sqrt{2}} + \frac{\hat{k}}{\sqrt{2}}$
(D) $-\frac{\hat{i}}{\sqrt{2}} + \frac{\hat{k}}{\sqrt{2}}$

Answer: (A) $\frac{\hat{i}}{\sqrt{2}} - \frac{\hat{k}}{\sqrt{2}}$ · The council's preliminary key

Q214 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

A ball is thrown upward from the ground with an initial speed of V. At the same instant, another ball is dropped from a building of height 20 m. If the balls are at the same height after 0.8 s, then the magnitude of V is
(Take acceleration due to gravity = $10\ \mathrm{ms}^{-2}$)

(A) $15\ \mathrm{ms}^{-1}$
(B) $25\ \mathrm{ms}^{-1}$
(C) $12.5\ \mathrm{ms}^{-1}$
(D) $18.5\ \mathrm{ms}^{-1}$

Answer: (B) $25\ \mathrm{ms}^{-1}$ · The council's preliminary key

Q215 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

In a hypothetical ring shaped satellite rotating in space, artificial gravity can be achieved using centripetal force. If the satellite has a radius 10 m, then to achieve centripetal acceleration at a point on circumference as $10\ \mathrm{ms}^{-2}$, its angular speed is

(A) $1\ \mathrm{rad\ s}^{-1}$
(B) $10\ \mathrm{rad\ s}^{-1}$
(C) $1\ \mathrm{revolution\ s}^{-1}$
(D) $10\ \mathrm{revolution\ s}^{-1}$

Answer: (A) $1\ \mathrm{rad\ s}^{-1}$ · The council's preliminary key

Q216 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

A player kicks a foot ball at an angle 30° with the horizontal with an initial speed $30\ \mathrm{ms}^{-1}$. A second player standing at a distance of $21\sqrt{3}$ m from the first and in the direction of kick, starts running to catch the ball, at the same instant as kicked by first player. The minimum speed of second player to catch the ball before it hits the ground is
(Take acceleration due to gravity = $10\ \mathrm{ms}^{-2}$)

(A) $10\ \mathrm{ms}^{-1}$
(B) $8\ \mathrm{ms}^{-1}$
(C) $8\sqrt{3}\ \mathrm{ms}^{-1}$
(D) $15\sqrt{3}\ \mathrm{ms}^{-1}$

Answer: (C) $8\sqrt{3}\ \mathrm{ms}^{-1}$ · The council's preliminary key

Q217 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

A student is at a distance 16 m from a bus when the bus begins to move with a constant acceleration of $9\ \mathrm{m\,s}^{-2}$. The minimum velocity with which the student should run towards the bus so as the catch it is $\alpha\sqrt{2}\ \mathrm{m\,s}^{-1}$. The value of α is

(A) 10
(B) 12
(C) 15
(D) 20

Answer: (B) 12 · The council's preliminary key

Q218 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

The component of a vector $\vec{P} = 3\hat{i} + 4\hat{j}$ along the direction $(\hat{i} + 2\hat{j})$ is

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(A) $\frac{8}{\sqrt{5}}$
(B) $\frac{11}{\sqrt{5}}$
(C) $\frac{11}{2}$
(D) $\sqrt{10}$

Answer: (B) $\frac{11}{\sqrt{5}}$ · The council's preliminary key

Q219 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

A projectile is launched from the ground, such that it hits a target on the ground which is 90 m away. The minimum velocity of projectile to hit the target is (acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

(A) $10\ \mathrm{m\,s}^{-1}$
(B) $16\ \mathrm{m\,s}^{-1}$
(C) $60\ \mathrm{m\,s}^{-1}$
(D) $30\ \mathrm{m\,s}^{-1}$

Answer: (D) $30\ \mathrm{m\,s}^{-1}$ · The council's preliminary key

Q220 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

If two vectors $\vec{A}$ and $\vec{B}$ are mutually perpendicular, then the component of $\vec{A}\cdot\vec{B}$ along the direction of $\vec{A}+\vec{B}$ is

(A) $\sqrt{|\bar{A}|^2+|\bar{B}|^2}$
(B) $\sqrt{|\bar{A}|^2-|\bar{B}|^2}$
(C) $\frac{|\bar{A}|^2-|\bar{B}|^2}{\sqrt{|\bar{A}|^2+|\bar{B}|^2}}$
(D) $\frac{|\bar{A}|^2+|\bar{B}|^2}{\sqrt{|\bar{A}|^2-|\bar{B}|^2}}$

Answer: (C) $\frac{|\bar{A}|^2-|\bar{B}|^2}{\sqrt{|\bar{A}|^2+|\bar{B}|^2}}$ · The council's preliminary key

Q221 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

The dot product of unit vectors $\hat{n}_1$ and $\hat{n}_2$ that are parallel to $5\hat{i}+12\hat{j}$ and $3\hat{i}+4\hat{j}$ respectively is

(A) $\frac{63}{65}$
(B) 63
(C) $\frac{63}{4225}$
(D) $\frac{63}{845}$

Answer: (A) $\frac{63}{65}$ · The council's preliminary key

Q222 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

A sphere rolls down from the top of an inclined plane which makes an angle 30° with the edge of a horizontal roof of a house. If the highest and lowest points of the inclined plane are 8.75 m and 3.75

m respectively from the ground then the horizontal distance from the lower edge of the roof at which the sphere hits the ground is

(acceleration due to gravity = $10\ \mathrm{m\,s^{-2}}$)

(A) $5\ \mathrm{m}$
(B) $5\sqrt{3}\ \mathrm{m}$
(C) $\frac{5\sqrt{3}}{2}\ \mathrm{m}$
(D) $10\ \mathrm{m}$

Answer: (C) $\frac{5\sqrt{3}}{2}\ \mathrm{m}$ · The council's preliminary key

Q223 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

A car covers a distance at speed of 60 $\mathrm{km\,h^{-1}}$. It returns and comes back to the original point moving at a speed of V. If the average speed for the round trip is 48 $\mathrm{km\,h^{-1}}$, then the magnitude of V is

(A) $40\ \mathrm{km\,h^{-1}}$
(B) $36\ \mathrm{km\,h^{-1}}$
(C) $44\ \mathrm{km\,h^{-1}}$
(D) $32\ \mathrm{km\,h^{-1}}$

Answer: (A) $40\ \mathrm{km\,h^{-1}}$ · The council's preliminary key

Q224 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

A car travels with a speed of 40 $\mathrm{km\,h^{-1}}$. Rain drops are falling at a constant speed vertically. The traces of the rain on the side windows of the car make an angle of 30° with the vertical. The magnitude of the velocity of the rain with respect to the car is

(A) $40\sqrt{3}\ \mathrm{km\,h^{-1}}$
(B) $\frac{40}{\sqrt{3}}\ \mathrm{km\,h^{-1}}$
(C) $80\ \mathrm{km\,h^{-1}}$
(D) $\frac{80}{\sqrt{3}}\ \mathrm{km\,h^{-1}}$

Answer: (C) $80\ \mathrm{km\,h^{-1}}$ · The council's preliminary key

Q225 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

A projectile with speed 50 $\mathrm{ms^{-1}}$ is thrown at an angle of 60° with the horizontal. The maximum height that can be reached is

(acceleration due to gravity = 10 $\mathrm{ms^{-2}}$)

(A) 90.75 m
(B) 70.00 m
(C) 85.00 m
(D) 93.75 m

Answer: (D) 93.75 m · The council's preliminary key

Q226 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

An object moving along x-axis with a uniform acceleration has velocity $\vec{V} = (12\,\text{cm}\,\text{s}^{-1})\hat{i}$ at x = 3 cm. After 2 s if it is at x = -5 cm, then its acceleration is

(A) $\vec{a} = (-16\,\text{cm}\,\text{s}^{-2})\hat{i}$
(B) $\vec{a} = (11\,\text{cm}\,\text{s}^{-2})\hat{i}$
(C) $\vec{a} = (-11\,\text{cm}\,\text{s}^{-2})\hat{i}$
(D) $\vec{a} = (8\,\text{cm}\,\text{s}^{-2})\hat{i}$

Answer: (A) $\vec{a} = (-16\,\text{cm}\,\text{s}^{-2})\hat{i}$ · The council's preliminary key

Q227 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

A force $\overrightarrow{F_1}$ of magnitude 4 N acts on an object of mass 1 kg, at origin in a direction 30° above the positive x - axis. A second force $\overrightarrow{F_2}$ of magnitude 4 N acts on the same object in the direction of the positive y - axis. The magnitude of the acceleration of the object is nearly

(A) $6.9\ \text{ms}^{-2}$
(B) $7.6\ \text{ms}^{-2}$
(C) $4.3\ \text{ms}^{-2}$
(D) $8.0\ \text{ms}^{-2}$

Answer: (A) $6.9\ \text{ms}^{-2}$ · The council's preliminary key

Q228 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

$y = (Pt^2 - Qt^3)$ m is the vertical displacement of a ball which is moving in vertical plane. Then the maximum height that the ball can reach is

(A) $\frac{27P^3}{4Q^2}$
(B) $\frac{4Q^2}{27P^3}$
(C) $\frac{4P^3}{27Q^2}$
(D) $\frac{27Q^2}{4P^3}$

Answer: (C) $\frac{4P^3}{27Q^2}$ · The council's preliminary key

Q229 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

Which of the following is not true about vectors $\vec{A}$, $\vec{B}$ and $\vec{C}$?

(A) $(\vec{A}.\vec{A})\ (\vec{B}.\vec{C})$ is a scalar value.
(B) $(\vec{A} \times \vec{B}).\ (\vec{B} \times \vec{C})$ is a scalar value.
(C) $(\vec{A} \times \vec{C}) \times\ (\vec{B} \times \vec{C})$ is a scalar value.
(D) $\vec{A} \times (\vec{B} \times \vec{C})$ is a vector value.

Answer: (C) $(\vec{A} \times \vec{C}) \times\ (\vec{B} \times \vec{C})$ **is a scalar value.** · The council's preliminary key

Q230 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

A particle is at $x = 0$ when $t = 0$. It moves among x-axis with a velocity given by $v = 5\sqrt{x}$. Find the acceleration of this particle _____

(A) $8.5\ \mathrm{m.s^{-2}}$
(B) $12.5\ \mathrm{m.s^{-2}}$
(C) $10.5\ \mathrm{m.s^{-2}}$
(D) $11.5\ \mathrm{m.s^{-2}}$

Answer: (B) $12.5\ \mathrm{m.s^{-2}}$ · The council's preliminary key

Q231 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

To reach point-B from point-A, a person travels 500 m North, 400 m East and 200 m South. If the person takes 1200 seconds to reach point-B from point-A, then find the average velocity of the person _____

(A) $\frac{5}{12}\ \mathrm{m.s^{-1}}$
(B) $\frac{5}{20}\ \mathrm{m.s^{-1}}$
(C) $\frac{10}{3}\ \mathrm{m.s^{-1}}$
(D) $\frac{12}{5}\ \mathrm{m.s^{-1}}$

Answer: (A) $\frac{5}{12}\ \mathrm{m.s^{-1}}$ · The council's preliminary key

Q232 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

A bomb needs to be dropped by an aero plane while moving with a speed of $200\ \mathrm{m.s^{-1}}$ from a height of $800\ m$ in order to hit a target. The plane must drop the bomb when it is at a distance of _____ from the target? ($g = 10\ \mathrm{m.s^{-2}}$)

(A) $1980\ m$
(B) $1631\ m$
(C) $1908\ m$
(D) $1131\ m$

Answer: (D) $1131\ m$ · The council's preliminary key

EdLoop EAPCET

Q233 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

Two towns A and B are connected by a regular bus service with a bus leaving in either direction every T minutes. A man cycling with a speed of $20\ \text{kmph}$ from A to B notices that a bus travelling in the direction of his motion goes past him every 18 minutes and every 6 minutes he notices a bus travelling in the opposite direction go past him. Assuming that the busses travel with a constant speed, find T and the constant speed of the busses.

(A) $\frac{2}{27}\ \text{hr}$ & $38\ \text{kmph}$
(B) $\frac{5}{8}\ \text{hr}$ & $40\ \text{kmph}$
(C) $\frac{3}{20}\ \text{hr}$ & $40\ \text{kmph}$
(D) $\frac{2}{3}\ \text{hr}$ & $28\ \text{kmph}$

Answer: (C) $\frac{3}{20}\ \text{hr}$ & $40\ \text{kmph}$ · The council's preliminary key

Q234 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

A ball is thrown at 30° with horizontal from the top of roof $20\ \text{m}$ high with a speed of $13\ \text{m.s}^{-1}$. At what distance from the throwing point will the ball, once again be at a height of $20\ \text{m}$ from the ground? ($g = 10\ \text{m.s}^{-2}$)

(A) $10.2\ \text{m}$
(B) $14.6\ \text{m}$
(C) $18.6\ \text{m}$
(D) $9.8\ \text{m}$

Answer: (B) $14.6\ \text{m}$ · The council's preliminary key

Q235 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

Acceleration of a body whose displacement follows the equation $3s = 9t + 5t^2$ is _____

(A) $\frac{5}{3}$
(B) $\frac{14}{3}$
(C) $\frac{10}{3}$
(D) $\frac{19}{3}$

Answer: (C) $\frac{10}{3}$ · The council's preliminary key

Q236 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

When a body moves with a constant speed along a circle _____

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(A) No acceleration is produced on the body
(B) No work is done on it
(C) Its velocity remains constant
(D) No force acts on the body

Answer: (B) No work is done on it · The council's preliminary key

Q237 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

A train travels from city-A to city-B with a constant speed of $18\ \mathrm{m.s^{-1}}$ and returns back to city-A with a constant speed of $36\ \mathrm{m.s^{-1}}$. Find its average speed during the journey.

(A) $\frac{72}{5}\ \mathrm{m.s^{-1}}$
(B) $\frac{36}{3}\ \mathrm{m.s^{-1}}$
(C) $\frac{72}{3}\ \mathrm{m.s^{-1}}$
(D) $\frac{36}{5}\ \mathrm{m.s^{-1}}$

Answer: (C) $\frac{72}{3}\ \mathrm{m.s^{-1}}$ · The council's preliminary key

Q238 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

From the top of a tower $19.6\ \mathrm{m}$ high, a ball is thrown horizontally. If the line joining the point of projection to the point where it hits the ground makes an angle of 45° with the horizontal, then the initial velocity of the ball is _____

(A) $9.8\ \mathrm{m.s^{-1}}$
(B) $4.9\ \mathrm{m.s^{-1}}$
(C) $14.7\ \mathrm{m.s^{-1}}$
(D) $2.8\ \mathrm{m.s^{-1}}$

Answer: (A) $9.8\ \mathrm{m.s^{-1}}$ · The council's preliminary key

Q239 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

Find the angle between the vectors $\vec{A} = 2\hat{i} + 4\hat{j} + 4\hat{k}$ and $\vec{B} = 4\hat{i} + 2\hat{j} - 4\hat{k}$.

(A) 0°
(B) 45°
(C) 60°
(D) 90°

Answer: (D) 90° · The council's preliminary key

Q240 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

The slope of velocity – time graph for motion with uniform velocity is equal to:

(A) Initial velocity
(B) Final velocity
(C) Zero
(D) Constant velocity

Answer: (C) Zero · The council's preliminary key

Q241 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

If the equation of motion of a projectile is given by $y = 12x - \frac{3}{4}x^2$ and its horizontal component of velocity is $3\ m.s^{-1}$, then find its range. ($g = 10\ m.s^{-2}$)

(A) $12.4\ m$
(B) $21.6\ m$
(C) $30.6\ m$
(D) $36.0\ m$

Answer: (B) $21.6\ m$ · The council's preliminary key

Q242 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

The velocity of a particle is given by $v = 2t^2 - 8t + 15\ \mathrm{m.s^{-1}}$. Find its instantaneous acceleration at $t = 5\ s$.

(A) $18\ \mathrm{m.s^{-2}}$
(B) $20\ \mathrm{m.s^{-2}}$
(C) $5\ \mathrm{m.s^{-2}}$
(D) $12\ \mathrm{m.s^{-2}}$

Answer: (D) $12\ \mathrm{m.s^{-2}}$ · The council's preliminary key

Q243 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

When a particle moved from point $A(2, 2, 3)$ to point $B(6, 6, 9)$, its displacement vector is _____

(A) $4\hat{i} + 4\hat{j} + 6\hat{k}$
(B) $8\hat{i} + 8\hat{j} + 12\hat{k}$
(C) $4\hat{i} + 8\hat{j} + 6\hat{k}$
(D) $8\hat{i} + 4\hat{j} + 6\hat{k}$

Answer: (A) $4\hat{i} + 4\hat{j} + 6\hat{k}$ · The council's preliminary key

Q244 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

A car is moving with a speed of $30\ \mathrm{m.s^{-1}}$ on a circular path of radius $500\ m$. If its speed is increasing at the rate of $2\ \mathrm{m.s^{-2}}$, then find its acceleration?

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(A) $2.0\ \mathrm{m.s^{-2}}$
(B) $1.8\ \mathrm{m.s^{-2}}$
(C) $9.8\ \mathrm{m.s^{-2}}$
(D) $2.7\ \mathrm{m.s^{-2}}$

Answer: (D) $2.7\ \mathrm{m.s^{-2}}$ · The council's preliminary key

Q245 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

If a 100 m long train needs 7.2 seconds to cross an object moving in a direction opposite to the train's direction with a speed of 5 $kmph$, then find the velocity of the train _____

(A) 40 $kmph$
(B) 25 $kmph$
(C) 45 $kmph$
(D) 20 $kmph$

Answer: (C) 45 $kmph$ · The council's preliminary key

Q246 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

For the resultant of two vectors $\vec{A}$ and $\vec{B}$ to maximum, the angle between them should be ___

(A) 180°
(B) 0°
(C) 90°
(D) 60°

Answer: (B) 0° · The council's preliminary key

Q247 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

The displacement of a particle starting from rest at $t = 0$ is given by $s = 9t^2 - 2t^3$. The time in seconds at which the particle will attain zero velocity is _____.

(A) 8 s
(B) 6 s
(C) 4 s
(D) 3 s

Answer: (D) 3 s · The council's preliminary key

Q248 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

The range of a projectile is $100\ \mathrm{m}$. Its kinetic energy will be maximum after covering a distance of:

(A) $25\ \mathrm{m}$
(B) $50\ \mathrm{m}$
(C) $75\ \mathrm{m}$
(D) $100\ \mathrm{m}$

Answer: (D) $100\ \mathrm{m}$ · The council's preliminary key

Q249 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

Two cars A and B are moving with a velocity of $30\ \mathrm{kmph}$ in the same direction. They are separated by $10\ \mathrm{km}$. The speed of another car C moving in the opposite direction, if it meets these two cars at an interval of eight minutes is _____.

(A) $45\ \mathrm{kmph}$
(B) $40\ \mathrm{kmph}$
(C) $15\ \mathrm{kmph}$
(D) $30\ \mathrm{kmph}$

Answer: (A) $45\ \mathrm{kmph}$ · The council's preliminary key

Q250 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

A rifle bullet loses $\left(\frac{1}{25}\right)^{th}$ of its velocity in passing through a plank. The least number of such planks required just to stop the bullet is _____.

(A) 5
(B) 10
(C) 11
(D) 13

Answer: (D) 13 · The council's preliminary key

Q251 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

An object is moving with a uniform acceleration which is parallel to its instantaneous direction of motion. The displacement(s) $-$ velocity(v) graph of this object is _____

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Mandatory : No

An object is moving with a uniform acceleration which is parallel to its instantaneous direction of motion. The displacement(s) — velocity(v) graph of this object is _____

ఒక వస్తువు సమత్వరణముతో చలిస్తున్నది. దాని త్వరణము దిశ తత్క్షణ చలన దిశకు సమాంతరముగా ఉన్నది. వస్తువు యొక్క స్థానభ్రంశము (s) – వేగము (v) గ్రాఫ్ _____

Options :

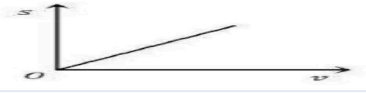
1. 

2. 

AP EAPCET 2021

AP EAPCET 2021

3. 

4. 

(A) *see figure*

(B) *see figure*

(C) *see figure*

(D) *see figure*

Answer: (C) · The council's preliminary key

Q252 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

A hiker stands on the edge of a cliff $490\ m$ above the ground and throws a stone horizontally with an initial speed of $15\ m.s^{-1}$. The speed with which it hits the ground is _____

(A) $99\ m.s^{-1}$

(B) $101\ m.s^{-1}$

(C) $103\ m.s^{-1}$

(D) $105\ m.s^{-1}$

Answer: (A) $99\ m.s^{-1}$ · The council's preliminary key

Q253 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

Two paper screens A and B are separated by $150\ m$. A bullet pierces A and then B. The hole in B is $15\ cm$ below the hole in A. If the bullet is traveling horizontally at the time of hitting A, then the velocity of the bullet at A is: ($g = 10\ m.s^{-2}$)

(A) $100\sqrt{3}\ m.s^{-1}$
(B) $200\sqrt{3}\ m.s^{-1}$
(C) $300\sqrt{3}\ m.s^{-1}$
(D) $500\sqrt{3}\ m.s^{-1}$

Answer: (D) $500\sqrt{3}\ m.s^{-1}$ · The council's preliminary key

Q254 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

Which of the following decreases, in motion on a straight line, with constant retardation?

(A) Speed
(B) Acceleration
(C) Displacement
(D) Distance

Answer: (A) Speed · The council's preliminary key

Q255 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

When a ball is thrown with a velocity of $50\ \mathrm{m.s^{-1}}$ at an angle 30° with the horizontal, it remains in the air for _____ seconds. (take $g = 10\ \mathrm{m.s^{-2}}$)

(A) 5
(B) 2.5
(C) 1.25
(D) 0.625

Answer: (A) 5 · The council's preliminary key

Q256 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

One of the rectangular components of a force of $40\ N$ is $20\sqrt{3}\ N$. What is the other rectangular component?

(A) $10\ N$
(B) $20\ N$
(C) $30\ N$
(D) $25\ N$

Answer: (B) $20\ N$ · The council's preliminary key

Q257 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

An object travelling at a speed of $36\ \mathrm{kmph}$ comes to rest in a distance of $200\ \mathrm{m}$ after the brakes were applied. The retardation produced by the brakes is _____

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(A) $0.25\ \mathrm{m.s^{-2}}$
(B) $0.20\ \mathrm{m.s^{-2}}$
(C) $0.15\ \mathrm{m.s^{-2}}$
(D) $0.10\ \mathrm{m.s^{-2}}$

Answer: (A) $0.25\ \mathrm{m.s^{-2}}$ · The council's preliminary key

Q258 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

A ball is projected upwards. Its acceleration at the highest point is _____

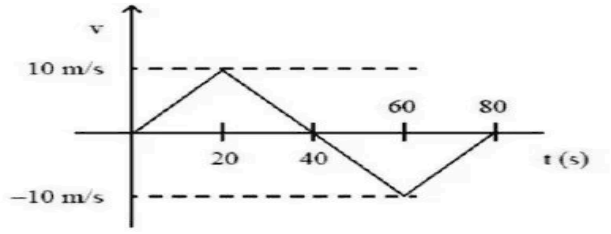
(A) Zero
(B) directed upwards
(C) directed downwards
(D) such as cannot be predicted

Answer: (C) directed downwards · The council's preliminary key

Q259 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

For the following velocity- time graph, the average speed for the motion during first 80 seconds is *(see the figure above)*

For the following velocity- time graph, the average speed for the motion during first 80 seconds is



Options :

1. 0
2. 5 m/s
3. 10 m/s
4. 0.25 m/s

(A) 0
(B) 5 m/s
(C) 10 m/s
(D) 0.25 m/s

Answer: (B) 5 m/s · The council's preliminary key

Q260 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

A ball thrown upwards vertically reaches a height 25 m in 1 s. The ratio of total distance covered by the ball in time t = 2 s and t = 4 s is (use g = 10 m/s^2)

(A) 1
(B) $\frac{4}{5}$
(C) $\frac{2}{3}$
(D) $\frac{3}{4}$

Answer: (B) $\frac{4}{5}$ · The council's preliminary key

Q261 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

Car A is moving to the east with a speed of 30 km/hr, and car B is moving to the north with the same speed. What is the velocity of car B as measured in car A?

(A) 42 km/hr, 45° north of west
(B) 42 km/hr, 45° east of north
(C) 60 km/hr, 45° south of east
(D) 42 km/hr, 45° south of east

Answer: (A) 42 km/hr, 45° north of west · The council's preliminary key

Q262 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

At time t = 0, a particle leaves the origin and moves in the positive direction of the X- axis. If the velocity of the particles varies as $\overline{V}(t) = \overline{V_0}\left(1 - \frac{t}{t_0}\right)$, $|\overrightarrow{V_0}| = 10\,\mathrm{m/s}$ and $t_0 = 10$ s, then the distance covered by the particle during the first 20 s is:

(A) 200 m
(B) 100m
(C) 0 m
(D) 400 m

Answer: (B) 100m · The council's preliminary key

Q263 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

A ball is dropped from rest at time $t = 0$ from certain height. A second ball is dropped from same height at time $t = 1$ s. At what time t, the distance between two balls becomes 10 m?

(A) $1.25\ \mathrm{s}$
(B) $1.5\ \mathrm{s}$
(C) $1.75\ \mathrm{s}$
(D) $2\ \mathrm{s}$

Answer: (B) $1.5\ \mathrm{s}$ · The council's preliminary key

Q264 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

The acceleration of a particle is increasing linearly with time t as 6t. The particle starts from the origin with an initial velocity $10\ \mathrm{m/s}$. The distance travelled by the particle after 2 seconds will be

(A) $18\ \mathrm{m}$
(B) $14\ \mathrm{m}$
(C) $22\ \mathrm{m}$
(D) $26\ \mathrm{m}$

Dropped by TGCHE. Full marks to everyone. · The council's preliminary key

Q265 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

A man can swim with a speed of $4\ \mathrm{kmh^{-1}}$ in still water. How long does he take to cross a river 1 km wide, if the river flows steadily $3\ \mathrm{kmh^{-1}}$ and he makes his strokes normal to the river current?

(A) 30 minutes
(B) 25 minutes
(C) 20 minutes
(D) 15 minutes

Answer: (D) 15 minutes · The council's preliminary key

Q266 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

A projectile object is thrown in the upward direction making an angle of 60° with the horizontal with velocity of $140\ \mathrm{m/s}$. Then the time after which its velocity makes an angle 30° with the horizontal is (use $g = 10\ \mathrm{m/s^2}$)

(A) $\frac{14}{\sqrt{3}}\ \mathrm{s}$
(B) $7\sqrt{3}\ \mathrm{s}$
(C) $14\sqrt{3}\ \mathrm{s}$
(D) $\frac{7}{\sqrt{3}}\ \mathrm{s}$

Answer: (A) $\frac{14}{\sqrt{3}}\ \mathrm{s}$ · The council's preliminary key

EdLoop EAPCET

Q267 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

In uniform circular motion which of following statement is wrong?

(A) Work done during one complete cycle is zero
(B) Centripetal force acting towards the centre of circle
(C) Angular velocity is constant
(D) Tangential velocity is constant

Answer: (D) Tangential velocity is constant · The council's preliminary key

Q268 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

A particle is moving in a circle of radius $5\ \mathrm{cm}$ with uniform speed and completes the circle in $5\ \mathrm{s}$. What is the magnitude of linear acceleration?

(A) $0.8\pi^2\ \mathrm{cm/s^2}$
(B) $0.8\pi^2\ \mathrm{m/s^2}$
(C) $0.8\pi\ \mathrm{cm/s^2}$
(D) $0.8\pi\ \mathrm{m/s^2}$

Answer: (A) $0.8\pi^2\ \mathrm{cm/s^2}$ · The council's preliminary key

Q269 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

Two cars A and B initially at rest are moving in same direction with accelerations a_1 and a_2 respectively. After a certain time, they achieve velocities v_1 and v_2 respectively and separated are by a distance of 50 m. If $(a_1 - a_2) = 4\ \mathrm{m/s^2}$, then the quantity $(v_1 - v_2)$ will be

(A) 24 m/s
(B) 20 m/s
(C) 40 m/s
(D) 12 m/s

Answer: (B) 20 m/s · The council's preliminary key

Q270 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

A rocket lifts off from ground and accelerate upwards at $1\ \mathrm{m/s^2}$. 20 seconds after lift off a piece breaks off from the bottom of rocket. After breaking off, how much time it takes approximately to reach the ground? (Take $g = 10\ \mathrm{m/s^2}$)

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(A) 6.3 s
(B) 4.5 s
(C) 10.5 s
(D) 8.5 s

Answer: (D) 8.5 s · The council's preliminary key

Q271 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

Two bodies were thrown simultaneously from the origin: one straight up and the other, at angle 60° to the vertical. The initial velocity of each body is equal to 10 m/s. Neglecting the air resistance, the distance between the two bodies after t = 2s is (Use $g = 10\ \mathrm{m/s^2}$)

(A) 20 m
(B) $20\sqrt{2}$ m
(C) $5\sqrt{3}$ m
(D) 30 m

Answer: (A) 20 m · The council's preliminary key

Q272 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

A particle leaves the origin with initial velocity $\vec{v} = (3\hat{i})\ \mathrm{m/s}$ and a constant acceleration $\vec{a} = (-1\hat{i} - 0.5\hat{j})\ \mathrm{m/s^2}$. The position vector of particle, when it reaches its maximum x-coordinate, is

(A) $\frac{9}{2}(\hat{i} - \hat{j})$ m
(B) $\frac{9}{2}\left(\hat{i} - \frac{\hat{j}}{2}\right)$ m
(C) $\frac{9}{2}(-\hat{i} + \hat{j})$ m
(D) $\frac{9}{2}\left(\frac{\hat{i}}{2} - \hat{j}\right)$ m

Answer: (B) $\frac{9}{2}\left(\hat{i} - \frac{\hat{j}}{2}\right)$ m · The council's preliminary key

Q273 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

Two balls are released from the same position at a height of 500 m above ground, one after the other, with an interval of 1s. What is the distance between the two balls when the first hits ground? (Acceleration due to gravity g = 10 m/s^2)

(A) 95 m
(B) 65 m
(C) 130 m
(D) 175 m

Answer: (A) 95 m · The council's preliminary key

Q274 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

A cyclist traversed half the distance of a linear track with a velocity 10 m/s. The remaining part of the track was covered with a velocity $\vec{v_1}$ for half the time and a velocity $\vec{v_2}$ for the other half of the time. If $\vec{v_1} + \vec{v_2} = 20$ m/s, then the average velocity of the cyclist during the completion of the journey through the track is

(A) 30 m/s
(B) 20 m/s
(C) 10 m/s
(D) 15 m/s

Answer: (C) 10 m/s · The council's preliminary key

Q275 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

A projectile is thrown at a speed which is twice its speed at its maximum height. If R and H are its range and maximum height respectively then the ratio $\frac{R}{H}$ is

(A) $\frac{4}{\sqrt{3}}$
(B) $\frac{\sqrt{3}}{8}$
(C) 2
(D) $2\sqrt{3}$

Answer: (A) $\frac{4}{\sqrt{3}}$ · The council's preliminary key

Q276 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

A particle is moving in xy-plane crosses the origin at time t = 0. The equation of motion of the particle is $y = 4x^2$. If the velocity of the particle is $\vec{v} = |2\hat{i} + 2\hat{j}|$ m/s and acceleration is $\vec{a} = |a\hat{j}|$ m/s^2 then the magnitude of a is

(A) 8
(B) 16
(C) $8\sqrt{2}$
(D) 32

Answer: (D) 32 · The council's preliminary key

Q277 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

A car travels in a straight line along a road. Its distance 'x' from a stop sign is given as a function of 't' by the equation $x(t) = \alpha t + \beta t^3$, where $\alpha = 2.0\ \mathrm{m/s}$, $\beta = 0.01\ \mathrm{m/s^3}$. Calculate the average velocity of the car in the time interval t = 2.00 sec to 4.00 sec.

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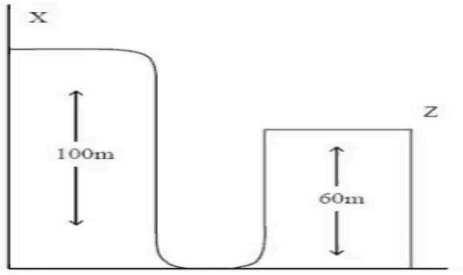
(A) 2.28 m/s
(B) 4.94 m/s
(C) 3.34 m/s
(D) 4.12 m/s

Answer: (A) 2.28 m/s · The council's preliminary key

Q278 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

A car driver is trying to jump across a path as shown in figure by driving horizontally off a cliff 'X' at the speed 10 m/s. When he touches peak Z (ignore air resistance), what would be speed?
(use $g = 10\ \mathrm{m/s^2}$)
(see the figure above)

A car driver is trying to jump across a path as shown in figure by driving horizontally off a cliff 'X' at the speed 10 m/s. When he touches peak Z (ignore air resistance), what would be speed?
(use g =10 m/s^2)



Options :

1. 30 m/s
2. 40 m/s
3. 15 m/s
4. 50 m/s

(A) 30 m/s
(B) 40 m/s
(C) 15 m/s
(D) 50 m/s

Answer: (A) 30 m/s · The council's preliminary key

Q279 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

Find the angle between the two vectors: $\vec{a} = 3\hat{i} + 2\hat{j} + 5\hat{k}$, $\vec{b} = 5\hat{i} + 3\hat{j} + \hat{k}$

(A) $\cos^{-1}\left(\frac{26}{\sqrt{1330}}\right)$
(B) $\sin^{-1}\left(\frac{26}{\sqrt{1330}}\right)$
(C) $\cos^{-1}\left(\frac{26}{\sqrt{1335}}\right)$
(D) $\tan^{-1}\left(\frac{26}{\sqrt{1330}}\right)$

Answer: (A) $\cos^{-1}\left(\frac{26}{\sqrt{1330}}\right)$ · The council's preliminary key

Q280 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

A particle moves over a xy plane with a constant acceleration $\vec{a} = (4.0\ \mathrm{m/s^2})\hat{i} + (4.0\ \mathrm{m/s^2})\hat{j}$. At time t = 0, the velocity is $(4.0\ \mathrm{m/s^2})\hat{i}$ (sic). The speed of the particle when it is displaced by 6.0 m parallel to the x-axis is

(A) $4\sqrt{5}$ m/s
(B) $\sqrt{60}$ m/s
(C) $3\sqrt{10}$ m/s
(D) $\sqrt{20}$ m/s

Answer: (A) $4\sqrt{5}$ m/s · The council's preliminary key

Q281 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

A stone falls freely under gravity. It covers distance d_1 and d_2 in the first 4 seconds, and the next 8 seconds respectively. The ratio $\frac{d_2}{d_1}$ is

(A) 8
(B) 2
(C) 16
(D) 12

Answer: (A) 8 · The council's preliminary key

Q282 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

The velocity of a particle moving along the x-axis varies as a function of time t as $v(t) = (1 - 3t^2 + 2t^3)\ \mathrm{m/s}$. If its position at t = 0 is x = 0 then at t = 2 s, its position is

(A) 1 m
(B) 2 m
(C) 4 m
(D) 18 m

Answer: (B) 2 m · The council's preliminary key

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Q283 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

The y-component of vector $\vec{A}$ is +3.0 m if $\vec{A}$ makes an angle of 30° counter clockwise from the positive y-axis, the magnitude of $\vec{A}$ is
(assume $\vec{A}$ is in x-y plane)

(A) $2\sqrt{3}\ \text{m}$
(B) $\sqrt{11}\ \text{m}$
(C) $\sqrt{15}\ \text{m}$
(D) $\sqrt{21}\ \text{m}$

Answer: (A) $2\sqrt{3}\ \text{m}$ · The council's preliminary key

Q284 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

Find the component of vector $\vec{P} = 2\hat{i} + 3\hat{j}$ along the direction of vector $\vec{Q} = \hat{i} + \hat{j}$.

(A) 2
(B) $2\sqrt{5}$
(C) $\frac{5}{\sqrt{2}}$
(D) $\frac{\sqrt{2}}{5}$

Answer: (C) $\frac{5}{\sqrt{2}}$ · The council's preliminary key

Q285 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

A projectile can have the same range R for two angles of projection. If t_1 and t_2 be the times of flight in two cases, then their product _____

(A) $t_1 t_2 \propto R^2$
(B) $t_1 t_2 \propto R$
(C) $t_1 t_2 \propto \frac{1}{R}$
(D) $t_1 t_2 \propto \frac{1}{R^2}$

Answer: (B) $t_1 t_2 \propto R$ · The council's preliminary key

Q286 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

Motion of a particle is given by equation $s = (3t^3 + 7t^2 + 3t + 8)\ m$. The acceleration of the particle at $t = 1$ second is _____

(A) $32\ m.s^{-2}$
(B) $10\ m.s^{-2}$
(C) $16\ m.s^{-2}$
(D) $23\ m.s^{-2}$

Answer: (A) $32\ m.s^{-2}$ · The council's preliminary key

Q287 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

A particle executing uniform circular motion has _____

(A) Radial velocity and radial acceleration
(B) Transverse velocity and radial acceleration
(C) Radial velocity and transverse acceleration
(D) Transverse velocity and transverse acceleration

Answer: (B) Transverse velocity and radial acceleration · The council's preliminary key

Q288 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

The displacement is given by $x = 2t^2 + t + 5$, the acceleration at $t = 2s$ is

(A) $4\ m.s^{-2}$
(B) $8\ m.s^{-2}$
(C) $10\ m.s^{-2}$
(D) $15\ m.s^{-2}$

Answer: (A) $4\ m.s^{-2}$ · The council's preliminary key

Q289 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

The displacement of a particle moving with uniform acceleration in time 't' is given by $S = 30t + 5t^2$, its initial velocity is _____

(A) $35\ \mathrm{m.s^{-1}}$
(B) $30\ \mathrm{m.s^{-1}}$
(C) $40\ \mathrm{m.s^{-1}}$
(D) $45\ \mathrm{m.s^{-1}}$

Answer: (B) $30\ \mathrm{m.s^{-1}}$ · The council's preliminary key

Q290 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

The acceleration at the end of $2\ \mathrm{s}$, of a particle whose motion is represented by the equation $S = 4t^3 - 8t^2 + 5t + 4$ is _____

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(A) $32\ \mathrm{m.s^{-2}}$
(B) $40\ \mathrm{m.s^{-2}}$
(C) $37\ \mathrm{m.s^{-2}}$
(D) $35\ \mathrm{m.s^{-2}}$

Answer: (A) $32\ \mathrm{m.s^{-2}}$ · The council's preliminary key

Q291 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

Four projectiles are fired with the same velocities at angles $25^\circ, 40^\circ, 55^\circ$ and 70° with the horizontal. The range of projectile will be largest for the one projected at angle _____.

(A) 25°
(B) 40°
(C) 55°
(D) 70°

Answer: (B) 40° · The council's preliminary key

Q292 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

Two cars A and B are going around concentric circular paths of radii R_A and R_B. If the two cars complete the circular paths in the same time then the ratio of angular speeds of A and B is:

(A) $1:1$
(B) $R_A : R_B$
(C) $R_B : R_A$
(D) $1:2$

Answer: (A) $1:1$ · The council's preliminary key

Q293 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

The graph between two quantities P and Q is a straight line when

(A) $PQ = Constant$
(B) $\frac{P}{Q} = Constant$
(C) $PQ^2 = Constant$
(D) $\frac{P}{Q^2} = Constant$

Answer: (B) $\frac{P}{Q} = Constant$ · The council's preliminary key

Q294 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

A body starts from rest and moves with uniform acceleration. If the distance travelled by it in the first 2 seconds is x_1 and in the next 2 seconds is x_2, then x_1 and x_2 are related as _____

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(A) $x_1 = x_2$
(B) $x_1 = 2x_2$
(C) $2x_1 = x_2$
(D) $3x_1 = x_2$

Answer: (D) $3x_1 = x_2$ · The council's preliminary key

Q295 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

A particle is projected with velocity $2\sqrt{gh}$, so that it just flies over two walls of equal height 'h' and '2h' distance apart from each other. Find the time for which the particle flies between the walls.

(A) $\sqrt{\frac{4h}{g}}$
(B) $\sqrt{\frac{h}{g}}$
(C) $\sqrt{\frac{4g}{h}}$
(D) $\sqrt{\frac{g}{h}}$

Answer: (A) $\sqrt{\frac{4h}{g}}$ · The council's preliminary key

Q296 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

A train of $150\ \mathrm{m}$ length is going towards north direction at a speed of $10\ \mathrm{m.s^{-1}}$. A parrot flies at the speed of $5\ \mathrm{m.s^{-1}}$ towards south direction parallel to the railway track. The time for which the parrot flies alongside the train is

(A) $12\ \mathrm{s}$
(B) $30\ \mathrm{s}$
(C) $10\ \mathrm{s}$
(D) $5\ \mathrm{s}$

Answer: (C) $10\ \mathrm{s}$ · The council's preliminary key

Q297 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

A stone falls freely such that the distance covered by it in the last second of its motion is equal to the distance covered by it in the first 5 seconds. It is in air for _____ seconds

(A) 12
(B) 13
(C) 25
(D) 26

Answer: (B) 13 · The council's preliminary key

Q298 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

A shot is fired from a point at a distance of $400\ \mathrm{m}$, from the foot of a tower $100\ \mathrm{m}$ high, so that it just passes over it. The direction of shot with respect to the horizontal is:

(A) 30°
(B) 60°
(C) 70°
(D) 45°

Answer: (D) 45° · The council's preliminary key

Q299 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

How many revolutions does a wheel with angular speed $88\,\mathrm{rad.s^{-1}}$ make in one second?

(A) 7
(B) 14
(C) 28
(D) 44

Answer: (B) 14 · The council's preliminary key

Q300 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

Which of the following remains constant for a projectile fired from the earth?

(A) Momentum
(B) Vertical component of velocity
(C) Kinetic energy
(D) Horizontal component of velocity

Answer: (D) Horizontal component of velocity · The council's preliminary key

Q301 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

A rocket is fired vertically from the ground with a resultant vertical acceleration of a $10\,\mathrm{m.s^{-2}}$. Fuel is finished in $1\ \mathrm{min}$ and it continues to move up. What the maximum height reached?

(A) $36.4\,km$
(B) $42.3\,km$
(C) $48.4\,km$
(D) $25.6\,km$

Answer: (A) $36.4\,km$ · The council's preliminary key

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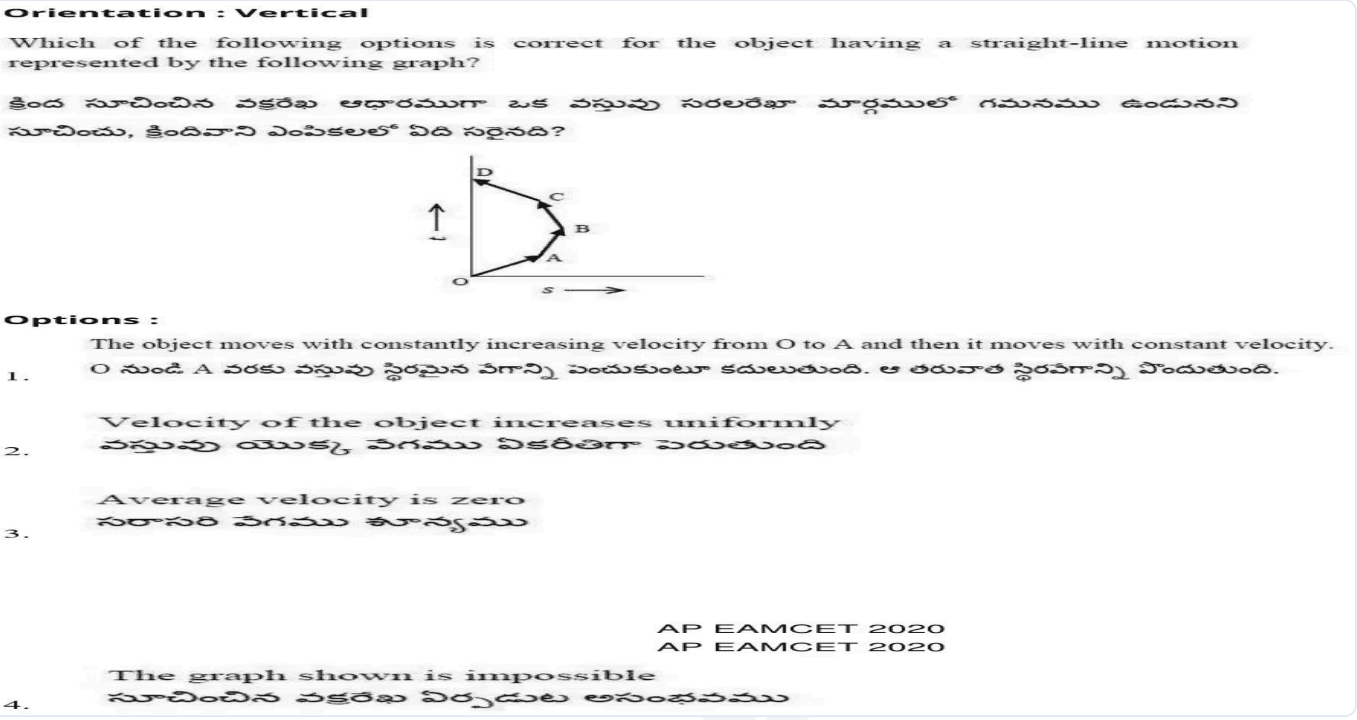
Q302 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

Which of the following options is correct for the object having a straight-line motion represented by the following graph?
(see the figure above)



(A) The object moves with constantly increasing velocity from O to A and then it moves with constant velocity.
(B) Velocity of the object increases uniformly
(C) Average velocity is zero
(D) The graph shown is impossible

Answer: (C) Average velocity is zero · The council's preliminary key

Q303 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

The displacement of a body when it covers a distance of "c/4" (where c is circumference) along the circumference of the circle of radius r with a uniform speed u is

(A) r
(B) $r\sqrt{2}$
(C) $2r$
(D) $r/2$

Answer: (B) $r\sqrt{2}$ · The council's preliminary key

Q304 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

Simultaneously, from the top of a tower, when ball-1 is thrown horizontally and ball-2 is just dropped, in the absence of air resistance which among the following options is correct?

(A) Ball-1 reaches the ground first
(B) Ball-2 reaches the ground first
(C) Both will reach the ground simultaneously
(D) Either ball-1 or ball-2 reach the ground first depending on which ever is heavier

Answer: (C) Both will reach the ground simultaneously · The council's preliminary key

Q305 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

When a player throws a ball, it reaches the other player in 4 seconds. If the height of each player is $1.8\ m$, the maximum height attained by the ball above the ground is

(A) $19.4\,m$
(B) $20.4\,m$
(C) $21.4\,m$
(D) $22.4\,m$

Answer: (C) $21.4\,m$ · The council's preliminary key

Q306 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

A swimmer can swim in still water with speed 'v' and the river flowing with velocity $v/2$. To cross the river in shortest time, he should swim making angle 'θ' with the upstream. What is the ratio of the time taken to swim across in the shortest time to that in swimming across over shortest distance?

(A) $\cos\theta$
(B) $\cot\theta$
(C) $\sin\theta$
(D) $\tan\theta$

Answer: (C) $\sin\theta$ · The council's preliminary key

Q307 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

An airplane flies 400 m north and 300 m south and then flies 1200 m upwards then net displacement is

(A) $1400\ m$
(B) $1500\ m$
(C) $1200\ m$
(D) $1100\ m$

Answer: (C) $1200\ m$ · The council's preliminary key

Q308 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

A body is moving with an initial velocity of $10\sqrt{2}\ m.s^{-1}$ in the north-east direction. If it is subjected to an acceleration of $2\ m.s^{-2}$ directed towards the south, the velocity of the body after 5 s is _____

(A) $10\ m.s^{-1}$, towards east
(B) $10\ m.s^{-1}$, towards north
(C) $10\ m.s^{-1}$, towards south
(D) $10\ m.s^{-1}$, towards north-east

Answer: (A) $10\ m.s^{-1}$, **towards east** · The council's preliminary key

Q309 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

A particle is projected with a velocity 'v' such that its range on the horizontal plane is twice the greatest height attained by it. The range of the projectile is (g =acceleration due to gravity)

(A) $\frac{4v^2}{5g}$
(B) $\frac{4g}{5v^2}$
(C) $\frac{v^2}{g}$
(D) $\frac{4v^2}{\sqrt{5}g}$

Answer: (A) $\frac{4v^2}{5g}$ · The council's preliminary key

Q310 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

A body of mass 10 kg has constant velocity of 10 $\mathrm{m.s^{-1}}$. A constant force is applied for a duration of 4 s on the object and gives it a speed of 2 $\mathrm{m.s^{-1}}$ in opposite direction. Then find acceleration produced in it?

(A) $3\ \mathrm{m.s^{-2}}$
(B) $-3\ \mathrm{m.s^{-2}}$
(C) $0.3\ \mathrm{m.s^{-2}}$
(D) $-0.3\ \mathrm{m.s^{-2}}$

Answer: (B) $-3\ \mathrm{m.s^{-2}}$ · The council's preliminary key

Q311 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

The ratio of displacement to distance for a moving particle is _____

(A) Always less than one
(B) Always greater than one
(C) Always one.
(D) One or less than one.

Answer: (D) One or less than one. · The council's preliminary key

Q312 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

A ball is projected upwards from a height h above the surface of the earth with velocity v. The time at which the ball strikes the ground is _____

(A) $\frac{v}{g}\left[1+\sqrt{\frac{2gh}{v^2}}\right]$

(B) $\frac{v}{g}\left[1-\sqrt{1+\frac{2h}{g}}\right]$

(C) $\frac{v}{g}\left[1+\sqrt{1+\frac{2gh}{v^2}}\right]$

(D) $\frac{v}{g}\left[1+\sqrt{v^2+\frac{2g}{v^2}}\right]$

Answer: (C) $\frac{v}{g}\left[1+\sqrt{1+\frac{2gh}{v^2}}\right]$ · The council's preliminary key

Q313 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

A body moves in a straight line with speed v_1 and v_2 for distance which are in ratio 1 : 2. Find average speed.

(A) $3v_1+v_2$

(B) v_2+2v_1

(C) $\frac{3v_1v_2}{v_2+2v_1}$

(D) $\frac{3v_1v_2}{v_2-2v_1}$

Answer: (C) $\frac{3v_1v_2}{v_2+2v_1}$ · Official TGCHE final key

Q314 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

A ball is projected with a velocity 5 m/s so that its horizontal range is twice the greatest height attained. The value of range is

(A) 10 m

(B) 2 m

(C) 4 m

(D) 5 m

Answer: (B) 2 m · Official TGCHE final key

Q315 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

A point moves in the xy - plane according to the following equation $x=a\sin\omega t$, $y=a(1-\cos\omega t)$, where a,ω are positive constants. Find the angle between the point's velocity and acceleration vectors.

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(A) $\frac{\pi}{2}$
(B) $\frac{\pi}{3}$
(C) π
(D) 2π

Answer: (A) $\frac{\pi}{2}$ · Official TGCHE final key

Q316 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

A ball is thrown straight upward from ground with a speed of $20\,\mathrm{m/s}$. The ball was caught on its way down at a point $5\,\mathrm{m}$ above the ground. The time taken by the ball during entire trip is (Assume $g = 10\,\mathrm{m/s^2}$)

(A) $2+\sqrt{3}\,\mathrm{sec}$
(B) $3-\sqrt{3}\,\mathrm{sec}$
(C) $2+\sqrt{2}\,\mathrm{sec}$
(D) $3.5\,\mathrm{sec}$

Answer: (A) $2+\sqrt{3}\,\mathrm{sec}$ · Official TGCHE final key

Q317 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

A motor-bike starts from rest, attains a velocity of $10\,\mathrm{m/s}$ with an acceleration of $0.5\,\mathrm{m/s^2}$, travels $10\,\mathrm{km}$ with this uniform velocity and then comes to halt with a uniform deceleration of $0.2\,\mathrm{m/s^2}$. The total time of travel is

(A) $1070\,\mathrm{sec}$
(B) $1050\,\mathrm{sec}$
(C) $1150\,\mathrm{sec}$
(D) $1170\,\mathrm{sec}$

Answer: (A) $1070\,\mathrm{sec}$ · Official TGCHE final key

Q318 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

If $\vec{r_1} = 2\hat{x}$, $\vec{r_2} = 2\hat{y}$, where $\hat{x}$ & $\hat{y}$ are unit vectors along the x-axis and y-axis respectively, then the magnitude of $\vec{r_1}+\vec{r_2}$ is

(A) $2\sqrt{2}$
(B) $2\sqrt{3}$
(C) $3\sqrt{2}$
(D) $\sqrt{3}$

Answer: (A) $2\sqrt{2}$ · Official TGCHE final key

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Q319 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

Let $\overrightarrow{A_1} + \overrightarrow{A_2} = 5\overrightarrow{A_3}$
$\overrightarrow{A_1} - \overrightarrow{A_2} = 3\overrightarrow{A_3}$
$\overrightarrow{A_3} = 2\hat{i} + 4\hat{j}$
then $\frac{|\overrightarrow{A_1}|}{|\overrightarrow{A_2}|}$ is

(A) 4
(B) 8
(C) 2
(D) 6

Answer: (A) 4 · Official TGCHE final key

Q320 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

A person moves 30m north and then 20m towards east and finally $30\sqrt{2}$ m in south west direction. The displacement of the person from the origin will be

(A) 10m along north
(B) 10m along south
(C) 10m along west
(D) zero

Answer: (C) 10m along west · Official TGCHE final key

Q321 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

A particle moving along x-axis has acceleration f, at time t, given by $f = f_0\left(1 - \frac{t}{T}\right)$, Where f_0 and T are constants. The particle at t = 0 has zero velocity. In the time interval between t = 0 and the instant when f = 0, the particle's velocity is

(A) $\frac{1}{2}f_0T^2$
(B) f_0T^2
(C) $\frac{1}{2}f_0T$
(D) f_0T

Answer: (C) $\frac{1}{2}f_0T$ · Official TGCHE final key

Q322 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

Consider following vectors
(see the figure above)
The correct statement is

Question Number : 85 Question Id : 719650885 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Consider following vectors

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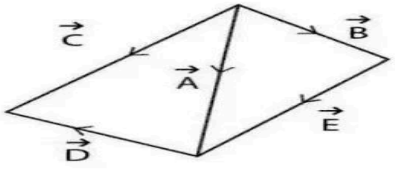


The correct statement is

సరైన వివరణము

Options :

1. $\vec{E}=\vec{A}-\vec{B}$ and $\vec{A}=\vec{D}+\vec{C}$

2. $-\vec{E}=-\vec{A}+\vec{B}$ and $\vec{A}=-\vec{D}+\vec{C}$

3. $\vec{E}=-\vec{A}-\vec{B}$ and $\vec{E}=-\vec{B}+\vec{D}+\vec{C}$

4. $\vec{E}=-\vec{A}-\vec{B}$ and $\vec{E}=-\vec{B}+\vec{C}-\vec{D}$

(A) $\vec{E}=\vec{A}-\vec{B}$ and $\vec{A}=\vec{D}+\vec{C}$
(B) $-\vec{E}=-\vec{A}+\vec{B}$ and $\vec{A}=-\vec{D}+\vec{C}$
(C) $\vec{E}=-\vec{A}-\vec{B}$ and $\vec{E}=-\vec{B}+\vec{D}+\vec{C}$
(D) $\vec{E}=-\vec{A}-\vec{B}$ and $\vec{E}=-\vec{B}+\vec{C}-\vec{D}$

Answer: (B) $-\vec{E}=-\vec{A}+\vec{B}$ and $\vec{A}=-\vec{D}+\vec{C}$ · Official TGCHE final key

Q323 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

A river 200 m wide is flowing at a rate of 3.0 m/s. A boat is sailing at a velocity of 15 m/s with respect to the water in a direction perpendicular to the river. How far from the point directly opposite to the starting point does the boat reach on the opposite bank?

(A) 25 m
(B) 60 m
(C) 40 m
(D) 50 m

Answer: (C) 40 m · Official TGCHE final key

Q324 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

Consider that a truck is moving initially with 54 Km/h. It has stopped by the driver after looking at an obstacle with a deceleration of $10\ \mathrm{m/s^2}$. The distance travelled by truck before coming to rest is

(A) $12\ \mathrm{m}$
(B) $11.25\ \mathrm{m}$
(C) $11.30\ \mathrm{m}$
(D) $11.20\ \mathrm{m}$

Answer: (B) $11.25\ \mathrm{m}$ · Official TGCHE final key

Q325 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

A ball is thrown vertically upwards with an initial velocity u reaches maximum height in 5 sec. The ratio of distance travelled by the ball in the second and seventh second is:
(Assume $g = 10\ \mathrm{m/s^2}$)

(A) $8 : 19$
(B) $16 : 29$
(C) $16 : 49$
(D) $8 : 49$

Answer: (B) $16 : 29$ · Official TGCHE final key

Q326 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

A particle of mass m = 1 Kg moves in the x-y plane. The force on it at time t is $F(t) = \left[2\sin(\alpha t)\hat{i} + 3\cos(\alpha t)\hat{j}\right]$ N, where $\alpha = 1\ \mathrm{s^{-1}}$. At time t = 0, the particle is at rest at the origin. Calculate the magnitude of its position vector r (in m) and velocity vector v (in m/s) at time $t = \frac{\pi}{2}$ s.

(A) $r = \sqrt{[(\pi-2)^2+9]}\ ;\ v = \sqrt{13}$
(B) $r = \sqrt{13}\ ;\ v = \sqrt{9}$
(C) $r = \sqrt{3}\ ;\ v = \sqrt{2}$
(D) $r = 1\ ;\ v = \sqrt{5}$

Answer: (A) $r = \sqrt{[(\pi-2)^2+9]}\ ;\ v = \sqrt{13}$ · Official TGCHE final key

Q327 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

A particle aimed at a target, projected with an angle 15° with the horizontal is short of the target by 10 m. If projected with an angle of 45° is away from the target by 10 meters, then the angle of projection to hit the target is

(A) $\frac{1}{2}\sin^{-1}\left(\frac{1}{4}\right)$

(B) $\frac{1}{2}\sin^{-1}\left(\frac{3}{4}\right)$

(C) $\frac{1}{2}\sin^{-1}\left(\frac{10}{4}\right)$

(D) $\frac{1}{2}\sin^{-1}\left(\frac{20}{4}\right)$

Answer: (B) $\frac{1}{2}\sin^{-1}\left(\frac{3}{4}\right)$ · Official TGCHE final key

Q328 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

A car travelling at 15 m/s overtake another car travelling at 10 m/s. Assuming each car is 4 m long. What is the time taken during the overtake?

(A) 1.6 s

(B) 0.8 s

(C) 0.6 s

(D) 0.4 s

Answer: (A) 1.6 s · Official TGCHE final key

Q329 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

If a body moving in a circular path maintains constant speed of $10\ \mathrm{ms}^{-1}$, then which of the following correctly describes the relation between acceleration (a) and radius (r).

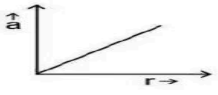
Question Number : 84 Question Id : 814578244 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

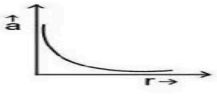
If a body moving in a circular path maintains constant speed of 10 ms^{-1}, then which of the following correctly describes the relation between acceleration (a) and radius (r).

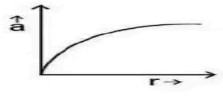
10 ms^{-1} స్థిర వేగంతో వృత్తాకార పథంలో కదులుతున్న ఒక వస్తువునకు గల త్వరణం (a) మరియు వ్యాసార్ధం (r) కి గల సంబంధాన్ని గ్రాఫ్‌లో గీస్తే, క్రింది వానిలో ఏది సరైన నిరూపణము

Options :

1. 

2. 

3. 

4. 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (C) · Official TGCHE final key

Q330 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

If $0.5\hat{i} + 0.8\hat{j} + C\hat{k}$ is a unit vector then C is

(A) $\sqrt{0.89}$
(B) 0.2
(C) 0.3
(D) $\sqrt{0.11}$

Answer: (D) $\sqrt{0.11}$ · Official TGCHE final key

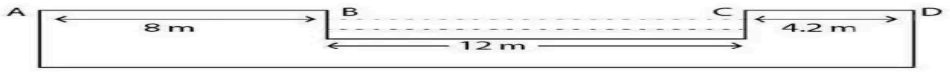
Q331 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

A projectile is launched from point A of the given landscape with a water body as shown in the diagram. The launching angle is 15°. From the following, identify the right initial velocity of the projectile with which it will fall somewhere in between the points C and D. (Assume $g = 10\ \mathrm{m/s^2}$) *(see the figure above)*

Question Number : 86 Question Id : 8145782246 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

A projectile is launched from point A of the given landscape with a water body as shown in the diagram. The launching angle is 15°. From the following, identify the right initial velocity of the projectile with which it will fall somewhere in between the points C and D.
(Assume g = 10 m/s²)

నీటి తటాకం కలిగిన ఒక రమణీయ ప్రకృతి ప్రాంతం క్రింద పటంలో చూపించబడింది. A బిందువు వద్ద నుండి ఒక ప్రక్షేపక వస్తువు 15° ల కోణంలో ప్రక్షిప్తం చేయబడింది. ఆ వస్తువు C మరియు D బిందువుల మధ్యలో మాత్రమే పడాలంటే దాని ప్రారంభ వేగం
(g = 10 m/s² అనుకోండి)



Options :
1. 21.5 m/s
2. 22.5 m/s
3. 19.5 m/s
4. 24.0 m/s

(A) 21.5 m/s
(B) 22.5 m/s
(C) 19.5 m/s
(D) 24.0 m/s

Answer: (A) 21.5 m/s · Official TGCHE final key

Q332 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

A particle is moving along the y- axis. The position of the particle from the origin as a function of time (t) is given as $y(t) = 10\,te^{-2t}$. How far is the particle from the origin when it stops momentarily (y is given in units of meter and t is in units of sec.)

(A) 5 meter
(B) 5e meter
(C) $\frac{5}{e}$ meter
(D) 10 meter

Answer: (C) $\frac{5}{e}$ meter · Official TGCHE final key

Q333 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

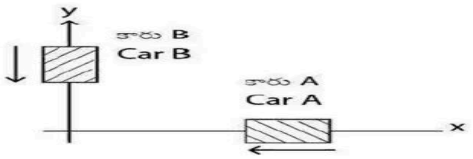
Two cars A and B are moving with speeds V_A=120 km/hr and V_B= 50 km/hr respectively in the directions as indicated by the arrow in the figure below. What is the relative speed of the car B with respect to car A?

(see the figure above)

Question Number : 84 Question Id : 719650564 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Two cars A and B are moving with speeds V_A=120 km/hr and V_B= 50 km/hr respectively in the directions as indicated by the arrow in the figure below. What is the relative speed of the car B with respect to car A?

A మరియు B అను రెండు కార్లు పటంలో చూపిన విధముగా V_A=120 km/hr మరియు V_B= 50 km/hr ల వడిలో కదులుతున్నాయి. A లో పోల్చిన B యొక్క సాపేక్ష వేగము



Options :
1. 70 km/h
2. 120 km/h
3. 130 km/h
4. 170 km/h

(A) 70 km/h
(B) 120 km/h
(C) 130 km/h
(D) 170 km/h

Answer: (C) 130 km/h · Official TGCHE final key

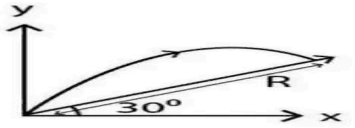
Q334 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

Initial velocity with which a body is projected is 10 m/s from the base of an inclined plane as shown in the given figure. If the angle of projection is 60^0 with the horizontal, then the range R is
[Take value of g = 10 m /s^2]
(see the figure above)

Question Number : 85 Question Id : 7196505 65 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Initial velocity with which a body is projected is 10 m/s from the base of an inclined plane as shown in the given figure. If the angle of projection is 60^0 with the horizontal, then the range R is
[Take value of g = 10 m /s^2]

క్షితిజసమాంతరంలో 60^0 ప్రక్షేపణ కోణము చెప్తూ ఒక వస్తువు ప్రక్షేపణ లోని వేగము 10 m/s క్రింది పటములో చూపబడినది. ఆ వస్తువు యొక్క వ్యాప్తి R
[g = 10 m /s^2 గా తీసుకోనుము]



Options :
1. $\frac{15\sqrt{3}}{2}$ m
2. $\frac{40}{3}$ m
3. $5\sqrt{3}$ m
4. $\frac{20}{3}$ m

(A) $\frac{15\sqrt{3}}{2}$ m
(B) $\frac{40}{3}$ m
(C) $5\sqrt{3}$ m
(D) $\frac{20}{3}$ m

Answer: (D) $\frac{20}{3}$ m · Official TGCHE final key

Q335 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

A projectile is fired at an angle of 45^0 with the horizontal. Elevation angle of the projectile at its highest point as seen from the point of projection is

(A) 60^0
(B) $\mathrm{Tan}^{-1}\left(\frac{1}{2}\right)$
(C) $\mathrm{Tan}^{-1}\left(\frac{\sqrt{3}}{2}\right)$
(D) 45^0

Answer: (B) $\mathrm{Tan}^{-1}\left(\frac{1}{2}\right)$ · Official TGCHE final key

Q336 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

A point P is moving in uniform circular motion with radius 3m. Let at some instant the acceleration of the point is $\vec{a} = (6\hat{i} - 4\hat{j})$ m/s^2, the position vector is $\vec{r}$ and velocity vector is $\vec{v}$. The correct statement is

(A) $\vec{v} \cdot \vec{a} = 0$ and $\vec{r} \times \vec{a} \neq 0$
(B) $\vec{v} \cdot \vec{a} \neq 0$ and $\vec{r} \times \vec{a} \neq 0$
(C) $\vec{v} \cdot \vec{a} = 0$ and $\vec{r} \times \vec{a} = 0$
(D) $\vec{v} \cdot \vec{a} \neq 0$ and $\vec{r} \times \vec{a} = 0$

Answer: (C) $\vec{v} \cdot \vec{a} = 0$ and $\vec{r} \times \vec{a} = 0$ · Official TGCHE final key

Q337 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

A ball is dropped from a bridge that is 45 m above the water. It falls directly into a boat which is moving with constant velocity. The boat is 12 m away from the point of impact when the ball is dropped. The speed of the boat is (Take $g = 10\ \mathrm{m/s^2}$)

(A) $2\ \mathrm{m/s}$
(B) $3\ \mathrm{m/s}$
(C) $4\ \mathrm{m/s}$
(D) $5\ \mathrm{m/s}$

Answer: (C) $4\ \mathrm{m/s}$ · Official TGCHE final key

Q338 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

A ball is dropped from a height H from rest. The ball travels $\frac{H}{2}$ in last 1.0 s. The total time taken by the ball to hit the ground is

(A) $3.85\ \mathrm{s}$
(B) $3.41\ \mathrm{s}$
(C) $2.55\ \mathrm{s}$
(D) $4.65\ \mathrm{s}$

Answer: (B) $3.41\ \mathrm{s}$ · Official TGCHE final key

Q339 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

A planet is moving in a circular orbit. It completes 2 revolutions in 360 days. What is its angular frequency?

(A) $1.5 \times 10^{-2}\ \mathrm{rad/day}$
(B) $2.5 \times 10^{-2}\ \mathrm{rad/day}$
(C) $3.5 \times 10^{-2}\ \mathrm{rad/day}$
(D) $4.5 \times 10^{-2}\ \mathrm{rad/day}$

Answer: (C) $3.5 \times 10^{-2}\ \mathrm{rad/day}$ · Official TGCHE final key

Q340 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

The vector sum of two forces is perpendicular to their vector differences. In that case, the forces

(A) cannot be predicted
(B) always are equal to each other
(C) are equal to each other in magnitude
(D) are not equal to each other in magnitude

Answer: (C) are equal to each other in magnitude · Official TGCHE final key

Q341 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

The position of an object moving along x- axis is given by $x = \alpha + \beta t^2$ where α and β are constants with appropriate dimensions and t is time in seconds. The average velocity between t = 2s and 4s is 12 m/s. If α = 8m then the value of β is

(A) $0.5\ \mathrm{m/s^2}$
(B) $2\ \mathrm{m/s^2}$
(C) $4\ \mathrm{m/s^2}$
(D) $5\ \mathrm{m/s^2}$

Answer: (B) $2\ \mathrm{m/s^2}$ · Official TGCHE final key

Q342 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

Two buses A and B are moving in opposite direction. Now if the first bus A moves towards east with a speed of 36 Km/h and bus B moves towards west with a speed of 18 Km/h then the bus B appears to A as

(A) moving with a speed of 5 m/s from east to west
(B) moving with a speed of 15 m/s from west to east
(C) moving with a speed of 15 m/s from east to west
(D) moving with a speed of 10 m/s from east to west

Answer: (C) moving with a speed of 15 m/s from east to west · Official TGCHE final key

Q343 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

A projectile is thrown into air with velocity 15 m/s at an angle 30° with the horizontal. After what time its direction of motion is perpendicular to its initial direction? (Assume g = 10 m/s^2)

(A) 3 sec
(B) 2 sec
(C) 0.5 sec
(D) 1.5 sec

Answer: (A) 3 sec · Official TGCHE final key

Q344 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

A particle is projected from the ground with some initial velocity making an angle of 45° with the horizontal. If it reaches a height of 7.5 m above the ground while it travels a horizontal distance of 10m from the point of projection, then the initial speed of particle is (Assume g =10 m/s^2)

(A) 10 m/s
(B) 20 m/s
(C) 15 m/s
(D) 25 m/s

Answer: (B) 20 m/s · Official TGCHE final key

Q345 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

For a particle executing uniform circular motion

(A) velocity is transverse, acceleration is radial
(B) velocity is transverse, acceleration is transverse
(C) velocity is radial, acceleration is transverse
(D) velocity is radial, acceleration is radial

Answer: (A) velocity is transverse, acceleration is radial · Official TGCHE final key

Q346 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

A particle having kinetic energy K is projected at 60° with the horizontal. The kinetic energy at the highest point is

(A) K
(B) zero
(C) K/4
(D) K/2

Answer: (C) K/4 · Official TGCHE final key

Q347 TS EAMCET 2019 · 6 May · Shift 1 MCQ

A ball is thrown vertically upward from the ground at time $t = 0$ s. It passes the top of a tower at $t = 3$ s and 2 s later it reaches its maximum height. The height of the tower is :
(Let $g = 10$ m/s^2)

(A) 105 m
(B) 125 m
(C) 85 m
(D) 65 m

Answer: (A) 105 m · Official TGCHE final key

Q348 TS EAMCET 2019 · 6 May · Shift 1 MCQ

Rain is falling vertically with a speed of 30 m/s. A man rides a bicycle with a speed of 10 m/s from east to west direction. At what angle with the vertical, he sees the rain falling.

(A) $\tan^{-1}\left(\frac{1}{3}\right)$ towards west
(B) $\tan^{-1}(3)$ towards west
(C) $\tan^{-1}\left(\frac{1}{3}\right)$ towards east
(D) $\tan^{-1}(3)$ towards east

Answer: (A) $\tan^{-1}\left(\frac{1}{3}\right)$ towards west · Official TGCHE final key

Q349 TS EAMCET 2019 · 6 May · Shift 1 MCQ

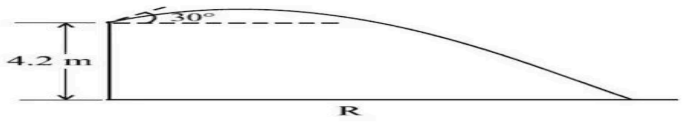
An archer shoots an arrow from a height 4.2 m above the ground with a speed 40 m/s and at an angle 30° as shown in the figure. Determine the horizontal distance 'R' covered by the arrow, when it hits the ground. (Let $g = 10$ m/s^2)
(see the figure above)

EdLoop EAPCET

Question Number : 85 Question Id : 75123365045 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An archer shoots an arrow from a height 4.2 m above the ground with a speed 40 m/s and at an angle 30° as shown in the figure. Determine the horizontal distance 'R' covered by the arrow, when it hits the ground. (Let $g = 10\ m/s^2$)

పటంలో చూపిన విధంగా ఒక విలుకాడు భూమి నుండి 4.2 m ఎత్తు నుండి ఒక బాణాన్ని 40 m/s వేగంతో మరియు 30° కోణంలో విసిరినాడు. ఆది భూమిని తాకినపుడు ప్రయాణించిన క్షితిజ సమాంతర దూరం 'R' ను కనుగొనండి. ($g = 10\ m/s^2$ గా తీసుకోనుము)



Options :

1. $\frac{185}{\sqrt{3}}$ m
2. $84\sqrt{3}$ m
3. $68\sqrt{3}$ m
4. $\frac{95}{\sqrt{3}}$ m

(A) $\frac{185}{\sqrt{3}}$ m
(B) $84\sqrt{3}$ m
(C) $68\sqrt{3}$ m
(D) $\frac{95}{\sqrt{3}}$ m

Answer: (B) $84\sqrt{3}$ m · Official TGCHE final key

Q350 TS EAMCET 2019 · 6 May · Shift 1 MCQ

A bullet enters a wooden block with velocity 120 m/s. The bullet travels 1.5 s in the block before its velocity reduces to zero due to resistance force which is proportional to square root of the velocity. The distance travelled by the bullet in the wooden block is

(A) 10 m
(B) 60 m
(C) 25 m
(D) 40 m

Answer: (B) 60 m · Official TGCHE final key

Q351 TS EAMCET 2019 · 4 May · Shift 1 MCQ

The nature of graph drawn for a freely falling body with time on the x-axis and speed on the y-axis is (Assuming initial speed to be zero)

(A) a straight line with positive y-axis intercept.
(B) a straight line passing through origin.
(C) a parabola.
(D) a straight line parallel to y-axis with positive x-axis intercept.

Answer: (B) a straight line passing through origin. · Official TGCHE final key

Q352 TS EAMCET 2019 · 4 May · Shift 1 MCQ

A particle A moves along the line $y = 30\ \mathrm{m}$ with a constant velocity $\vec{v}$ parallel to x-axis. At the moment particle A passes the y-axis, a particle B starts from origin with zero initial speed and a constant acceleration $\vec{a} = 0.40\ \mathrm{m/sec^2}$. The angle between $\vec{a}$ and y-axis is 60°. If particles A and B collide after sometime, then the value of $|\vec{v}|$ will be

(A) $2\ \mathrm{m/s}$
(B) $3\ \mathrm{m/s}$
(C) $4\ \mathrm{m/s}$
(D) $5\ \mathrm{m/s}$

Answer: (B) $3\ \mathrm{m/s}$ · Official TGCHE final key

Q353 TS EAMCET 2019 · 4 May · Shift 1 MCQ

A ball moves one-fourth $\left(\frac{1}{4}^{\text{th}}\right)$ of a circle of radius R in time T. Let v_1 and v_2 be magnitudes of mean speed and mean velocity vector. The ratio $\frac{v_1}{v_2}$ will be

(A) $\frac{\pi}{2}$
(B) $\frac{3}{\pi}$
(C) $\frac{2}{\sqrt{3}\pi}$
(D) $\frac{\pi}{2\sqrt{2}}$

Answer: (D) $\frac{\pi}{2\sqrt{2}}$ · Official TGCHE final key

Q354 TS EAMCET 2019 · 4 May · Shift 2 MCQ

A particle covers a distance from A to B over a period of time; the distance versus time plot is shown below. Then which of the following is true for the motion of the particle?
(see the figure above)

EdLoop EAPCET

Question Number : 83 Question Id : 7512364883 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A particle covers a distance from A to B over a period of time; the distance versus time plot is shown below. Then which of the following is true for the motion of the particle?

ఒక కణం కొంతకాలంలో A నుండి B మధ్యగల దూరాన్ని గమిస్తుంది: దూరము మరియు కాలం పట్టికను క్రింద చూపినారు. అయినప్పుడు, కణం గమనానికి సంబంధించి, ఈ క్రింది వాటిలో ఏది సరియైనది.



Options :

1. Both average speed and instantaneous speed are always zero.
సరాసరి వడి మరియు తాక్షణిక వడులు రెండూ ఎల్లప్పుడు సున్నా.

2. Average speed is always non zero but instantaneous speed can be zero.
సరాసరి వడి ఎల్లప్పుడు సున్నా కాని తాక్షణిక వడి సున్నా కావచ్చును.

3. Instantaneous speed is always non zero but average speed can be zero.
తాక్షణిక వడి ఎల్లప్పుడూ సున్నా కానిదై ఉండి సరాసరి వడి సున్నా కావచ్చును.

4. Both average speed and instantaneous speed are always non zero.
సరాసరి వడి మరియు తాక్షణిక వడులు రెండూ ఎల్లప్పుడు సున్నా కానిదై ఉండును.

TS EAMCET 2019

(A) Both average speed and instantaneous speed are always zero.
(B) Average speed is always non zero but instantaneous speed can be zero.
(C) Instantaneous speed is always non zero but average speed can be zero.
(D) Both average speed and instantaneous speed are always non zero.

Answer: (B) Average speed is always non zero but instantaneous speed can be zero. · Official TGCHE final key

Q355 TS EAMCET 2019 · 4 May · Shift 2 MCQ

A boy standing on a moving truck throws a projectile such that he is able to catch it back after the truck has moved 100 m. If the truck is moving horizontally along a straight line with constant speed 30 m/s, at what speed (relative to the truck) must the projectile is thrown (Assume $g = 10$ m/s^2)

(A) $\frac{55}{3}$ m/s
(B) $\frac{43}{2}$ m/s
(C) $\frac{50}{3}$ m/s
(D) $\frac{23}{2}$ m/s

Answer: (C) $\frac{50}{3}$ m/s · Official TGCHE final key

Q356 TS EAMCET 2019 · 3 May · Shift 1 MCQ

Ball-1 is dropped from the top of a building from rest. At the same moment, ball-2 is thrown upward towards ball-1 with a speed 14 m/s from a point 21 m below the top of building. How far will the ball-1 have dropped when it passes ball-2. (Assume $g = 10\ \mathrm{m/s^2}$)

(A) $\frac{45}{4}$ m
(B) $\frac{52}{6}$ m
(C) $\frac{37}{2}$ m
(D) $\frac{25}{2}$ m

Answer: (A) $\frac{45}{4}$ m · Official TGCHE final key

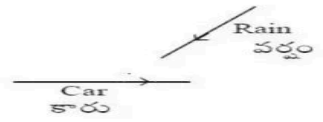
Q357 TS EAMCET 2019 · 3 May · Shift 1 MCQ

Rain is falling at an angle of 30° from the vertical due to the wind with a speed of 40 m/s. A car is travelling horizontally in the direction opposite to the wind, at a speed of 40 m/s. At what angle from the vertical will it experience the rain falling from?
(see the figure above)

Question Number : 84 Question Id : 7512364244 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Rain is falling at an angle of 30° from the vertical due to the wind with a speed of 40 m/s. A car is travelling horizontally in the direction opposite to the wind, at a speed of 40 m/s. At what angle from the vertical will it experience the rain falling from?

వీస్తున్న పవనం వల్ల, నిలువ రేఖ నుంచి 30° కోణం చేస్తూ పడి 40 m/s తో వర్షం పడుతోంది. ఈ పవనానికి వ్యతిరేక దిశలో, క్షితిజ సమాంతరంగా ఒక కారు 40 m/s వడితో ప్రయాణిస్తున్నది. నిలువు రేఖ నుంచి ఏ కోణం వద్ద, పడుతున్న వర్షంకు ఆ కారు లోనవుతుంది?



Options :
1. 30°
2. 60°
3. 90°
4. 120°

(A) 30°
(B) 60°
(C) 90°
(D) 120°

Answer: (B) 60° · Official TGCHE final key

Q358 TS EAMCET 2019 · 3 May · Shift 2 MCQ

Consider a car initially at rest, starts to move along a straight road first with acceleration $5\ \mathrm{m/s^2}$, then with uniform velocity and finally, decelerating at $5\ \mathrm{m/s^2}$, before coming to a stop. Total time taken from start to end is $t = 25$ s. If the average velocity during that time is 72 km/hr, the car moved with uniform velocity for a time of

(A) 15 s
(B) 30 s
(C) 155 s
(D) 2 s

Answer: (A) 15 s · Official TGCHE final key

Q359 TS EAMCET 2019 · 3 May · Shift 2 MCQ

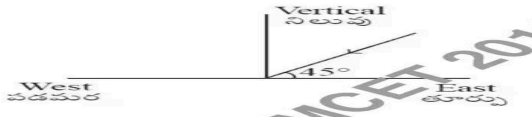
A boy runs on a horizontal road with a speed of 4 m/s while it is raining. He sees that the rain is making an angle θ with the vertical while running from west to east. However, when he runs from east to west, the angle is α. The rain is pouring down at an angle 45° with the vertical and at a speed of 8 m/s as shown in the figure. The ratio $\frac{\tan\theta}{\tan\alpha}$ is

(see the figure above)

Question Number : 84 Question Id : 7512364404 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A boy runs on a horizontal road with a speed of 4 m/s while it is raining. He sees that the rain is making an angle θ with the vertical while running from west to east. However, when he runs from east to west, the angle is α. The rain is pouring down at an angle 45° with the vertical and at a speed of 8 m/s as shown in the figure. The ratio $\frac{\tan\theta}{\tan\alpha}$ is

ఒక బాలుడు వర్షం పడుచున్నప్పుడు క్షితిజ సమాంతర మార్గం గుండా 4 m/s వేగంతో పరుగెత్తుచున్నాడు. బాలుడు పడమర నుండి తూర్పునకు పరుగెత్తునపుడు వర్షం నిలువుతో θ కోణం చేయునట్లు చూశాడు. కాని అతడు తూర్పు నుండి పడమరకు పరుగెత్తినపుడు, ఆ కోణం α గా చూశాడు. నిలువుతో 45° కోణంలో క్రిందకు వర్షం 8 m/s వేగంతో పడుంలో చూసినట్లు కనుగొనుండి. $\frac{\tan\theta}{\tan\alpha}$ నిష్పత్తి విలువ



Options :
1. $(1-\sqrt{2})^2$
2. $(1+\sqrt{2})^2$
3. $(1+\sqrt{2})$
4. $(\sqrt{2}-1)$

(A) $(1-\sqrt{2})^2$
(B) $(1+\sqrt{2})^2$
(C) $(1+\sqrt{2})$
(D) $(\sqrt{2}-1)$

Answer: (B) $(1+\sqrt{2})^2$ · Official TGCHE final key

Q360 TS EAMCET 2019 · 3 May · Shift 2 MCQ

A ball is projected vertically up from ground. Boy 'A' standing at the window of first floor of a nearby building observes that the time interval between the ball crossing him while going up and the ball crossing him while going down is 2 s. Another boy B standing on the second floor notices that time

interval between the ball passing him twice, during up motion and down motion is 1 s. Calculate the difference between the vertical positions of boy B and boy A. (Assume g = 10 m/s^2)

(A) 8.45 m
(B) 3.75 m
(C) 4.25 m
(D) 2.50 m

Answer: (B) 3.75 m · Official TGCHE final key

Q361 TS EAMCET 2019 · 3 May · Shift 2 MCQ

A particle of mass m is moving along a circle of radius R such that its tangential acceleration (a_t) varies with distance covered (x) as $a_t = \alpha x^2$ where α is a constant. The kinetic energy (K) of the particle varies with the distance as $K = \beta x^c$ where β and c are constants. The values of β and c are

(A) $\beta = \frac{m\alpha}{3};\ c = 3$
(B) $\beta = \frac{m\alpha}{4};\ c = 4$
(C) $\beta = \frac{m\alpha}{2};\ c = 4$
(D) $\beta = \frac{m\alpha}{2};\ c = 3$

Answer: (A) $\beta = \frac{m\alpha}{3};\ c = 3$ · Official TGCHE final key

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Q362 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

A car moving with a velocity $6.25\ \text{ms}^{-1}$ is decelerated with $2.5\sqrt{v}\ \text{ms}^{-2}$ ('v' is instantaneous velocity). Time taken by the car to come to rest is

(A) 2 s
(B) 3 s
(C) 2.5 s
(D) 4 s

Answer: (A) 2 s · Official APSCHE final key

Q363 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

A bullet fired from a gun falls at a distance half of its maximum range. The angle of projection of the bullet is

(A) 45°
(B) 60°
(C) 30°
(D) 15°

Answer: (D) 15° · Official APSCHE final key

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Q364 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

A body is projected at an angle of 45° from a point on the ground at a distance of $30\ \mathrm{m}$ from the foot of a vertical pole of height $20\ \mathrm{m}$. The body just crosses the top of the pole and strikes the ground at a distance s from the foot of the pole on the other side of the pole. Then $s =$

(A) $20\ \mathrm{m}$
(B) $30\ \mathrm{m}$
(C) $50\ \mathrm{m}$
(D) $60\ \mathrm{m}$

Answer: (D) $60\ \mathrm{m}$ · Official APSCHE final key

Q365 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

A body travelling along a straight line path travels first half of the distance with a velocity $7\ \mathrm{ms}^{-1}$. During the travel time of the second half of the distance, first half time is travelled with a velocity $14\ \mathrm{ms}^{-1}$ and the second half time is travelled with a velocity $21\ \mathrm{ms}^{-1}$. Then the average velocity of the body during the journey is

(A) $14\ \mathrm{ms}^{-1}$
(B) $10\ \mathrm{ms}^{-1}$
(C) $9\ \mathrm{ms}^{-1}$
(D) $12\ \mathrm{ms}^{-1}$

Answer: (B) $10\ \mathrm{ms}^{-1}$ · Official APSCHE final key

Q366 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

Assertion (A): The range of a projectile is maximum when the angle of projection is 45°.
Reason (R): The range of a projectile depends only on the angle of projection.

(A) Both (A) and (R) are true and (R) is the correct explanation of (A)
(B) Both (A) and (R) are true but (R) is not the correct explanation of (A)
(C) (A) is true but (R) is false
(D) (A) is false but (R) is true

Answer: (C) (A) is true but (R) is false · Official APSCHE final key

Q367 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

A car moving with a certain velocity, jumps from an inclined plane placed at one bank of a river and reaches the other bank by attaining a maximum height of 80 m. If the same car, moving with the same velocity jumps from another inclined plane having different angle of inclination and reaches the same point on the other bank by attaining maximum height of 45 m, then the width of the river is

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(A) 80 m
(B) 60 m
(C) 125 m
(D) 240 m

Answer: (D) 240 m · Official APSCHE final key

Q368 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

Two food packets are thrown with same velocity in the same direction with different angles of projection simultaneously. The angle of projection of one packet is 15°. At the same moment one boy starts running from rest from the point of projection with an acceleration of $10\ \mathrm{ms}^{-2}$ to catch them. If he caught one packet at a distance of $20\ \mathrm{m}$ and other packet in $\frac{1}{2}\ \mathrm{s}$ later the first packet, then the angle of projection of the second packet is (Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

(A) $\frac{1}{2}\sin^{-1}\left(\frac{25}{32}\right)$
(B) $\frac{1}{2}\sin^{-1}\left(\frac{8}{9}\right)$
(C) $\frac{1}{2}\sin^{-1}\left(\frac{7}{8}\right)$
(D) $\frac{1}{2}\sin^{-1}\left(\frac{5}{6}\right)$

Answer: (A) $\frac{1}{2}\sin^{-1}\left(\frac{25}{32}\right)$ · Official APSCHE final key

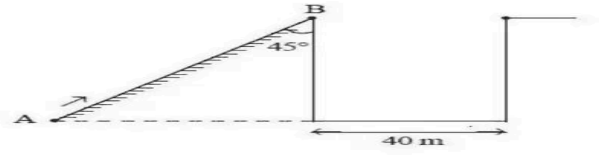
Q369 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

A body is projected up a smooth inclined plane of length $20\sqrt{2}\ \mathrm{m}$ from point A as shown in the figure. The top (B) of the inclined plane is connected to a well of diameter $40\ \mathrm{m}$. If the body just manages to cross the well then the velocity of projection is (Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$) *(see the figure above)*

Question Number : 84 Question Id : 1874634564 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A body is projected up a smooth inclined plane of length $20\sqrt{2}$ m from point A as shown in the figure. The top (B) of the inclined plane is connected to a well of diameter 40 m. If the body just manages to cross the well then the velocity of projection is (Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

$20\sqrt{2}$ m పొడవు గల ఘర్షణ రహిత వాలు తలముపై A బిందువు నుండి ఒక వస్తువును పైకి పటములో చూపినట్లు ప్రక్షిప్తం చేసినారు. వాలుతలం పైకొన (B) 40 m వ్యాసం గల ఒక బావికి తగిలించబడినది. వస్తువు బావి అంచులను తాకుతూ దాటవలెనన్న దాని ప్రక్షిప్త వేగం (గురుత్వ త్వరణం $= 10\ \mathrm{ms}^{-2}$)



Options :
1. $40\ \mathrm{ms}^{-1}$
2. $40\sqrt{2}\ \mathrm{ms}^{-1}$
3. $20\ \mathrm{ms}^{-1}$
4. $20\sqrt{2}\ \mathrm{ms}^{-1}$

(A) $40\ \mathrm{ms}^{-1}$
(B) $40\sqrt{2}\ \mathrm{ms}^{-1}$
(C) $20\ \mathrm{ms}^{-1}$
(D) $20\sqrt{2}\ \mathrm{ms}^{-1}$

Answer: (D) $20\sqrt{2}\ \mathrm{ms}^{-1}$ · Official APSCHE final key

Q370 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

The speed of a particle changes from $\sqrt{5}\,\mathrm{ms}^{-1}$ to $2\sqrt{5}\,\mathrm{ms}^{-1}$ in a time t. If the magnitude of change in its velocity is $5\,\mathrm{ms}^{-1}$, the angle between the initial and final velocities of the particle is

(A) 30°
(B) 45°
(C) 60°
(D) 90°

Answer: (D) 90° · Official APSCHE final key

Q371 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

If the maximum height and range of a projectile are 3 m and 4 m respectively then the velocity of the projectile is (Acceleration due to gravity = $10\,\mathrm{ms}^{-2}$)

(A) $20\sqrt{\frac{6}{5}}\ \mathrm{ms}^{-1}$
(B) $10\sqrt{\frac{3}{2}}\ \mathrm{ms}^{-1}$
(C) $10\sqrt{\frac{2}{3}}\ \mathrm{ms}^{-1}$
(D) $20\sqrt{\frac{5}{6}}\ \mathrm{ms}^{-1}$

Answer: (C) $10\sqrt{\frac{2}{3}}\ \mathrm{ms}^{-1}$ · Official APSCHE final key

Q372 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

A body is projected at an angle other than 90° with the horizontal with some velocity. If the time of ascent of the body is 1 s then the maximum height it can reach is (Acceleration due to gravity = $10\,\mathrm{ms}^{-2}$)

(A) 5 m
(B) 10 m
(C) 2.5 m
(D) 75 m

Answer: (A) 5 m · Official APSCHE final key

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Q373 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

Ship 'A' is moving westwards with a speed of $20\ \mathrm{km\,h^{-1}}$ and another ship 'B' which is at 200 km south of "A" is moving Northwards with a speed of $10\ \mathrm{km\,h^{-1}}$. The time after which the distance between them is shortest and the shortest distance between them are respectively

(A) $4\ \mathrm{h},\ 80\sqrt{5}\ \mathrm{km}$
(B) $50\sqrt{2}\ \mathrm{h},\ \sqrt{10}\ \mathrm{km}$
(C) $100\sqrt{2}\ \mathrm{h},\ 2\sqrt{10}\ \mathrm{km}$
(D) $80\sqrt{5}\ \mathrm{h},\ 4\ \mathrm{km}$

Answer: (A) $4\ \mathrm{h},\ 80\sqrt{5}\ \mathrm{km}$ · Official APSCHE final key

Q374 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

A body is projected at an angle of 60° with the horizontal such that the vertical component of its initial velocity is $40\ \mathrm{ms^{-1}}$. The magnitude of velocity of the projectile at one quarter of its time of flight is nearly
(Acceleration due to gravity $= 10\ \mathrm{ms^{-2}}$)

(A) $3.54\ \mathrm{ms^{-1}}$
(B) $35.40\ \mathrm{ms^{-1}}$
(C) $30.54\ \mathrm{ms^{-1}}$
(D) $34.5\ \mathrm{ms^{-1}}$

Answer: (C) $30.54\ \mathrm{ms^{-1}}$ · Official APSCHE final key

Q375 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

The velocity of an object moving in a straight line path is given as a function of time by $v = 6t - 3t^2$, where v is in $\mathrm{ms^{-1}}$, t is in s. The average velocity of the object between $t = 0$ and $t = 2$ seconds is

(A) 0
(B) $3\ \mathrm{ms^{-1}}$
(C) $2\ \mathrm{ms^{-1}}$
(D) $4\ \mathrm{ms^{-1}}$

Answer: (C) $2\ \mathrm{ms^{-1}}$ · Official APSCHE final key

Q376 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

A gun and a target are at the same horizontal level separated by a distance of 600 m. The bullet is fired from the gun with a velocity of $500\ \mathrm{ms^{-1}}$. In order to hit the target, the gun should be aimed to a height h above the target. The value of h is
(Acceleration due to gravity $= 10\ \mathrm{ms^{-2}}$)

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(A) 2.4 m
(B) 3.6 m
(C) 7.2 m
(D) 10.8 m

Answer: (C) 7.2 m · Official APSCHE final key

Q377 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

A projectile is thrown in the upward direction making an angle of 60° with the horizontal with a velocity of $140\ \mathrm{ms}^{-1}$. Then, the time after which its velocity makes 45° with the horizontal is (Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

(A) 0.5124 s
(B) 51.24 s
(C) 5.124 s
(D) 512.4 s

Answer: (C) 5.124 s · Official APSCHE final key

Q378 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

A body starting from rest at $\mathrm{t} = 0$ moves along a straight line with a constant acceleration. At $\mathrm{t} = 2\ \mathrm{s}$, the body reverses its direction keeping the acceleration same. The body returns to the initial position at $\mathrm{t} = \mathrm{t}_0$, then t_0 is

(A) $4\ \mathrm{s}$
(B) $(4 + 2\sqrt{2})\ \mathrm{s}$
(C) $(2 + 2\sqrt{2})\ \mathrm{s}$
(D) $(4 + 4\sqrt{2})\ \mathrm{s}$

Answer: (B) $(4 + 2\sqrt{2})\ \mathrm{s}$ · Official APSCHE final key

Q379 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

Two boys conducted experiments on projectile motion with stopwatch and noted some readings. As one boy throws a stone in air at some angle with the horizontal, the other boy observes that after 4 s the stone is moving at an angle 30° to the horizontal and after another 2 s it is travelling horizontally. The magnitude of the initial velocity of the stone is (Acceleration due to gravity = $10\ \mathrm{ms}^{-2}$)

(A) $40\sqrt{3}\ \mathrm{ms}^{-1}$
(B) $20\sqrt{3}\ \mathrm{ms}^{-1}$
(C) $10\sqrt{3}\ \mathrm{ms}^{-1}$
(D) $50\sqrt{3}\ \mathrm{ms}^{-1}$

Answer: (A) $40\sqrt{3}\ \mathrm{ms}^{-1}$ · Official APSCHE final key

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Q380 TS EAMCET 2018 · 7 May · Shift 1 MCQ

Consider a vehicle moving with a velocity 54 km/h. At a distance of 400 m from the traffic light brakes are applied. The acceleration of the vehicle, after the application of brakes is $-0.3\ \mathrm{m/s^2}$. The vehicle's position relative to the traffic light is

(A) 25 m
(B) 375 m
(C) 425 m
(D) 30 m

Answer: (A) 25 m · The council's preliminary key

Q381 TS EAMCET 2018 · 7 May · Shift 1 MCQ

Two trains A and B travel in two parallel rail tracks in opposite direction with speed v_1 and v_2, respectively. They take 4 sec to pass each other at this speed. If the speed of train A is increased by 50%, then they take 3 sec to pass each other. The ratio v_1/v_2 is

(A) 0.5
(B) 1.5
(C) 2.0
(D) 2.5

Answer: (C) 2.0 · The council's preliminary key

Q382 TS EAMCET 2018 · 7 May · Shift 1 MCQ

A small ball is thrown at an angle 45° to the horizontal with an initial velocity of $2\sqrt{2}$ m/sec. The magnitude of mean velocity averaged over the first 2 seconds is [Assume acceleration due to gravity, $g = 10\ \mathrm{m/s^2}$]

(A) 7.0 m/s
(B) 8.2 m/s
(C) 7.8 m/s
(D) 9 m/s

Answer: (B) 8.2 m/s · The council's preliminary key

Q383 TS EAMCET 2018 · 7 May · Shift 1 MCQ

The position vector of a particle moving in a plane is given by $\vec{r} = a\cos\omega t\,\hat{i} + b\sin\omega t\,\hat{j}$ where $\hat{i}$ and $\hat{j}$ are the unit vectors along the rectangular axes X and Y ; a, b and ω are constants and t is the time. The acceleration of the particle is directed along the vector

(A) $-a\hat{i}+b\hat{j}$
(B) $b\hat{i}+a\hat{j}$
(C) $-\vec{r}$
(D) $\frac{d\vec{r}}{dt}$

Answer: (C) $-\vec{r}$ · The council's preliminary key

Q384 TS EAMCET 2018 · 7 May · Shift 1 MCQ

A 1.5 kg ball is shot upward at an angle of 34° to the horizontal with an initial speed of 20 m/s. The maximum height the ball reaches is (Use $\cos 34^\circ = 0.83$ or $\sin 34^\circ = 0.56$)

(A) 6.3 m
(B) 9.4 m
(C) 13.8 m
(D) 11.2 m

Answer: (A) 6.3 m · The council's preliminary key

Q385 TS EAMCET 2018 · 5 May · Shift 1 MCQ

A stone is dropped from a height of 100 m while another one is projected vertically upwards from the ground with a velocity of 25 m/s at the same time. The time in seconds after which they will have the same height is (acceleration due to gravity $g = 10\ \mathrm{ms}^{-2}$)

(A) 4
(B) 5
(C) 6
(D) 7

Answer: (A) 4 · The council's preliminary key

Q386 TS EAMCET 2018 · 5 May · Shift 1 MCQ

A car starts from rest and moves with a constant acceleration of $5\ \mathrm{m/s^2}$ for 10 seconds before the driver applies the brake. It then decelerates for 5 seconds before coming to rest. The average speed of the car over the entire journey of the car is

(A) $23\ \mathrm{m/s}$
(B) $30\ \mathrm{m/s}$
(C) $33\ \mathrm{m/s}$
(D) $25\ \mathrm{m/s}$

Answer: (D) $25\ \mathrm{m/s}$ · The council's preliminary key

Q387 TS EAMCET 2018 · 5 May · Shift 1 MCQ

A particle moves in a circle with speed v varying with time as $v(t) = 2t$. The total acceleration of the particle after it completes 2 rounds of cycle is

(A) 16π
(B) $2\sqrt{1+64\pi^2}$
(C) $2\sqrt{1+49\pi^2}$
(D) 14π

Answer: (B) $2\sqrt{1+64\pi^2}$ · The council's preliminary key

Q388 TS EAMCET 2018 · 5 May · Shift 1 MCQ

A small object is thrown at an angle 45° to the horizontal with an initial velocity $\vec{v}_0$. The velocity is averaged for first $\sqrt{2}$ s. and the magnitude of average velocity comes out to be same as that of initial velocity, i.e. $|\vec{v}_o|$. The magnitude $|\vec{v}_o|$ will be
(Take $g = 10\ \mathrm{m/s^2}$)

(A) $3\ \mathrm{m/s}$
(B) $3\sqrt{2}\ \mathrm{m/s}$
(C) $4\ \mathrm{m/s}$
(D) $5\ \mathrm{m/s}$

Answer: (D) $5\ \mathrm{m/s}$ · The council's preliminary key

Q389 TS EAMCET 2018 · 5 May · Shift 1 MCQ

Consider a wheel rotating around a fixed axis. If the rotation angle 'θ' varies with time as $\theta = at^2$, the total acceleration of a point A on the rim of the wheel is (v being the tangential velocity)

(A) $\frac{v}{t}\sqrt{1+4a^2t^4}$
(B) $\frac{v}{t}$
(C) $\frac{v}{t}\left(1+4a^2t^4\right)$
(D) $\sqrt{(1+4a^2t^4)}$

Answer: (A) $\frac{v}{t}\sqrt{1+4a^2t^4}$ · The council's preliminary key

Q390 TS EAMCET 2018 · 5 May · Shift 2 MCQ

A vehicle starts moving in a straight line with an acceleration, $a = 4\ \mathrm{m/s^2}$, with initial velocity equal to zero. After accelerating for time t_1, the vehicle then moves uniformly for t_2 and then finally decelerates for time t_1 eventually coming to a stop. The total time taken during the motion is $10\ \mathrm{s}$ and the average velocity during the motion is $5.1\ \mathrm{m/s}$. The time taken by the vehicle during acceleration is

(A) $2\ \mathrm{s}$
(B) $2.5\ \mathrm{s}$
(C) $1.5\ \mathrm{s}$
(D) $1.8\ \mathrm{s}$

Answer: (C) $1.5\ \mathrm{s}$ · The council's preliminary key

Q391 TS EAMCET 2018 · 5 May · Shift 2 MCQ

A body travels in a straight line from point A to point B with an initial velocity zero and uniform acceleration, covering $1\ \mathrm{m}$ during the first second and $39\ \mathrm{m}$ during the last second. The distance between A and B in m is

(A) 50
(B) 100
(C) 390
(D) 400

Answer: (D) 400 · The council's preliminary key

Q392 TS EAMCET 2018 · 5 May · Shift 2 MCQ

A cricket player can throw a ball with an initial speed of $30\ \mathrm{m/s}$. What is the maximum range the player can throw the ball? (Neglect air resistance. Take $g = 10\ \mathrm{m/s^2}$.)

(A) $100\ \mathrm{m}$
(B) $90\ \mathrm{m}$
(C) $80\ \mathrm{m}$
(D) $90\sqrt{2}\ \mathrm{m}$

Answer: (B) $90\ \mathrm{m}$ · The council's preliminary key

Q393 TS EAMCET 2018 · 5 May · Shift 2 MCQ

A particle moves in X-Y plane with x and y varying with time t as $x(t) = 5t$, $y(t) = 5t(27 - t^2)$. At what time in seconds the direction of velocity and acceleration will be perpendicular to each other.

(A) $5\sqrt{\frac{27}{2}}$
(B) 5
(C) $5\sqrt{12}$
(D) 3

Answer: (D) 3 · The council's preliminary key

Q394 TS EAMCET 2018 · 5 May · Shift 2 MCQ

A bullet enters in a piece of wood with velocity v_0. The resistive force acting on the bullet in the wood is proportional to $v^{1/3}$. If the total distance travelled by the bullet is proportional to $(v_0)^{\beta}$, then the value of β is

(A) $\frac{2}{3}$
(B) $\frac{5}{3}$
(C) $\frac{4}{3}$
(D) $-\frac{1}{3}$

Answer: (B) $\frac{5}{3}$ · The council's preliminary key

Q395 TS EAMCET 2018 · 4 May · Shift 1 MCQ

A car moves in positive Y-direction with velocity 'v' proportional to distance travelled y as $v(y) \propto y^{\beta}$, where β is a positive constant. The car covers a distance L with average velocity $\langle v \rangle$ proportional to L as $\langle v \rangle \propto L^{1/3}$. The constant β is given as

(A) $\frac{1}{4}$
(B) $\frac{1}{3}$
(C) $\frac{2}{3}$
(D) $\frac{1}{2}$

Answer: (B) $\frac{1}{3}$ · The council's preliminary key

Q396 TS EAMCET 2018 · 4 May · Shift 1 MCQ

Consider a particle moving along the positive direction of X-axis. The velocity of the particle is given by $v = \alpha\sqrt{x}$ (α is a positive constant). At time $t = 0$, if the particle is located at $x = 0$, the time dependence of the velocity and the acceleration of the particle are, respectively.

(A) $\frac{\alpha^2}{2}t$ and $\frac{\alpha^2}{2}$
(B) $\alpha^2 t$ and α^2
(C) $\frac{\alpha}{2}t$ and $\frac{\alpha}{2}$
(D) $\frac{\alpha^2}{4}t$ and $\frac{\alpha^2}{4}$

Answer: (A) $\frac{\alpha^2}{2}t$ and $\frac{\alpha^2}{2}$ · The council's preliminary key

Q397 TS EAMCET 2018 · 4 May · Shift 1 MCQ

The magnitude of acceleration and velocity of a particle moving in a plane, whose position vector $\vec{r} = 3t^2\hat{i} + 2t\,\hat{j} + \hat{k}$ at $t = 2$ sec. are, respectively

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(A) $\sqrt{148}, 6$
(B) $\sqrt{144}, 6$
(C) $\sqrt{13}, 3$
(D) $\sqrt{14}, 3$

Answer: (A) $\sqrt{148}, 6$ · The council's preliminary key

Q398 TS EAMCET 2018 · 4 May · Shift 1 MCQ

Two objects are located at height 10 m above the ground. At some point of time, the objects are thrown with initial velocity $2\sqrt{2}$ m/s at an angle 45° and 135° with the positive X-axis respectively. Assuming $g = 10\ \mathrm{m/s^2}$, the velocity vectors will be perpendicular to each other at time equal to

(A) 0.2 s
(B) 0.4 s
(C) 0.6 s
(D) 0.8 s

Answer: (B) 0.4 s · The council's preliminary key

Q399 TS EAMCET 2018 · 4 May · Shift 1 MCQ

An object moves along the circle with normal acceleration proportional to t^α, where t is the time and α is a positive constant. The power developed by all the forces acting on the object will have time dependence proportional to

(A) $t^{\alpha-1}$
(B) $t^{\alpha/2}$
(C) $t^{\frac{1+\alpha}{2}}$
(D) $t^{2\alpha}$

Answer: (A) $t^{\alpha-1}$ · The council's preliminary key

Q400 TS EAMCET 2018 · 4 May · Shift 2 MCQ

An object moves in a straight line with deceleration whose magnitude varies with velocity as $3v^{2/3}$. If at an initial point, the velocity is 8 m/sec, then the distance travelled by the object before it stops is

(A) 2 m
(B) 4 m
(C) 6 m
(D) 8 m

Answer: (B) 4 m · The council's preliminary key

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Q401 TS EAMCET 2018 · 4 May · Shift 2 MCQ

A particle starts from origin at time $t = 0$ and moves in positive X-direction. Its velocity $\vec{v}$ varies with time as $\vec{v} = 10t\,\hat{i}$ cm/sec. The distance covered by the particle in 8 sec. will be

(A) 320 cm
(B) 80 cm
(C) 120 cm
(D) 640 cm

Answer: (A) 320 cm · The council's preliminary key

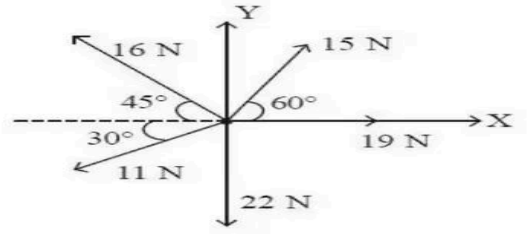
Q402 TS EAMCET 2018 · 4 May · Shift 2 MCQ

Consider an object kept at the center, in the XY plane, on which five coplanar forces act as shown in the figure. The resultant force on the object is
(see the figure above)

Question Number : 85 Question Id : 4928631845 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct : 1 Wrong : 0

Consider an object kept at the center, in the XY plane, on which five coplanar forces act a shown in the figure. The resultant force on the object is

పటములో చూపిన విధంగా XY తలంలో కేంద్రము వద్ద ఉంచిన వస్తువుపై ఐదు సమతల బలాల పనిచేస్తాయి. వస్తువుపై గల ఫలిత బలం



Options :
1. 6.5 N, 330°
2. 6.5 N, 300°
3. 6.5 N, 30°
4. 5.7 N, 331°

(A) 6.5 N, 330°
(B) 6.5 N, 300°
(C) 6.5 N, 30°
(D) 5.7 N, 331°

Answer: (A) 6.5 N, 330° · The council's preliminary key

Q403 TS EAMCET 2018 · 4 May · Shift 2 MCQ

Consider an object making uniform motion around a circle of radius 5 m with tangential velocity $2\,\mathrm{ms}^{-1}$. The time it takes to complete 2 revolutions and the magnitude of acceleration respectively are

(A) 0.2π s & $0.8\ \text{ms}^{-2}$
(B) 0.5π s & $1.0\ \text{ms}^{-2}$
(C) 10π s & $0.8\ \text{ms}^{-2}$
(D) 5π s & $5\ \text{ms}^{-2}$

Answer: (C) 10π s & $0.8\ \text{ms}^{-2}$ · The council's preliminary key

Q404 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

The motion of a particle along a straight line is described by the function $x = (2t-3)^2$ where x is in metres and t is in seconds. The acceleration of the particle at $t = 2$ s is

(A) $1\ \text{ms}^{-2}$
(B) $4\ \text{ms}^{-2}$
(C) $8\ \text{ms}^{-2}$
(D) $7\ \text{ms}^{-2}$

Answer: (C) $8\ \text{ms}^{-2}$ · The council's preliminary key

Q405 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

A particle moves in the x-y plane with velocity $\vec{V} = x\hat{i} + yt\,\hat{j}$; At $t = \dfrac{x\sqrt{3}}{y}$, the magnitudes of tangential and normal accelerations, respectively are

(A) $\dfrac{\sqrt{3}y}{2}, \dfrac{y}{2}$
(B) $\dfrac{\sqrt{2}y}{3}, \dfrac{\sqrt{3}y}{2}$
(C) $\dfrac{\sqrt{3}y}{2}, \dfrac{5y}{2}$
(D) $2\sqrt{3}\,y, \dfrac{11y}{\sqrt{3}}$

Answer: (A) $\dfrac{\sqrt{3}y}{2}, \dfrac{y}{2}$ · The council's preliminary key

Q406 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

Assertion (A) : The speed of a body in uniform circular motion is constant.
Reason (R) : In uniform circular motion, the acceleration of the body is constant.

(A) Both (A) and (R) are true and (R) is the correct explanation of (A)
(B) Both (A) and (R) are true but (R) is not the correct explanation of (A)
(C) (A) is true but (R) is false
(D) (A) is false but (R) is true

Answer: (C) (A) is true but (R) is false · The council's preliminary key

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Q407 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

Assertion (A) : The displacement of a vertically projected body during last second of its upward motion is $\frac{g}{2}$.
Reason (R) : For a vertically projected body the acceleration decreases gradually and becomes $\frac{g}{2}$ during the last second of upward motion.

(A) Both (A) and (R) are true and (R) is the correct explanation of (A)
(B) Both (A) and (R) are true but (R) is not the correct explanation of (A)
(C) (A) is true but (R) is false
(D) (A) is false but (R) is true

Answer: (C) (A) is true but (R) is false · The council's preliminary key

Q408 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

A body is projected with a velocity $10\ \mathrm{ms}^{-1}$ at an angle of projection 60° from a point 'O'. If it reaches a point A such that OA is $3\sqrt{3}\ \mathrm{m}$ and OA makes 45° with the horizontal, then the time taken by the body to reach the point A is

(A) $0.21\ \mathrm{s}$
(B) $0.42\ \mathrm{s}$
(C) $0.52\ \mathrm{s}$
(D) $0.64\ \mathrm{s}$

Answer: (D) $0.64\ \mathrm{s}$ · Checked by our team

Q409 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

A large number of bullets are fired in all directions with the same speed 'u'. The maximum area of the ground on which these bullets spread is
(g - acceleration due to gravity)

(A) $\frac{\pi u^2}{g}$
(B) $\frac{\pi u^4}{g^2}$
(C) $\frac{\pi u^2}{g^4}$
(D) $\frac{\pi u}{g}$

Answer: (B) $\frac{\pi u^4}{g^2}$ · The council's preliminary key

Q410 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

A body is projected vertically upwards with a velocity 'u' from the top of a tower. Time taken by it to reach the ground is 'n' times the time taken by it to reach the highest point in its path. Height of the tower is

(A) $\frac{nu^2(n-1)}{2g}$
(B) $\frac{nu^2(n-2)}{g}$
(C) $\frac{nu^2(n-2)}{2g}$
(D) $\frac{u^2}{2g}(n+1)$

Answer: (C) $\frac{nu^2(n-2)}{2g}$ · The council's preliminary key

Q411 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

A body is projected horizontally from the top of a tower of height 180 m with a velocity of $20\ \mathrm{ms}^{-1}$. If acceleration due to gravity is $10\ \mathrm{ms}^{-2}$ then match the following.
List - I
A) Velocity of the body after 1 second (in ms^{-1})
B) Horizontal displacement of the body after 1 second (in meters)
C) Vertical displacement of the body after 1 second (in meters)
D) Vertical velocity of the body after 1 second (in ms^{-1})
List - II
I) 5
II) 20
III) 10
IV) 22.4
The correct answer is

(A) A-IV, B-II, C-III, D-I
(B) A-I, B-II, C-III, D-IV
(C) A-IV, B-II, C-I, D-III
(D) A-II, B-IV, C-I, D-III

Answer: (C) A-IV, B-II, C-I, D-III · The council's preliminary key

Q412 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

Two towers A and B, each of height 20 m are situated a distance 200 m apart. A body thrown horizontally from the top of the tower A with a velocity $20\ \mathrm{ms}^{-1}$ towards the tower B hits the ground at point P and another body thrown horizontally from the top of tower B with a velocity $30\ \mathrm{ms}^{-1}$ towards the tower A hits the ground at point Q. If a car starting from rest from P reaches Q in 10 seconds, the acceleration of the car is _____
(Acceleration due to gravity = $10\ \mathrm{ms}^{-2}$)

(A) $1\ \mathrm{ms}^{-2}$
(B) $2\ \mathrm{ms}^{-2}$
(C) $3\ \mathrm{ms}^{-2}$
(D) $4\ \mathrm{ms}^{-2}$

Answer: (B) $2\ \mathrm{ms}^{-2}$ · The council's preliminary key

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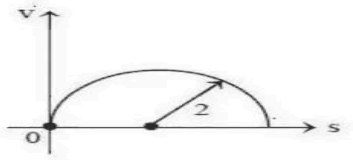
Q413 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

The velocity - displacement (v-s) graph shows the motion of a particle moving in a straight line. Velocity - displacement graph is a circle of radius 2 m and centre is at (2,0) m. The value of acceleration for this particle at a point $(2-\sqrt{2},\sqrt{2})$ m will be _____ ms^{-2} *(see the figure above)*

Question Number : 82 Question Id : 4557344242 Question Type : MCQ Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The velocity - displacement (v-s) graph shows the motion of a particle moving in a straight line. Velocity - displacement graph is a circle of radius 2 m and centre is at (2,0) m. The value of acceleration for this particle at a point $(2-\sqrt{2},\sqrt{2})$ m will be _____ ms^{-2}

వేగం-స్థానభ్రంశం (v-s) గ్రాఫ్ సరళరేఖ వెంబడి చలిస్తున్న కణం యొక్క చలనాన్ని తెలియజేస్తుంది. వేగం-స్థానభ్రంశం గ్రాఫ్ 2 m వ్యాసార్ధం మరియు (2,0) m బిందువు వద్ద కేంద్రం గల ఒక వృత్తం, అయితే $(2-\sqrt{2},\sqrt{2})$ m బిందువు వద్ద ఈ కణంనకు త్వరణం విలువ _____ ms^{-2}



Options :
1. $\sqrt{2}$
2. 4
3. 2
4. 3

(A) $\sqrt{2}$
(B) 4
(C) 2
(D) 3

Answer: (A) $\sqrt{2}$ · The council's preliminary key

Q414 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

A body is projected horizontally from the top of a tall tower with a velocity of $30\ \mathrm{ms}^{-1}$. At time t_1, its horizontal and vertical components of the velocity are equal and at time t_2, its horizontal and vertical displacements are equal. Then $(t_2 - t_1) =$
$(g = 10\ \mathrm{ms}^{-2})$

(A) 1 s
(B) 1.5 s
(C) 2 s
(D) 3 s

Answer: (D) 3 s · The council's preliminary key

Q415 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

A particle is projected at an angle of 60° with the horizontal from the ground with a velocity $10\sqrt{3}\ \text{ms}^{-1}$. The angle between velocity vector after 2 s and initial velocity vector is ($g = 10\ \text{ms}^{-2}$)

(A) 0°
(B) 30°
(C) 60°
(D) 90°

Answer: (D) 90° · The council's preliminary key

Q416 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

Assertion (A) : The velocity of a projectile at a point on its trajectory is equal to the slope at that point.
Reason (R) : The velocity vector at a point is always along the tangent to the trajectory at that point.

(A) Both (A) and (R) are true and (R) is the correct explanation of (A)
(B) Both (A) and (R) are true but (R) is not the correct explanation of (A)
(C) (A) is true but (R) is false
(D) (A) is false but (R) is true

Answer: (D) (A) is false but (R) is true · The council's preliminary key

Q417 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

A body is projected from the ground at an angle of $\tan^{-1}\left(\frac{8}{7}\right)$ with the horizontal. The ratio of the maximum height attained by it to its range is

(A) $8:7$
(B) $4:7$
(C) $2:7$
(D) $1:7$

Answer: (C) $2:7$ · The council's preliminary key

Q418 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

A body is projected with a speed 'u' at an angle 'θ' with the horizontal. The radius of curvature of the trajectory when it makes an angle $\left(\frac{\theta}{2}\right)$ with the horizontal is
(g - acceleration due to gravity)

(A) $\frac{u^2 \cos^2\theta \sec^3(\theta/2)}{\sqrt{3}g}$
(B) $\frac{u^2 \cos^2\theta \sec^3(\theta/2)}{2g}$
(C) $\frac{2u^2 \cos^3\theta \sec^2(\theta/2)}{g}$
(D) $\frac{u^2 \cos^2\theta \sec^3(\theta/2)}{g}$

Answer: (D) $\frac{u^2 \cos^2\theta \sec^3(\theta/2)}{g}$ · The council's preliminary key

Q419 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

Assertion (A) : The angle between acceleration and velocity of a body in one dimensional motion is always zero.
Reason (R) : One dimensional motion is along a straight line.

(A) Both (A) and (R) are true and (R) is the correct explanation of (A)
(B) Both (A) and (R) are true but (R) is not the correct explanation of (A)
(C) (A) is true but (R) is false
(D) (A) is false but (R) is true

Answer: (D) (A) is false but (R) is true · The council's preliminary key

Q420 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

A projectile is given an initial velocity of $(\hat{i} + 2\hat{j})\ \mathrm{ms}^{-1}$. The equation of its path is $(g = 10\ \mathrm{ms}^{-2})$

(A) $y = 2x - 5x^2$
(B) $y = x - 5x^2$
(C) $4y = 2x - 5x^2$
(D) $y = 2x - 25x^2$

Answer: (A) $y = 2x - 5x^2$ · The council's preliminary key

Q421 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

A body projected with some velocity at an angle 45° with the horizontal from the origin in X-Y plane passes through a point at (4, 3) m. Its horizontal range is

(A) $10\ \mathrm{m}$
(B) $14\ \mathrm{m}$
(C) $18\ \mathrm{m}$
(D) $16\ \mathrm{m}$

Answer: (D) $16\ \mathrm{m}$ · The council's preliminary key

Q422 TS EAMCET 2017 · 12 May · Offline MCQ

A swimmer wants to cross a 200 m wide river which is flowing at a speed of 2 m/s. The velocity of the swimmer with respect to the river is 1 m/s. How far from the point directly opposite to the starting

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point does the swimmer reach the opposite bank?

(A) 200 m
(B) 400 m
(C) 600 m
(D) 800 m

Answer: (B) 400 m · The council's preliminary key

Q423 TS EAMCET 2017 · 12 May · Offline MCQ

An object is thrown vertically upward with a speed of 30 m/s. The velocity of the object half-a-second before it reaches the maximum height is

(A) 4.9 m/s
(B) 9.8 m/s
(C) 19.6 m/s
(D) 25.1 m/s

Answer: (A) 4.9 m/s · The council's preliminary key

Q424 TS EAMCET 2017 · 12 May · Offline MCQ

Consider the motion of a particle described by $x = a\cos t$, $y = a\sin t$ and $z = t$. The trajectory traced by the particle as a function of time is

(A) Helix
(B) Circular
(C) Elliptical
(D) Straight line

Answer: (A) Helix · The council's preliminary key

Q425 TS EAMCET 2017 · 12 May · Offline MCQ

A ball is thrown at a speed of $20\ \mathrm{m/s}$ at an angle of 30° with the horizontal. The maximum height reached by the ball is (use $g = 10\ \mathrm{m/s^2}$)

(A) $2\ \mathrm{m}$
(B) $3\ \mathrm{m}$
(C) $4\ \mathrm{m}$
(D) $5\ \mathrm{m}$

Answer: (D) $5\ \mathrm{m}$ · The council's preliminary key

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Q426 TS EAMCET 2017 · 12 May · Offline MCQ

The deceleration of a car traveling on a straight highway is a function of its instantaneous velocity 'v' given by $w = a\sqrt{v}$, where 'a' is a constant. If the initial velocity of the car is $60\ \mathrm{km/hr}$, the distance the car will travel and the time it takes before it stops are

(A) $\frac{2}{3}\ \mathrm{m},\ \frac{1}{2}\ \mathrm{s}$
(B) $\frac{3}{2a}\ \mathrm{m},\ \frac{1}{2a}\ \mathrm{s}$
(C) $\frac{3a}{2}\ \mathrm{m},\ \frac{a}{2}\ \mathrm{s}$
(D) $\frac{2}{3a}\ \mathrm{m},\ \frac{2}{a}\ \mathrm{s}$

Answer: (D) $\frac{2}{3a}\ \mathrm{m},\ \frac{2}{a}\ \mathrm{s}$ · The council's preliminary key

Q427 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

A bird is tossing (flying to and pro) between two cars moving towards each other on a straight road. One car has speed of $54\ \mathrm{kmh^{-1}}$ while the other has the speed of $36\ \mathrm{kmh^{-1}}$. The bird starts moving from first car towards the other and is moving with the speed of $36\ \mathrm{kmh^{-1}}$ when the two cars were separated by 36 km. The total distance covered by the bird before the cars meet each other is

(A) $1440\ \mathrm{m}$
(B) $24400\ \mathrm{m}$
(C) $244\ \mathrm{m}$
(D) $14400\ \mathrm{m}$

Answer: (D) $14400\ \mathrm{m}$ · The council's preliminary key

Q428 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

A body is projected from the top of a tower with a velocity $\vec{u} = 3\hat{i} + 4\hat{j} + 5\hat{k}\ \mathrm{ms^{-1}}$, where $\hat{i}$, $\hat{j}$ and $\hat{k}$ are unit vectors along east, north and vertically upwards respectively. If the height of the tower is 30 m, horizontal range of the body on the ground is ($g = 10\ \mathrm{ms^{-2}}$)

(A) $12\ \mathrm{m}$
(B) $9\ \mathrm{m}$
(C) $25\ \mathrm{m}$
(D) $15\ \mathrm{m}$

Answer: (D) $15\ \mathrm{m}$ · The council's preliminary key

Q429 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

Equation of a projectile is given by $y = Px - Qx^2$ where P, Q are constants. The ratio of maximum height to Range of the projectile is

(A) $\frac{P^2}{Q}$
(B) $4P$
(C) $\frac{P}{4}$
(D) $\frac{Q^2}{2P}$

Answer: (C) $\frac{P}{4}$ · The council's preliminary key

Q430 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

The distance covered by a stone dropped from the top of a building in the last second of its motion is 0.36 times the total distance travelled by it. The height of the building is (acceleration due to gravity $= 9.8\ \mathrm{ms}^{-2}$)

(A) $98.6\ \mathrm{m}$
(B) $78.4\ \mathrm{m}$
(C) $122.5\ \mathrm{m}$
(D) $245\ \mathrm{m}$

Answer: (C) $122.5\ \mathrm{m}$ · The council's preliminary key

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Q431 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

A body is projected into vertical X-Y plane with X-axis along horizontal and Y-axis along vertical with an initial velocity $(10\hat{i} + p\hat{j})$. If the maximum height reached by the body is 50% of its range, then the value of p is

(A) 20
(B) 10
(C) 5
(D) 2

Answer: (A) 20 · The council's preliminary key

Q432 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

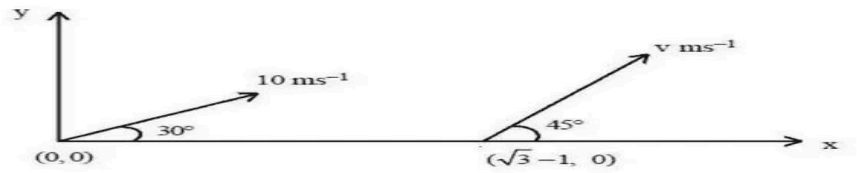
Two bodies are projected from points $(0, 0)$ and $(\sqrt{3} - 1, 0)$ with velocities $10\ \mathrm{ms}^{-1}$ and $v\ \mathrm{ms}^{-1}$ respectively, as shown in the figure. The time after which they collide in space is _____

(see the figure above)

Question Number : 84 Question Id : 1017174724 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Two bodies are projected from points (0, 0) and $(\sqrt{3}-1,\ 0)$ with velocities 10 ms^{-1} an v ms^{-1} respectively, as shown in the figure. The time after which they collide in space i _____

రెండు వస్తువులను (0, 0) మరియు $(\sqrt{3}-1,\ 0)$ బిందువుల నుండి వరుసగా 10 ms^{-1} మరియు v ms^{-1} వేగాలతో పటంలో చూపినట్లుగా ప్రక్షిప్తం చేయబడినవి. అయితే అవి అంతరాళములో ఢీకొనుటక పట్టిన కాలం _____



Options :
1. 0.8 s
2. 0.6 s
3. 0.4 s
4. 0.2 s

(A) 0.8 s

(B) 0.6 s

(C) 0.4 s

(D) 0.2 s

Answer: (D) 0.2 s · The council's preliminary key

Q433 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

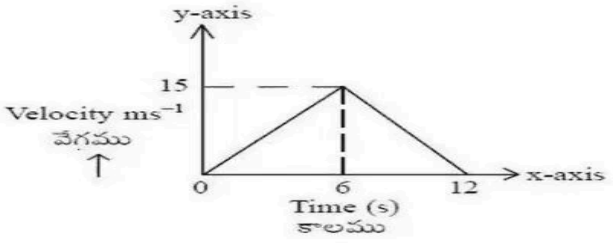
The velocity and time graph for a particle moving in a straight line is shown in the figure. Then, the average velocity between t = 4 s and t = 6 s is _____

(see the figure above)

Question Number : 82 Question Id : 1017174242 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The velocity and time graph for a particle moving in a straight line is shown in the figur Then, the average velocity between t = 4 s and t = 6 s is _____

ఒక సరళరేఖలో చలించే ఒక కణం యొక్క వేగము మరియు కాలం గ్రాఫ్ పటంలో చూపబడినది. అయిన t = 4 s మరియు t = 6 s ల మధ్య సగటు వేగము



Options :
1. 10.5 ms^{-1}
2. 12.5 ms^{-1}
3. 7.5 ms^{-1}
4. 9.5 ms^{-1}

(A) $10.5\ \text{ms}^{-1}$

(B) $12.5\ \text{ms}^{-1}$

(C) $7.5\ \text{ms}^{-1}$

(D) $9.5\ \text{ms}^{-1}$

Answer: (B) $12.5\ \text{ms}^{-1}$ · The council's preliminary key

Q434 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

The ratio of minimum kinetic energies of two projectiles of same mass is 4 : 1 and the ratio of maximum heights attained by them is 4 : 1. Then the ratio of their ranges is _____

(A) 2 : 1

(B) 8 : 1

(C) 16 : 1

(D) 4 : 1

Answer: (D) 4 : 1 · The council's preliminary key

Q435 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

The equation of motion of a projectile is $y = ax - bx^2$, where a, b are constants. Match the column - I with column - II

Column - I

i) The initial velocity of projection

ii) The horizontal range of projectile

iii) The maximum height attained by projectile

iv) The time of flight of projectile

Column - II

a) $\frac{a}{b}$

b) $a\sqrt{\frac{2}{bg}}$

c) $\frac{a^2}{4b}$

d) $\sqrt{\frac{g(1+a^2)}{2b}}$

The correct answer is

(A) i-a, ii-b, iii-c, iv-d

(B) i-d, ii-a, iii-b, iv-c

(C) i-d, ii-a, iii-c, iv-b

(D) i-a, ii-d, iii-c, iv-b

Answer: (C) i-d, ii-a, iii-c, iv-b · The council's preliminary key

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Q436 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

Assertion (A): When a vehicle takes a turn on the road, it travels along a curved path.
Reason (R): In a curved path, velocity of vehicle remains same.

(A) Both (A) and (R) are true and (R) is the correct explanation of (A)
(B) Both (A) and (R) are true and (R) is not the correct explanation of (A)
(C) (A) is true, but (R) is not true
(D) (A) is not true, but (R) is true

Answer: (C) (A) is true, but (R) is not true · The council's preliminary key

Q437 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

A stone is dropped from the top of a tall building and after 2 seconds another stone is thrown vertically downwards with a velocity $5\ \text{ms}^{-1}$ from the same point. Then the distance from the top of the building at which second stone overtakes the first is _____ ($g = 10\ \text{ms}^{-2}$)

(A) $0.222\ \text{m}$
(B) $2.22\ \text{m}$
(C) $22.2\ \text{m}$
(D) $222\ \text{m}$

Answer: (B) $2.22\ \text{m}$ · The council's preliminary key

Q438 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

A body is projected with a velocity $(\hat{i} + 2\hat{j})\ \text{ms}^{-1}$, where $\hat{i}$ is along the horizontal and $\hat{j}$ vertically upward. Then the equation of its trajectory is ($g = 10\ \text{ms}^{-2}$)

(A) $y = x - 5x^2$
(B) $y = 2x - 5x^2$
(C) $y = 2x + 5x^2$
(D) $y = x + 5x^2$

Answer: (B) $y = 2x - 5x^2$ · The council's preliminary key

Q439 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

A projectile is thrown with a velocity of $10\sqrt{2}\ \text{ms}^{-1}$ at an angle of 45° with the horizontal. The time interval between the moments when the speeds are $\sqrt{125}\ \text{ms}^{-1}$ is ($g = 10\ \text{ms}^{-2}$)

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(A) $0.5\ \text{s}$
(B) $1.5\ \text{s}$
(C) $2\ \text{s}$
(D) $1.0\ \text{s}$

Answer: (D) $1.0\ \text{s}$ · The council's preliminary key

Q440 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

A stone is dropped from the top of a tower of height $h = 60\ \text{m}$. Simultaneously another stone is projected vertically upwards from the foot of the tower. They meet at a height $\frac{2h}{3}$ from the ground level. The initial velocity of the stone projected upwards is ($g = 10\ \text{ms}^{-2}$)

(A) $20\ \text{ms}^{-1}$
(B) $60\ \text{ms}^{-1}$
(C) $10\ \text{ms}^{-1}$
(D) $30\ \text{ms}^{-1}$

Answer: (D) $30\ \text{ms}^{-1}$ · The council's preliminary key

Q441 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

A body is projected at an angle of 45° with the horizontal with a velocity of $60\sqrt{2}\ \text{ms}^{-1}$. Then the angle made by its velocity with the horizontal after 6 s is

(A) 45°
(B) 0°
(C) 30°
(D) 60°

Answer: (B) 0° · The council's preliminary key

Q442 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

The top of a smooth inclined plane of length $20\sqrt{2}\ \text{m}$ is connected to the edge of a well of diameter 40 m making an angle 45° as shown in figure. A body is projected along the inclined plane with a velocity 'u'. If the body crosses the well without falling in it then the minimum value of 'u' is ($g = 10\ \text{ms}^{-2}$)

(see the figure above)

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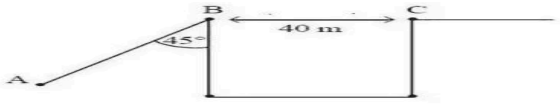
Question Number : 84 Question Id : 10171173764 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The top of a smooth inclined plane of length $20\sqrt{2}$ m is connected to the edge of a well of diameter 40 m making an angle 45° as shown in figure. A body is projected along the inclined plane with a velocity 'u'. If the body crosses the well without falling in it then the minimum value of 'u' is ($g = 10\ ms^{-2}$)

$20\sqrt{2}$ m పొడవుగల నునుపైన వాలుతలం పైభాగం 40 m వ్యాసం గల ఒక నూతి అంచుకు 45° కోణంతో పటంలో చూపిన విధంగా కలుపబడినది. బిందువు Aనుండి ఒక వస్తువును వాలుతలం వెంబడి 'u' వేగంతో ప్రక్షిప్తం చేసారు. ఆ వస్తువు నూతిలో పడకుండా నూతిని దాటాలంటే దాని కనీసవేగం 'u' ($g = 10\ ms^{-2}$)



Options :

1. $20\ ms^{-1}$
2. $20\sqrt{2}\ ms^{-1}$
3. $10\sqrt{2}\ ms^{-1}$
4. $15\sqrt{2}\ ms^{-1}$

(A) $20\ \text{ms}^{-1}$

(B) $20\sqrt{2}\ \text{ms}^{-1}$

(C) $10\sqrt{2}\ \text{ms}^{-1}$

(D) $15\sqrt{2}\ \text{ms}^{-1}$

Answer: (B) $20\sqrt{2}\ \text{ms}^{-1}$ · The council's preliminary key

Q443 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

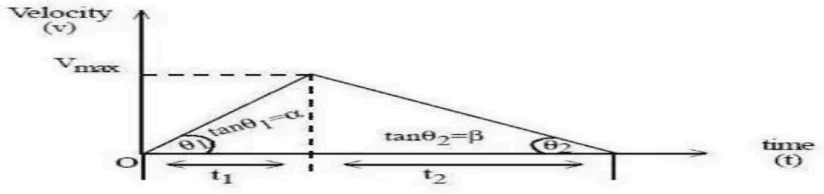
From the v-t graph, find the total distance covered by the car in time $t = t_1 + t_2$

(see the figure above)

Question Number : 82 Question Id : 10171173922 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

From the v-t graph, find the total distance covered by the car in time $t = t_1 + t_2$

ఇవ్వబడిన v-t గ్రాఫ్ నుండి $t = t_1 + t_2$ కాలంలో కారు ప్రయాణించిన మొత్తం దూరం



Options :

1. $\frac{1}{2}\left(\frac{\alpha\beta}{\alpha+\beta}\right)t^2$
2. $\frac{\alpha\beta\, t}{\alpha+\beta}$
3. $\alpha t + \frac{1}{2}\left(\frac{\alpha\beta}{\alpha+\beta}\right)t^2$
4. $\frac{1}{2}\left(\frac{\alpha+\beta}{\alpha\beta}\right)t^2$

(A) $\frac{1}{2}\left(\frac{\alpha\beta}{\alpha+\beta}\right)t^2$

(B) $\frac{\alpha\beta t}{\alpha+\beta}$

(C) $\alpha t+\frac{1}{2}\left(\frac{\alpha\beta}{\alpha+\beta}\right)t^2$

(D) $\frac{1}{2}\left(\frac{\alpha+\beta}{\alpha\beta}\right)t^2$

Answer: (A) $\frac{1}{2}\left(\frac{\alpha\beta}{\alpha+\beta}\right)t^2$ · The council's preliminary key

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Q444 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

The angle of projection of a projectile for which its initial kinetic energy becomes half at its maximum height is

(A) 90°

(B) 60°

(C) 45°

(D) 30°

Answer: (C) 45° · The council's preliminary key

Q445 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

The velocity $\vec{v}$ of a particle of mass 'm' acted upon by a constant force is given by $\vec{v}(t)=A\left[\cos(kt)\,\bar{i}-\sin(kt)\,\bar{j}\right]$. Then the angle between the force and the velocity of the particle is (Here A and k are constants)

(A) 90°

(B) 0°

(C) 180°

(D) 45°

Answer: (A) 90° · The council's preliminary key

Q446 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

The kinetic energy of a particle moving along a circle of radius 'R' depends on the distance 's' as $K=as^2$ where 'a' is a constant. Then the force acting on the particle is

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(A) $\frac{2as^2}{R}$

(B) $2as\left[1+\frac{s^2}{R^2}\right]^{1/2}$

(C) $2as$

(D) $2a\left(\frac{R}{s}\right)^{1/2}$

Answer: (B) $2as\left[1+\frac{s^2}{R^2}\right]^{1/2}$ · The council's preliminary key

Q447 TS EAMCET 2016 · 15 May · Offline MCQ

A car accelerates from rest with $2\ \mathrm{m/s^2}$ on a straight line path and then comes to rest after applying brakes. Total distance travelled by the car is 100 m in 20 seconds. Then the maximum velocity attained by the car is

(A) $10\ \mathrm{m/s}$

(B) $20\ \mathrm{m/s}$

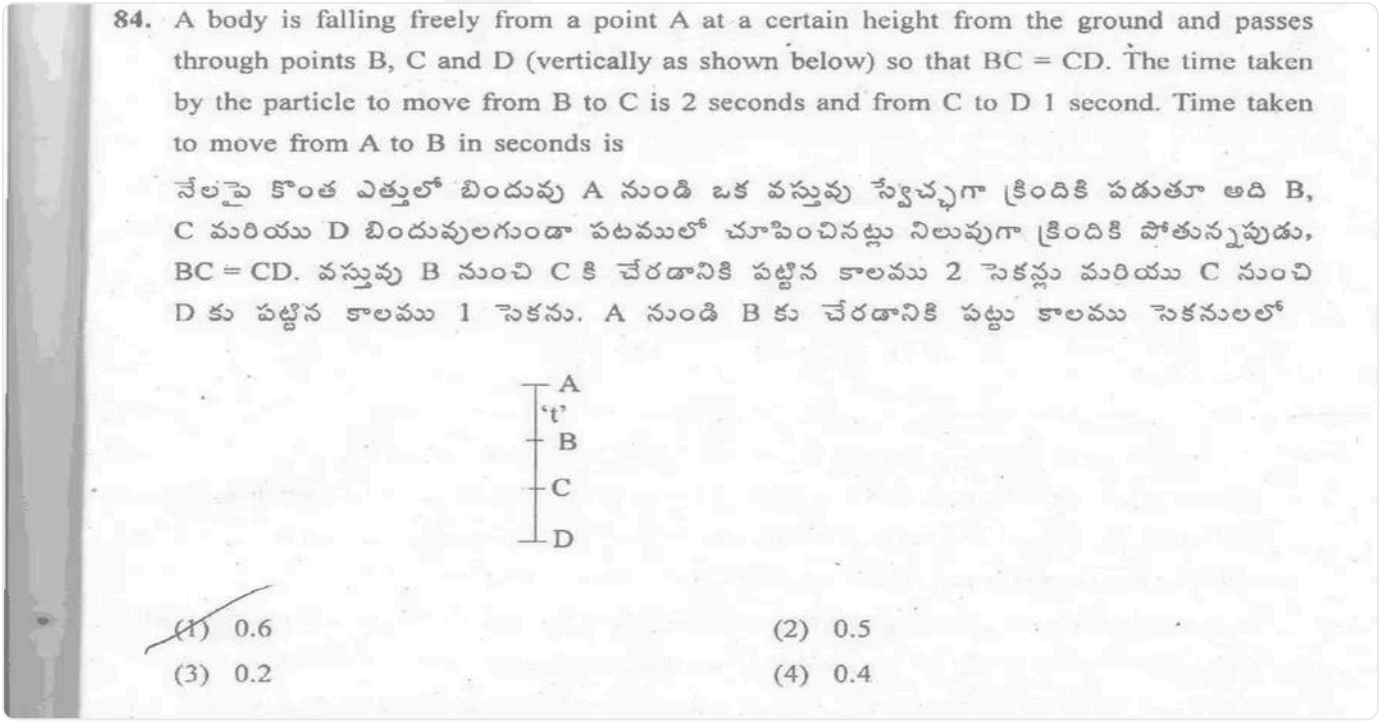
(C) $15\ \mathrm{m/s}$

(D) $5\ \mathrm{m/s}$

Answer: (A) $10\ \mathrm{m/s}$ · Official TGCHE final key

Q448 TS EAMCET 2016 · 15 May · Offline MCQ

A body is falling freely from a point A at a certain height from the ground and passes through points B, C and D (vertically as shown below) so that BC = CD. The time taken by the particle to move from B to C is 2 seconds and from C to D 1 second. Time taken to move from A to B in seconds is *(see the figure above)*


84. A body is falling freely from a point A at a certain height from the ground and passes through points B, C and D (vertically as shown below) so that BC = CD. The time taken by the particle to move from B to C is 2 seconds and from C to D 1 second. Time taken to move from A to B in seconds is

నేలపై కొంత ఎత్తులో బిందువు A నుండి ఒక వస్తువు స్వేచ్ఛగా క్రిందికి పడుతూ అది B, C మరియు D బిందువులగుండా పటములో చూపించినట్లు నిలువుగా క్రిందికి పోతున్నపుడు, BC = CD. వస్తువు B నుంచి C కి చేరడానికి పట్టిన కాలము 2 సెకన్లు మరియు C నుంచి D కు పట్టిన కాలము 1 సెకను. A నుండి B కు చేరడానికి పట్టు కాలము సెకనులలో

A
't'
B
C
D

(1) 0.6 (2) 0.5

(3) 0.2 (4) 0.4

(A) 0.6
(B) 0.5
(C) 0.2
(D) 0.4

Answer: (B) 0.5 · Official TGCHE final key

Q449 TS EAMCET 2016 · 15 May · Offline MCQ

A particle is projected with velocity $2\sqrt{gh}$ and at an angle 60° to the horizontal so that it just clears two walls of equal height 'h' which are at a distance 2h from each other. The time taken by the particle to travel between these two walls is

(A) $2\sqrt{\frac{2h}{g}}$
(B) $\sqrt{\frac{h}{2g}}$
(C) $2\sqrt{\frac{h}{g}}$
(D) $\sqrt{\frac{h}{g}}$

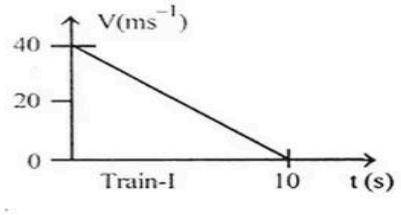
Answer: (C) $2\sqrt{\frac{h}{g}}$ · Official TGCHE final key

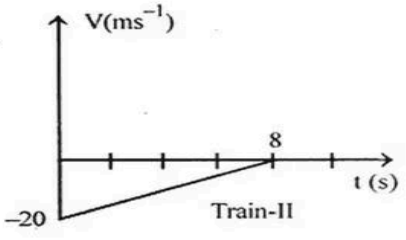
Q450 AP EAMCET 2016 · 29 Apr · Offline MCQ

Two trains, which are moving along different tracks in opposite directions are put on the same track by mistake. On noticing the mistake, when the trains are 300 m apart the drivers start slowing down the trains. The graphs given below show decrease in their velocities as function of time. The separation between the trains when both have stopped is *(see the figure above)*

82. Two trains, which are moving along different tracks in opposite directions are put on the same track by mistake. On noticing the mistake, when the trains are 300 m apart the drivers start slowing down the trains. The graphs given below show decrease in their velocities as function of time. The separation between the trains when both have stopped is

రెండు విభిన్న పట్టాల మీద వ్యతిరేక దిశలో ప్రయాణిస్తున్న రెండు రైళ్ళను పొరపాటున ఒకే పట్టాల మీదకు తీసుకువచ్చారు. వాటి చోదకులు ఈ విషయాన్ని గ్రహించి, అవి 300 m ఎడంలో ఉన్నప్పుడు రైళ్ళ వేగాలను తగ్గించటం ప్రారంభించారు. వాటి వేగాలలో తగ్గుదల కాల ప్రమేయంగా గల ఈ క్రింది గ్రాఫులు సూచిస్తున్నాయి. ఈ రెండు రైళ్ళు విరామ స్థితికి చేరుకున్నప్పుడు వాటి మధ్యదూరం





(1) 120 m (2) 20 m (3) 60 m (4) 280 m

(A) $120\ \text{m}$
(B) $20\ \text{m}$
(C) $60\ \text{m}$
(D) $280\ \text{m}$

Answer: (B) $20\ \text{m}$ · The council's preliminary key

Q451 AP EAMCET 2016 · 29 Apr · Offline MCQ

A point object moves along an arc of a circle of radius 'R'. Its velocity depends upon the distance covered 'S' as $V = K\sqrt{S}$ where 'K' is a constant. If 'θ' is the angle between the total acceleration and tangential acceleration, then

(A) $\tan\theta = \sqrt{\frac{S}{R}}$
(B) $\tan\theta = \sqrt{\frac{S}{2R}}$
(C) $\tan\theta = \frac{S}{2R}$
(D) $\tan\theta = \frac{2S}{R}$

Answer: (D) $\tan\theta = \frac{2S}{R}$ · The council's preliminary key

Q452 AP EAMCET 2016 · 29 Apr · Offline MCQ

A body projected from the ground reaches a point 'X' in its path after 3 seconds and from there it reaches the ground after further 6 seconds. The vertical distance of the point 'X' from the ground is (acceleration due to gravity $= 10\ \text{ms}^{-2}$)

(A) $30\ \text{m}$
(B) $60\ \text{m}$
(C) $80\ \text{m}$
(D) $90\ \text{m}$

Answer: (D) $90\ \text{m}$ · The council's preliminary key

Q453 AP EAMCET 2014 · 22 May · Offline MCQ

A body is projected at an angle θ so that its range is maximum. If T is the time of flight then the value of maximum range is (acceleration due to gravity = g)

(A) $\frac{g^2T}{2}$
(B) $\frac{gT}{2}$
(C) $\frac{gT^2}{2}$
(D) $\frac{g^2T^2}{2}$

Answer: (C) $\frac{gT^2}{2}$ · The council's preliminary key

Q454 AP EAMCET 2014 · 22 May · Offline MCQ

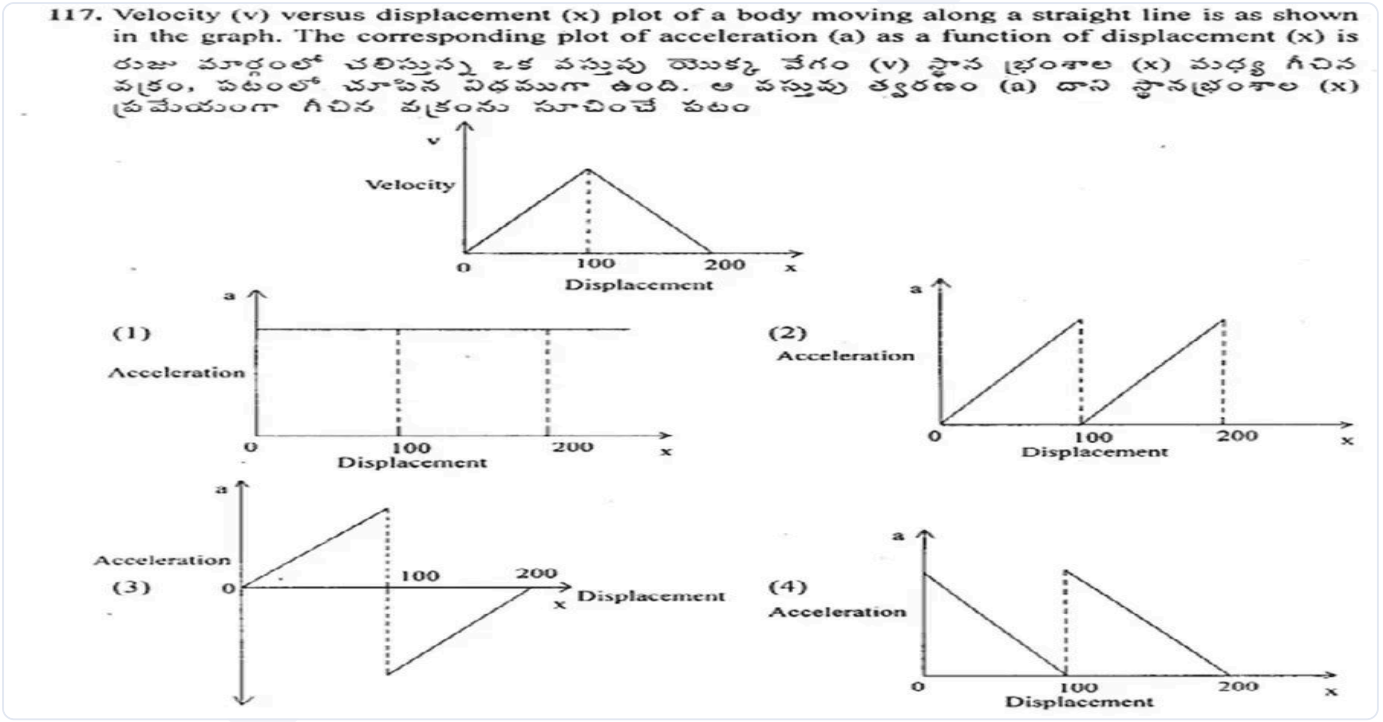
The path of a projectile is given by the equation $y = ax - bx^2$, where a and b are constants and x and y are respectively horizontal and vertical distances of projectile from the point of projection. The maximum height attained by the projectile and the angle of projection are respectively

(A) $\frac{2a^2}{b}$, $\tan^{-1}(a)$
(B) $\frac{b^2}{2a}$, $\tan^{-1}(b)$
(C) $\frac{a^2}{b}$, $\tan^{-1}(2b)$
(D) $\frac{a^2}{4b}$, $\tan^{-1}(a)$

Answer: (D) $\frac{a^2}{4b}$, $\tan^{-1}(a)$ · The council's preliminary key

Q455 AP EAMCET 2014 · 22 May · Offline MCQ

Velocity (v) versus displacement (x) plot of a body moving along a straight line is as shown in the graph. The corresponding plot of acceleration (a) as a function of displacement (x) is
(see the figure above)



(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (C) · The council's preliminary key

Q456 AP EAMCET 2014 · 22 May · Offline MCQ

A person walks along a straight road from his house to a market 2.5 kms away with a speed of 5 km/hr and instantly turns back and reaches his house with a speed of 7.5 kms/hr. The average speed

of the person during the time interval 0 to 50 minutes is (in m/sec)

(A) $4\frac{2}{3}$
(B) $\frac{5}{3}$
(C) $\frac{5}{6}$
(D) $\frac{1}{3}$

Answer: (B) $\frac{5}{3}$ · The council's preliminary key

Q457 AP EAMCET 2013 · 10 May · Offline MCQ

A particle is projected from the ground with an initial speed of v at an angle of projection θ. The average velocity of the particle between its time of projection and time it reaches highest point of trajectory is

(A) $\frac{v}{2}\sqrt{1+2\cos^2\theta}$
(B) $\frac{v}{2}\sqrt{1+2\sin^2\theta}$
(C) $\frac{v}{2}\sqrt{1+3\cos^2\theta}$
(D) $v\cos\theta$

Answer: (C) $\frac{v}{2}\sqrt{1+3\cos^2\theta}$ · The council's preliminary key

Q458 AP EAMCET 2012 · 12 May · Offline MCQ

Sum of magnitudes of two forces acting at a point is 16 N. If their resultant is normal to smaller force, and has a magnitude 8 N, then the forces are

(A) 6 N, 10 N
(B) 8 N, 8 N
(C) 4 N, 12 N
(D) 2 N, 14 N

Answer: (A) 6 N, 10 N · Official APSCHE final key

Q459 AP EAMCET 2012 · 12 May · Offline MCQ

It is possible to project a particle with a given velocity in two possible ways so as to make them pass through a point P at a horizontal distance r from the point of projection. If t_1 and t_2 are times taken to reach this point in two possible ways, then the product t_1t_2 is proportional to

(A) $\frac{1}{r}$
(B) r
(C) r^2
(D) $\frac{1}{r^2}$

Answer: (B) r · Official APSCHE final key

Q460 AP EAMCET 2011 · 8 May · Offline MCQ

A certain vector in the xy plane has an x component of 4 m and a y component of 10 m. It is then rotated in the xy plane so that its x-component is doubled. Then its new y component is (approximately) :

(A) 20 m
(B) 7.2 m
(C) 5.0 m
(D) 4.5 m

Answer: (B) 7.2 m · The council's preliminary key

Q461 AP EAMCET 2011 · 8 May · Offline MCQ

A police party is moving in a jeep at a constant speed v. They saw a thief at a distance x on a motorcycle which is at rest. The moment the police saw the thief, the thief started at constant acceleration α. Which of the following relations is true if the police is able to catch the thief ?

(A) $v^2 < \alpha x$
(B) $v^2 < 2\alpha x$
(C) $v^2 \geq 2\alpha x$
(D) $v^2 = \alpha x$

Answer: (C) $v^2 \geq 2\alpha x$ · The council's preliminary key

Q462 AP EAMCET 2010 · 30 May · Offline MCQ

$\vec{A}$ and $\vec{B}$ are two vectors of equal magnitude and θ is the angle between them. The angle between $\vec{A}$ or $\vec{B}$ with their resultant is :

(A) $\theta/4$
(B) $\theta/2$
(C) 2θ
(D) 0

Answer: (B) $\theta/2$ · Official APSCHE final key

Q463 AP EAMCET 2010 · 30 May · Offline MCQ

An athlete completes one round of a circular track of radius R in 40 sec. What will be his displacement at the end of 2 min 20 seconds ?

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(A) $7\mathrm{R}$

(B) $2\mathrm{R}$

(C) $2\pi\mathrm{R}$

(D) $7\pi\mathrm{R}$

Answer: (B) $2\mathrm{R}$ · Official APSCHE final key

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