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PHYSICS · EAPCET (EAMCET)

Semiconductor Electronics

Previous Year Questions with answers

227 questions · **142** papers · **2010–2026** · newest paper first

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What is in this PDF: every Semiconductor Electronics 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.

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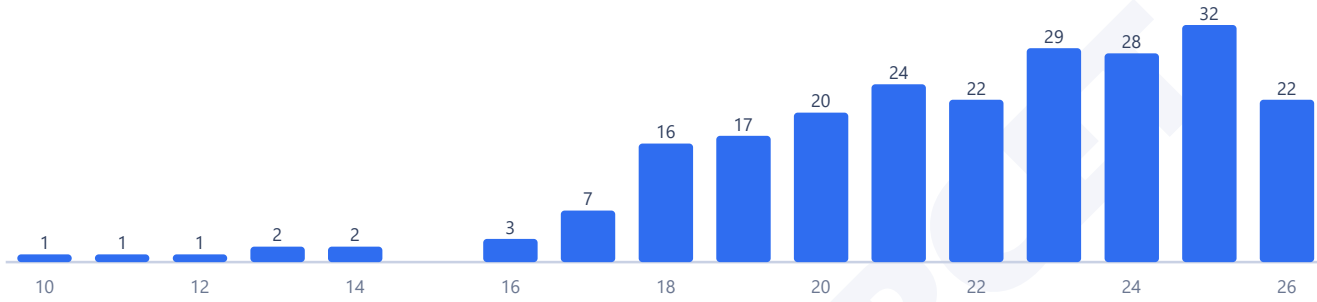
Chapter at a glance

4.3%	227	76 of 77	227 / 0
of Physics questions, 2022–2026	questions, 2010–2026	papers asked it, 2022–2026	MCQ / numerical, 2010–2026

Trend. Steady: 1.8 questions per paper in 2024–2026 against 1.6 in 2022–2023.

Questions per year



Counts are the questions we hold: 227 in 142 papers. No question in this chapter was found repeated across papers.

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

Transistors (legacy)	67
Logic Gates	65
p-n Junction & Diodes	59
Semiconductors	36

How often it comes up

Semiconductor Electronics serves as a vital component of Class 12 physics, connecting solid-state physics with practical circuitry. In our archive of AP and TS EAPCET papers spanning 2022 to 2026, the chapter contributed 133 questions across 77 papers. That corresponds to an average rate of 1.7 questions per paper, claiming 4.3% of all physics questions in that recent window. Taking the full historical archive from 2010 to 2026 into account, the chapter delivered 227 questions across 149 papers, maintaining an average of 1.5 questions per paper and a 3.8% subject share. In the earlier span between 2010 and 2021, we count 94 questions across 72 papers (3.3% share). Over the last three exam years from 2024 to 2026, the chapter supplied 82 questions across 46 papers, registering a 4.5% share. The share of the subject in the last three years compared to early papers is up, while compared to the recent five-year window it is about the same.

State-wise breakdowns reveal heavy testing in both jurisdictions, with particularly high density in Telangana papers. Between 2022 and 2026, AP EAPCET papers in our set contributed 76 questions across 48 papers, with 47 papers featuring questions (1.6 per paper, 4.0% share). TS EAPCET contributed 57 questions across 29 papers in our set, with all 29 papers carrying questions (2.0 per paper, 4.9% share). Semiconductor Electronics has appeared every year since 2022, though across all 77 recent papers in our collection, one AP sitting missed it, meaning it was not present in all 77 sittings. The chapter ranks 9th of 28 physics chapters by question share between 2022 and 2026. The busiest single sitting in our collection was 2025, which saw 32 questions across 16 papers.

Most-asked topics

Questions distribute across four syllabus areas:

- **Transistors (legacy)**: This area brought 40 questions between 2022 and 2026, contributing to 67 questions across all years in our archive. It tests common emitter and common base configurations, current gains α and β, input-

output characteristic curves, voltage amplifiers, power gains, and phase reversals.

- **Logic Gates**: Tying for top spot, this section delivered 40 questions in the recent five-year span and 65 questions overall. Key concepts cover Boolean algebra, truth tables, de Morgan's theorems, combinations of NAND, NOR, AND, OR, and NOT gates, and universal gate implementations.
- **p-n Junction & Diodes**: Recent examinations contributed 29 questions, out of 59 questions in the complete record. Topics evaluate forward and reverse bias characteristics, dynamic resistance, half-wave and full-wave rectifiers, ripple factor, Zener diodes as voltage regulators, and light-emitting diodes.
- **Semiconductors**: A solid block of 24 questions appeared in the recent five-year window, out of 36 questions across the entire archive. Questions test intrinsic carrier concentration $n_i^2 = n_e n_h$, n-type and p-type doping, electrical conductivity $\sigma = e (n_e \mu_e + n_h \mu_h)$, and energy band theory.

What the questions look like

Digital logic circuits represent one of the most dependable problem formats. Students are presented with an interconnected network of logic gates and asked to derive the final truth table or Boolean expression for output Y in terms of inputs A and B. Another frequent question tests universal gates, asking for the minimum number of two-input NAND or NOR gates required to build an XOR, XNOR, or basic AND gate.

Transistor and diode calculations form the other main group. A recurring problem gives a common emitter transistor amplifier with specified input and load resistances along with collector current gain β, asking students to calculate voltage gain or power gain. In rectifier circuits, questions ask for output ripple frequency: for an AC input frequency f, half-wave rectifiers produce ripple frequency f, while full-wave bridge rectifiers double the ripple frequency to 2f.

How to practise it

Start by mastering intrinsic and extrinsic semiconductor relationships. For any semiconductor in thermal equilibrium, the mass-action law is $n_e n_h = n_i^2$. Total electrical conductivity is $\sigma = e (n_e \mu_e + n_h \mu_h)$, where mobility $\mu = v_d / E$. In an n-type material doped with donor density N_d, majority electron density is $n_e \approx N_d$. In a p-type material doped with acceptor density N_a, majority hole density is $n_h \approx N_a$.

Next, study p-n junction diodes and rectification. In forward bias, external potential reduces the depletion layer width and barrier height, producing exponential current growth. In reverse bias, the barrier height widens, leaving a tiny reverse saturation current carried by minority carriers. For rectifiers, full-wave rectifier efficiency reaches a theoretical maximum of eighty-one point two percent with ripple factor zero point four eight, compared to forty point six percent efficiency and ripple factor one point two one for half-wave rectifiers.

Finally, review transistor formulas and logic gates. Emitter current satisfies $I_E = I_B + I_C$. Common base current gain is $\alpha = I_C / I_E$, and common emitter gain is $\beta = I_C / I_B$, linked by $\beta = \alpha / (1 - \alpha)$. In a common emitter amplifier, output voltage is inverted by one hundred eighty degrees relative to the input signal, with voltage gain $A_v = \beta (R_{out} / R_{in})$.

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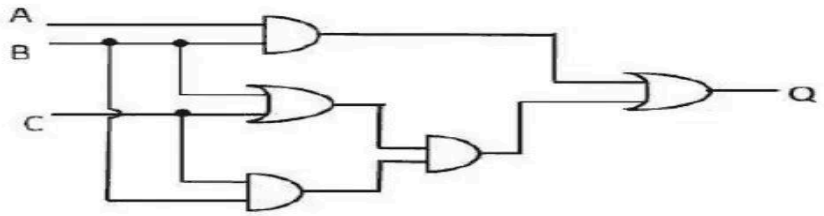
Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

The value of Q in the given digital circuit is

(see the figure above)

The value of Q in the given digital circuit is

ఇచ్చిన డిజిటల్ వలయంలో Q విలువ



Options :

1. $Q = A + B + B.C\,(B + C)$
2. $Q = A.B + B.C\,(B + C)$
3. $Q = A + B + B.C\,(B.C)$
4. $Q = A.B + \overline{B}.\overline{C}\,(B + C)$

(A) $Q = A + B + B.C\,(B + C)$
(B) $Q = A.B + B.C\,(B + C)$
(C) $Q = A + B + B.C\,(B.C)$
(D) $Q = A.B + \overline{B}.\overline{C}\,(B + C)$

Answer: (B) $Q = A.B + B.C\,(B + C)$ · The council's preliminary key

Q2 AP EAPCET 2026 · 18 May · Shift 2 MCQ

A solar cell has a light gathering area of $10\ \mathrm{cm}^2$ and produce $0.2\ \mathrm{A}$ at $0.8\ \mathrm{V}$ (D.C) when illuminated with sunlight of intensity $1000\ \mathrm{Wm}^{-2}$. The efficiency of the solar cell is

(A) 8%
(B) 16%
(C) 23%
(D) 32%

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

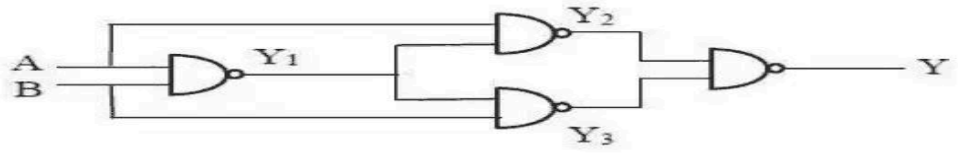
Q3 AP EAPCET 2026 · 18 May · Shift 2 MCQ

In the logic circuit, if A=1 and B=1, the outputs Y_3 and Y are respectively

(see the figure above)

In the logic circuit, if A=1 and B=1, the outputs Y_3 and Y are respectively

ఇచ్చిన తర్క వలయంలో A=1, B=1 అయితే Y_3 మరియు Y నిర్గమ విలువలు వరుసగా



Options :

1. 0, 0
2. 0, 1
3. 1, 0
4. 1, 1

(A) 0, 0
(B) 0, 1
(C) 1, 0
(D) 1, 1

Answer: (C) 1, 0 · The council's preliminary key

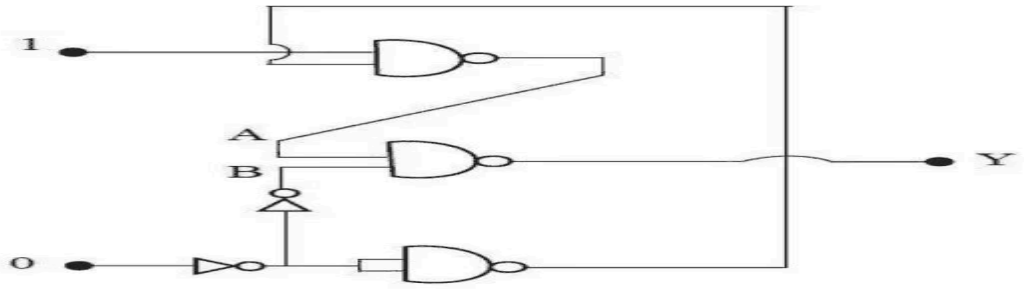
Q4 AP EAPCET 2026 · 15 May · Shift 1 MCQ

In the following circuit, the value of Y is

(see the figure above)

In the following circuit, the value of Y is

క్రింది పటంలో Y విలువ



Options :

1. 0
2. 1
3. Varies between 0 and 1
   0 మరియు 1 ల మధ్య మారును
4. 1/2

(A) 0

(B) 1

(C) Varies between 0 and 1

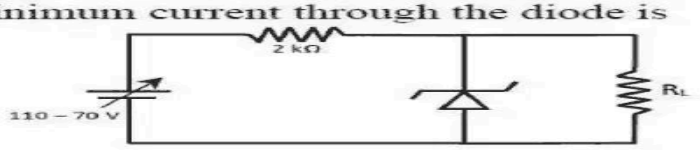
(D) 1/2

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

Q5 AP EAPCET 2026 · 15 May · Shift 2 MCQ

A zener diode of Zener voltage 30 V is connected to a variable dc supply as shown in the figure. If the ratio of the maximum current through $2\ \text{k}\Omega$ resistor and the minimum current through the diode is 8:3, then the load resistance is *(see the figure above)*

A zener diode of Zener voltage 30 V is connected to a variable dc supply as shown in the figure. If the ratio of the maximum current through 2 kΩ resistor and the minimum current through the diode is 8:3, then the load resistance is



30 V జెన్నర్ వోల్టేజ్ గల ఒక జెన్నర్ డయోడ్, చర dc సరఫరాకు పటంలో చూపిన విధంగా కలపబడినది. 2 kΩ నిరోధకం ద్వారా గరిష్ఠ విద్యుత్ ప్రవాహం మరియు డయోడ్ ద్వారా కనిష్ఠ విద్యుత్ ప్రవాహాల నిష్పత్తి 8:3 అయితే, భార నిరోధం

Options :

1. 4 kΩ
2. 6 kΩ
3. 8 kΩ
4. 2 kΩ

(A) $4\ \text{k}\Omega$

(B) $6\ \text{k}\Omega$

(C) $8\ \text{k}\Omega$

(D) $2\ \text{k}\Omega$

Answer: (B) $6\ \text{k}\Omega$ · The council's preliminary key

Q6 AP EAPCET 2026 · 14 May · Shift 1 MCQ

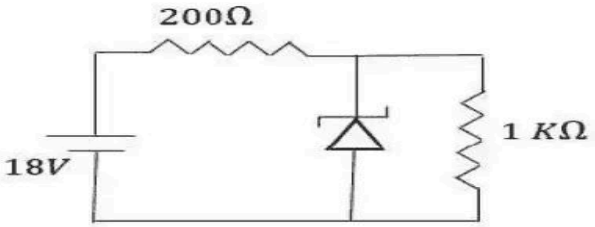
The breakdown voltage of a zenar diode is $10\ V$. It is used in a voltage regulator circuit shown in figure.

Current through zenar diode is

(see the figure above)

The breakdown voltage of a zenar diode is 10 V. It is used in a voltage regulator circuit shown in figure.
Current through zenar diode is

ఒక జీనార్ డయోడ్ విచ్ఛేదన వోల్టేజి 10 V. దీనిని పటంలో చూపిన విధంగా వోల్టేజి నియంత్రణకారిగా ఉపయోగిస్తే, జీనార్ డయోడ్ గుండా విద్యుత్ ప్రవాహం



Options :

1. $20\ mA$
2. $30\ mA$
3. $32\ mA$
4. $12\ mA$

(A) $20\ mA$
(B) $30\ mA$
(C) $32\ mA$
(D) $12\ mA$

Answer: (B) $30\ mA$ · The council's preliminary key

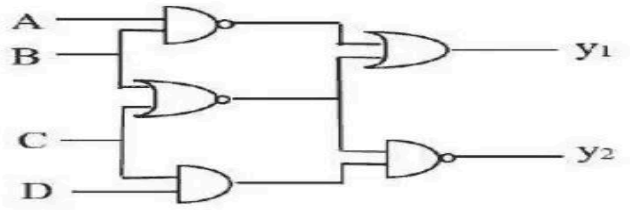
Q7 AP EAPCET 2026 · 14 May · Shift 2 MCQ

The given circuit consists of five logic gates. If the inputs are A = 0, B = 1, C = 1 and D = 0, then the outputs (y_1, y_2) are respectively

(see the figure above)

The given circuit consists of five logic gates. If the inputs are A = 0, B = 1, C = 1 and D = 0, then the outputs (y_1, y_2) are respectively

ఇవ్వబడిన వలయం ఐదు తర్క ద్వారాలను కలిగి ఉంది. నివేశాలు A = 0, B = 1, C = 1 మరియు D = 0 అయిన, నిర్గమాలు (y_1, y_2) వరుసగా



Options :

1. 1,1
2. 1,0
3. 0,1
4. 0,0

(A) 1,1
(B) 1,0
(C) 0,1
(D) 0,0

Answer: (A) 1,1 · The council's preliminary key

Q8 AP EAPCET 2026 · 13 May · Shift 1 MCQ

The minimum energy gap of a semi-conductor used in manufacturing LED is

(A) 3 eV
(B) 3.6 eV
(C) 2.8 eV
(D) 1.8 eV

Answer: (D) 1.8 eV · The council's preliminary key

Q9 AP EAPCET 2026 · 13 May · Shift 2 MCQ

Two amplifiers are connected one after the other in series (cascaded). Their voltage gains are 10 and 20 respectively. If the input ac signal is 0.01 volt, the output ac signal is

(A) 0.03 volt
(B) 2.0 volt
(C) 0.005 volt
(D) 0.1 volt

Answer: (B) 2.0 volt · The council's preliminary key

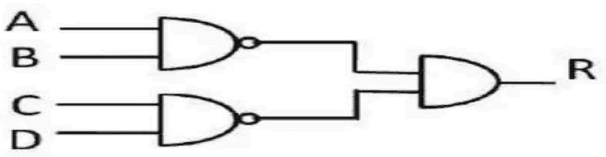
Q10 AP EAPCET 2026 · 12 May · Shift 1 MCQ

To have R = 1, values of A, B, C, D are respectively

(see the figure above)

To have R = 1, values of A, B, C, D are respectively

R విలువ 1 కావాలంటే, A, B, C, D ల విలువలు వరుసగా ఎంత?



Options :

1. 0, 1, 0, 0
2. 1, 1, 1, 1
3. 0, 1, 1, 1
4. 1, 1, 0, 0

(A) 0, 1, 0, 0
(B) 1, 1, 1, 1
(C) 0, 1, 1, 1
(D) 1, 1, 0, 0

Answer: (A) 0, 1, 0, 0 · The council's preliminary key

Q11 AP EAPCET 2026 · 12 May · Shift 2 MCQ

The truth table for the function of Y of A and B for the following logic gate

(see the figure above)

The truth table for the function of Y of A and B for the following logic gate

క్రింద ఇవ్వబడిన తర్క ద్వారము యొక్క ప్రమేయము Y (A మరియు B లలో) కు అనుగుణంగా సత్యపట్టిక



Options :

1.

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

2.

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

3.

A	B	Y
0	0	1
0	1	0
1	0	1
1	1	0

4.

A	B	Y
0	0	0
0	1	0
1	0	1
1	1	1

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(A)
A B Y
0 0 1
0 1 1
1 0 1
1 1 0

(B)
A B Y
0 0 0
0 1 0
1 0 0
1 1 1

(C)
A B Y
0 0 1
0 1 0
1 0 1
1 1 0

(D)
A B Y
0 0 0
0 1 0
1 0 1
1 1 1

Answer: (D)
A B Y
0 0 0
0 1 0
1 0 1
1 1 1
· The council's preliminary key

Q12 TS EAPCET 2026 · 11 May · Shift 1 MCQ

An electron in n-region of a p-n junction diode moves towards the junction with a speed of $5 \times 10^5\ \mathrm{ms}^{-1}$ and after penetration through the barrier, the electron enters the p-region with a speed of $3 \times 10^5\ \mathrm{ms}^{-1}$. The barrier potential of the p-n junction is

(Mass of electron $= 9 \times 10^{-31}$ kg and charge of electron $= 1.6 \times 10^{-19}$ C)

(A) 0.5 V
(B) 0.45 V
(C) 0.7 V
(D) 0.65 V

Answer: (B) 0.45 V · The council's preliminary key

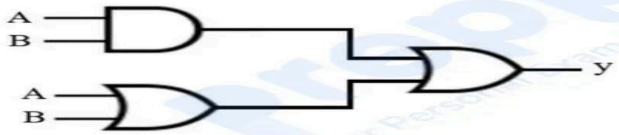
Q13 TS EAPCET 2026 · 11 May · Shift 1 MCQ

Two OR gates and one AND gate are connected as shown in the figure. The correct truth table of the combination of the logic gates is

(see the figure above)

Two OR gates and one AND gate are connected as shown in the figure. The correct truth table of the combination of the logic gates is

دو OR گیٹس اور ایک AND گیٹ کو شکل کے مطابق جوڑا گیا ہے لوجک گیٹس کے اجتماعت کا صحیح صدقی جدول ہے



Options :

1.

A	B	y
0	0	0
0	1	0
1	0	0
1	1	1

2.

A	B	y
0	0	1
0	1	0
1	0	0
1	1	1

3.

A	B	y
0	0	0
0	1	1
1	0	1
1	1	1

4.

A	B	y
0	0	0
0	1	1
1	0	1
1	1	0

(A)

A	B	y
0	0	0
0	1	0
1	0	0
1	1	1

(B)

A	B	y
0	0	1
0	1	0
1	0	0
1	1	1

(C)

A	B	y
0	0	0
0	1	1
1	0	1
1	1	1

(D)

A	B	y
0	0	0
0	1	1
1	0	1
1	1	0

Answer: (C)

A	B	y
0	0	0
0	1	1
1	0	1
1	1	1

· The council's preliminary key

Q14 TS EAPCET 2026 · 11 May · Shift 2 MCQ

If the band gap of a semiconductor is equal to the energy of a photon of wavelength 620 nm, then the minimum thermal energy required for the generation of 8 electron-hole pairs is nearly

(A) 8 eV
(B) 4 eV
(C) 16 eV
(D) 2 eV

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

Q15 TS EAPCET 2026 · 11 May · Shift 2 MCQ

The current gain of a common emitter amplifier is 50 and its power gain is 3000. If the input resistance of the amplifier is $1200\ \Omega$, then its output resistance is

(A) $1720\ \Omega$
(B) $1800\ \Omega$
(C) $2400\ \Omega$
(D) $1440\ \Omega$

Answer: (D) $1440\ \Omega$ · The council's preliminary key

Q16 TS EAPCET 2026 · 10 May · Shift 1 MCQ

In a common emitter amplifier, the voltage gain and the current amplification factor are 400 and 160 respectively. If the output resistance of the amplifier is $2500\ \Omega$, then its input resistance is

(A) $1\ \text{k}\Omega$
(B) $6.25\ \text{k}\Omega$
(C) $1.25\ \text{k}\Omega$
(D) $2\ \text{k}\Omega$

Answer: (A) $1\ \text{k}\Omega$ · The council's preliminary key

Q17 TS EAPCET 2026 · 10 May · Shift 1 MCQ

The incorrect statement about a Zener diode is

(A) It is heavily doped
(B) The depletion region formed in it is very thick
(C) The electric field at its junction is extremely high
(D) In general, in a circuit it is reverse biased

Answer: (B) The depletion region formed in it is very thick · The council's preliminary key

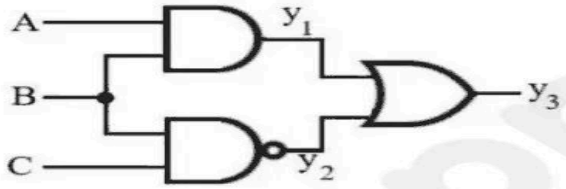
Q18 TS EAPCET 2026 · 10 May · Shift 2 MCQ

An AND gate, an OR and a NAND gate are connected as shown in the figure. If the inputs are A = 0, B=1 and C = 0, then the outputs y_1, y_2, y_3 are respectively

(see the figure above)

An AND gate, an OR and a NAND gate are connected as shown in the figure. If the inputs are $A=0$, $B=1$ and $C=0$, then the outputs y_1, y_2, y_3 are respectively

ఒక AND ద్వారం, ఒక OR ద్వారం మరియు ఒక NAND ద్వారం పటంలో చూపిన విధంగా కలపబడినాయి. నివేశాలు $A=0$, $B=1$ మరియు $C=0$ అయిన, నిర్గమాలు y_1, y_2, y_3 లు వరుసగా



Options :

1. $(1,0,1)$
2. $(0,0,1)$
3. $(0,1,1)$
4. $(0,1,0)$

(A) $(1,0,1)$
(B) $(0,0,1)$
(C) $(0,1,1)$
(D) $(0,1,0)$

Answer: (C) $(0,1,1)$ · The council's preliminary key

Q19 TS EAPCET 2026 · 10 May · Shift 2 MCQ

When the input voltage given to the combination of two common emitter amplifiers connected in series is 20 mV, then the output voltage is 30 V. If the voltage gain of one amplifier is 25, then the voltage gain of the other amplifier is

(A) 60
(B) 90
(C) 80
(D) 45

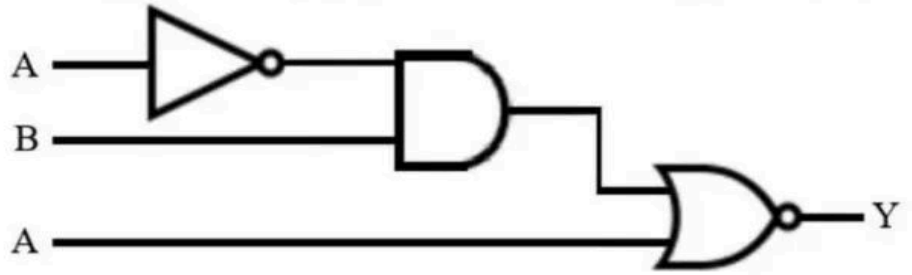
Answer: (A) 60 · The council's preliminary key

Q20 TS EAPCET 2026 · 9 May · Shift 1 MCQ

The resultant logic gate of the combination of logic gates given in the circuit is

(see the figure above)

The resultant logic gate of the combination of logic gates given in the circuit is
వలయంలో ఇవ్వబడిన తర్క ద్వారాల సంయోగం యొక్క ఫలిత తర్క ద్వారం



Options :

1. AND
2. NOR
3. NAND
4. OR

(A) AND
(B) NOR
(C) NAND
(D) OR

Answer: (B) NOR · The council's preliminary key

Q21 TS EAPCET 2026 · 9 May · Shift 2 MCQ

The electron and hole concentrations in a semiconductor are $5 \times 10^{18}\,\mathrm{m}^{-3}$ and $8 \times 10^{19}\,\mathrm{m}^{-3}$ respectively. If the mobilities of the electron and hole are $0.24\,\mathrm{m}^2\,\mathrm{V}^{-1}\mathrm{s}^{-1}$ and $0.01\,\mathrm{m}^2\,\mathrm{V}^{-1}\mathrm{s}^{-1}$ respectively, then the conductivity of the semiconductor is

(A) $0.48\ \mathrm{Sm}^{-1}$
(B) $0.16\ \mathrm{Sm}^{-1}$
(C) $0.32\ \mathrm{Sm}^{-1}$
(D) $0.64\ \mathrm{Sm}^{-1}$

Answer: (C) $0.32\ \mathrm{Sm}^{-1}$ · The council's preliminary key

Q22 TS EAPCET 2026 · 9 May · Shift 2 MCQ

If A, B and C represent the power gain, base resistance and collector resistance respectively of a transistor connected in common emitter configuration, then the common emitter current amplification factor is

(A) $\frac{AB}{C}$
(B) $\frac{AC}{B}$
(C) $\sqrt{\frac{AC}{B}}$
(D) $\sqrt{\frac{AB}{C}}$

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

Q23 AP EAPCET 2025 · 27 May · Shift 1 MCQ

In a transistor, if the collector current is 98% of emitter current, then the ratio of the base and collector currents is

(A) $1:98$
(B) $1:1$
(C) $1:49$
(D) $1:99$

Answer: (C) $1:49$ · The council's preliminary key

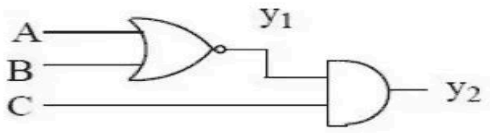
Q24 AP EAPCET 2025 · 27 May · Shift 1 MCQ

In the given circuit, if A = 0, B = 1 and C = 1 are inputs, then the values of y_1 and y_2 are respectively

(see the figure above)

In the given circuit, if A = 0, B = 1 and C = 1 are inputs, then the values of y_1 and y_2 are respectively

ఇవ్వబడిన వలయంలో నివేశాలు A = 0, B = 1 మరియు C = 1 అయిన y_1 మరియు y_2 విలువలు వరుసగా



Options :

1. 1, 1
2. 0, 1
3. 0, 0
4. 1, 0

(A) 1, 1
(B) 0, 1
(C) 0, 0
(D) 1, 0

Answer: (C) 0, 0 · The council's preliminary key

Q25 AP EAPCET 2025 · 26 May · Shift 1 MCQ

At absolute zero temperature, an intrinsic semiconductor behaves as

(A) conductor
(B) superconductor
(C) insulator
(D) intrinsic semiconductor

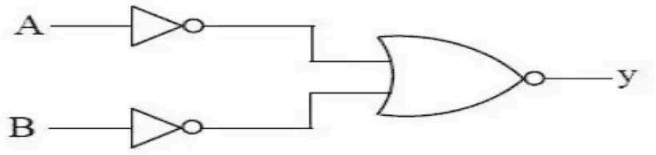
Answer: (C) insulator · The council's preliminary key

Q26 AP EAPCET 2025 · 26 May · Shift 1 MCQ

The logic gate equivalent to the combination of logic gates shown in the figure is

(see the figure above)

The logic gate equivalent to the combination of logic gates shown in the figure is



పటంలో చూపబడిన తర్క ద్వారాల సంయోగానికి తుల్యమైన తర్క ద్వారం

Options :

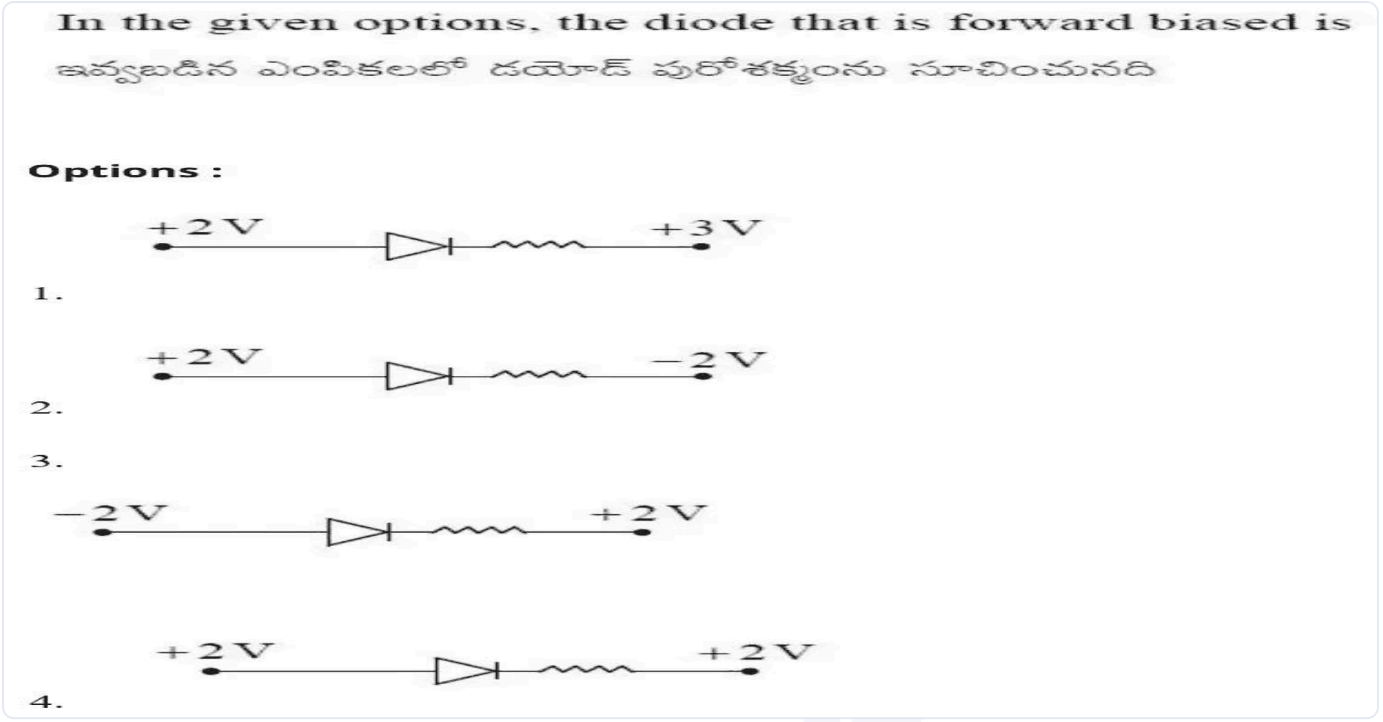
1. AND
2. NOR
3. OR
4. NAND

(A) AND
(B) NOR
(C) OR
(D) NAND

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

Q27 AP EAPCET 2025 · 26 May · Shift 2 MCQ

In the given options, the diode that is forward biased is



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

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

Q28 AP EAPCET 2025 · 26 May · Shift 2 MCQ

In a common emitter transistor amplifier the resistance of collector is $3\ \text{k}\Omega$. If the current amplification factor is 100 and the base resistance is $2\ \text{k}\Omega$, then the power gain of the transistor is

(A) 150
(B) 10000
(C) 1500
(D) 15000

Answer: (D) 15000 · The council's preliminary key

Q29 AP EAPCET 2025 · 24 May · Shift 1 MCQ

If X, Y and Z are the sizes of the emitter, base and collector of a transistor respectively, then

(A) $X > Z > Y$
(B) $X > Y > Z$
(C) $Z > X > Y$
(D) $Z > Y > X$

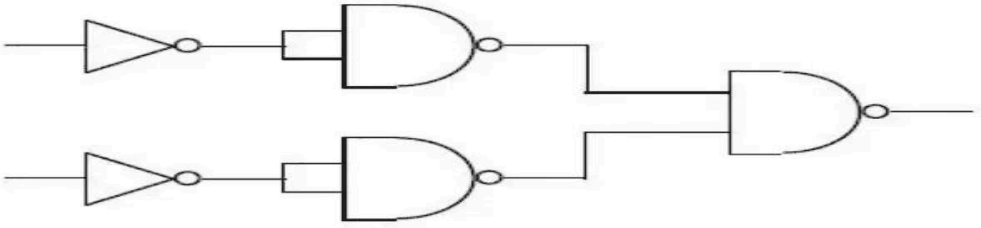
Answer: (C) $Z > X > Y$ · The council's preliminary key

Q30 AP EAPCET 2025 · 24 May · Shift 1 MCQ

The logic gate equivalent to the circuit given in the figure is

(see the figure above)

The logic gate equivalent to the circuit given in the figure is
పటంలో యివ్వబడిన వలయం యొక్క తుల్య తర్క ద్వారం



Options :
1. NAND
2. OR
3. AND
4. NOR

(A) NAND
(B) OR
(C) AND
(D) NOR

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

Q31 AP EAPCET 2025 · 23 May · Shift 1 MCQ

The voltage gain and the current amplification factor of a transistor in common emitter configuration are 300 and 60 respectively. If the collector resistance is $5\,\mathrm{k}\Omega$, then the base resistance is

(A) $5\,\mathrm{k}\Omega$
(B) $25\,\mathrm{k}\Omega$
(C) $2\,\mathrm{k}\Omega$
(D) $1\,\mathrm{k}\Omega$

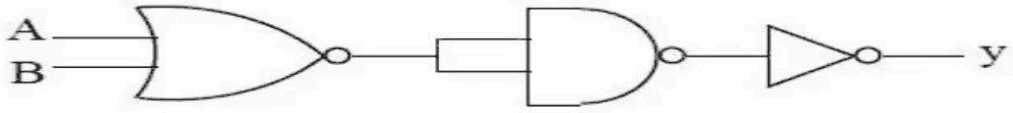
Answer: (D) $1\,\mathrm{k}\Omega$ · The council's preliminary key

Q32 AP EAPCET 2025 · 23 May · Shift 1 MCQ

The logic gate equivalent to the circuit shown in the figure is

(see the figure above)

The logic gate equivalent to the circuit shown in the figure is
పటంలో యివ్వబడిన వలయం యొక్క తుల్య తర్క ద్వారం



Options :
1. AND
2. NAND
3. NOR
4. OR

(A) AND
(B) NAND
(C) NOR
(D) OR

Answer: (C) NOR · The council's preliminary key

Q33 AP EAPCET 2025 · 23 May · Shift 2 MCQ

In common emitter amplifier of a transistor, if the ratio of the voltage gain and current amplification factor is 4, then the ratio of the collector and base resistances is

(A) $16 : 1$

(B) $1 : 16$

(C) $1 : 4$

(D) $4 : 1$

Answer: (D) $4 : 1$ · The council's preliminary key

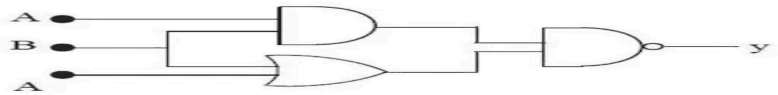
Q34 AP EAPCET 2025 · 23 May · Shift 2 MCQ

If three logic gates are connected as shown in the figure, then the correct truth table of the circuit is

(see the figure above)

If three logic gates are connected as shown in the figure, then the correct truth table of the circuit is

మూడు తర్క ద్వారాలు పటంలో చూపిన విధంగా కలుపబడిన, ఆ వలయం యొక్క సరియైన నిజ పట్టిక



Options :

1.

A	B	y
0	0	1
0	1	0
1	0	0
1	1	1

2.

A	B	y
0	0	1
0	1	1
1	0	1
1	1	0

3.

A	B	y
0	0	0
0	1	0
1	0	0
1	1	1

4.

A	B	y
0	0	0
0	1	1
1	0	1
1	1	0

(A)
A B y
0 0 1
0 1 0
1 0 0
1 1 1

(B)
A B y
0 0 1
0 1 1
1 0 1
1 1 0

(C)
A B y
0 0 0
0 1 0
1 0 0
1 1 1

(D)
A B y
0 0 0
0 1 1
1 0 1
1 1 0

Answer: (B)
A B y
0 0 1
0 1 1
1 0 1
1 1 0
· The council's preliminary key

Q35 AP EAPCET 2025 · 22 May · Shift 1 MCQ

A transistor has 3 impurity regions of different doping levels. In the order of increasing doping level, the regions are

(A) emitter, base, collector
(B) collector, base, emitter
(C) base, emitter, collector
(D) base, collector, emitter

Answer: (D) base, collector, emitter · The council's preliminary key

Q36 AP EAPCET 2025 · 22 May · Shift 1 MCQ

A cc camera is fabricated using a semiconducting material having a band gap of 3 eV. The wavelength of light it can detect is nearly

(A) 210 nm
(B) 546 nm
(C) 413 nm
(D) 345 nm

Answer: (C) 413 nm · The council's preliminary key

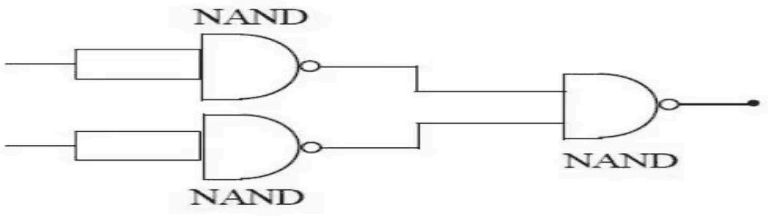
Q37 AP EAPCET 2025 · 22 May · Shift 2 MCQ

When three NAND logic gates are connected as shown in the figure, then the logic gate equivalent to the circuit is

(see the figure above)

When three NAND logic gates are connected as shown in the figure, then the logic gate equivalent to the circuit is

మూడు NAND తర్క ద్వారాలను పటంలో చూపిన విధంగా కలిపిన, ఈ వలయానికి తుల్యమైన తర్క ద్వారం



Options :
1. NOT
2. AND
3. OR
4. NOR

(A) NOT
(B) AND
(C) OR
(D) NOR

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

Q38 AP EAPCET 2025 · 22 May · Shift 2 MCQ

The device used for voltage regulation is

(A) Zener diode
(B) photo diode
(C) light emitting diode
(D) solar cell

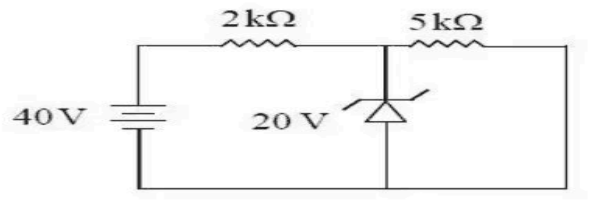
Answer: (A) Zener diode · The council's preliminary key

Q39 AP EAPCET 2025 · 21 May · Shift 1 MCQ

A Zener diode of breakdown voltage 20 V is connected as shown in the given circuit. The current through Zener diode is

(see the figure above)

A Zener diode of breakdown voltage 20 V is connected as shown in the given circuit. The current through Zener diode is
20 V భంజన వోల్టేజ్ గల ఒక జెన్నర్ దయోడ్ యివ్వబడిన వలయంలో చూపిన విధంగా కలుపబడినది. జెన్నర్ దయోడ్ ద్వారా విద్యుత్ ప్రవాహం



Options :

1. 10 mA
2. 4 mA
3. 6 mA
4. 8 mA

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

Answer: (C) 6 mA · The council's preliminary key

Q40 AP EAPCET 2025 · 21 May · Shift 1 MCQ

The voltage gains of two amplifiers connected in series are 8 and 12.5. If the voltage of the input signal is 200 μV, then the voltage of the output signal is

(A) 50 μV
(B) 20 μV
(C) 20 mV
(D) 50 mV

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

Q41 AP EAPCET 2025 · 21 May · Shift 2 MCQ

A transistor works as an amplifier when

(A) emitter-base junction is forward biased and base-collector junction is reverse biased
(B) both emitter-base and base-collector junctions are forward biased.
(C) both emitter-base and base-collector junctions are reverse biased.
(D) emitter-base junction is reverse biased and base-collector junction is forward biased

Answer: (A) emitter-base junction is forward biased and base-collector junction is reverse biased · The council's preliminary key

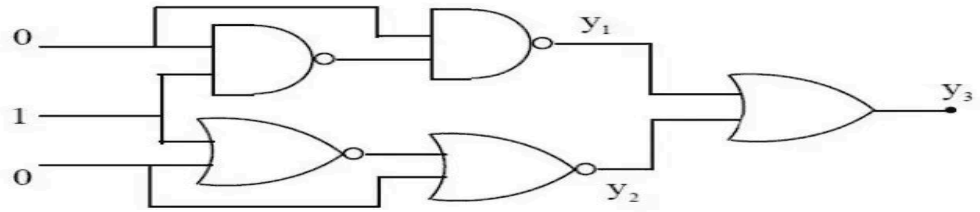
Q42 AP EAPCET 2025 · 21 May · Shift 2 MCQ

If five logic gates are connected as shown in the figure, then the values of y_1, y_2 and y_3 are respectively

(see the figure above)

EdLoop EAPCET

If five logic gates are connected as shown in the figure, then the values of y_1, y_2 and y_3 are respectively



ఐదు తర్క ద్వారాలు పటంలో చూపిన విధంగా కలుపబడిన y_1, y_2 మరియు y_3 విలువలు వరుసగా

Options :

1. 1, 1, 1
2. 0, 0, 1
3. 1, 1, 0
4. 1, 0, 1

(A) 1, 1, 1
(B) 0, 0, 1
(C) 1, 1, 0
(D) 1, 0, 1

Answer: (A) 1, 1, 1 · The council's preliminary key

Q43 TS EAPCET 2025 · 4 May · Shift 1 MCQ

At absolute zero temperature, a semiconductor behaves like

(A) semiconductor
(B) superconductor
(C) conductor
(D) insulator

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

Q44 TS EAPCET 2025 · 4 May · Shift 1 MCQ

Three logic gates are connected as shown in the figure. If the inputs are A = 1, B = 0 and C = 1, then the values of y_1, y_2 and y_3 respectively are

(see the figure above)

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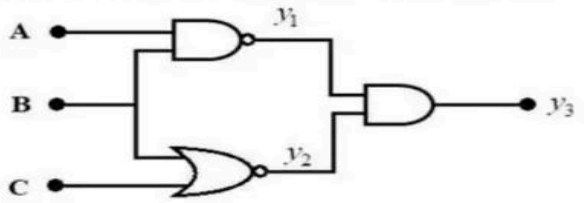
Correct Marks : 1 Wrong Marks : 0

Three logic gates are connected as shown in the figure. If the inputs are A = 1, B = 0 and C = 1, then the values of y_1, y_2 and y_3 respectively are

మూడు తర్క ద్వారాలను పటంలో చూపిన విధంగా కలిపారు. నివేశాలు A = 1, B = 0 మరియు C = 1 అయిన y_1, y_2 మరియు y_3 విలువలు వరుసగా



Options :

1. 1, 0, 0
2. 0, 1, 0
3. 1, 1, 0
4. 1, 0, 1

(A) 1, 0, 0

(B) 0, 1, 0

(C) 1, 1, 0

(D) 1, 0, 1

Answer: (A) 1, 0, 0 · The council's preliminary key

Q45 TS EAPCET 2025 · 4 May · Shift 2 MCQ

The current amplification factor of a transistor in common emitter configuration is 80. If the emitter current is 2.43 mA, then the base current is

(A) 15 μA

(B) 1.5 μA

(C) 3 μA

(D) 30 μA

Answer: (D) 30 μA · The council's preliminary key

Q46 TS EAPCET 2025 · 4 May · Shift 2 MCQ

The negative feedback in an amplifier

(A) increases noise and distortion

(B) reduces noise and distortion

(C) reduces noise and increases distortion

(D) increases noise and reduces distortion

Answer: (B) reduces noise and distortion · The council's preliminary key

Q47 TS EAPCET 2025 · 3 May · Shift 1 MCQ

According to a graph drawn between the input and output voltages of a transistor connected in common emitter configuration, the region in which transistor acts as a switch is

(A) Cutoff or saturation region
(B) Active region
(C) Active or saturation region
(D) Cutoff or active region

Answer: (A) Cutoff or saturation region · The council's preliminary key

Q48 TS EAPCET 2025 · 3 May · Shift 1 MCQ

If the energy gap of a semiconductor used for the fabrication of an LED is nearly 1.9 eV, then the color of the light emitted by the LED is

(A) White
(B) Red
(C) Green
(D) Blue

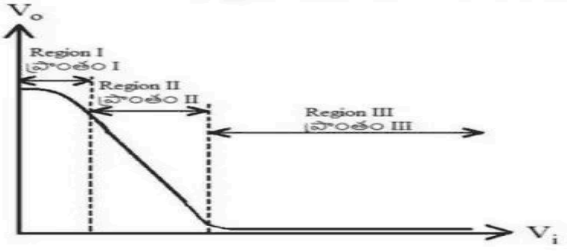
Answer: (B) Red · The council's preliminary key

Q49 TS EAPCET 2025 · 3 May · Shift 2 MCQ

The graph between the input voltage (V_i) and the output voltage (V_o) of a transistor connected in common emitter configuration is shown in the figure. The active, saturation and cutoff regions of the transistor are respectively

(see the figure above)

The graph between the input voltage (V_i) and the output voltage (V_o) of a transistor connected in common emitter configuration is shown in the figure. The active, saturation and cutoff regions of the transistor are respectively
ఒక ఉమ్మడి ఉద్గారక విన్యాసంలో కలుపబడిన ఒక ట్రాన్సిస్టర్ నివేశ వోల్టేజి (V_i) మరియు నిర్గమ వోల్టేజి (V_o) ల మధ్య గ్రాఫ్ పటంలో చూపబడినది. ట్రాన్సిస్టర్ క్రియాశీల, సంతృప్త మరియు కటాఫ్ ప్రాంతములు వరుసగా



Options :
1. I, II and III
I, II మరియు III
2. II, III and I
II, III మరియు I
3. I, III and II
I, III మరియు II
4. III, I and II
III, I మరియు II

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

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

Q50 TS EAPCET 2025 · 3 May · Shift 2 MCQ

Which of the following logic gates is a universal gate?

(A) AND
(B) OR
(C) NOT
(D) NAND

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

Q51 TS EAPCET 2025 · 2 May · Shift 1 MCQ

The power gain and voltage gain of a transistor connected in common emitter configuration are 1800 and 60 respectively. If the change in the emitter current is 0.62 mA, then the change in the collector current is

(A) 0.60 mA
(B) 0.58 mA
(C) 0.52 mA
(D) 0.48 mA

Answer: (A) 0.60 mA · The council's preliminary key

Q52 TS EAPCET 2025 · 2 May · Shift 1 MCQ

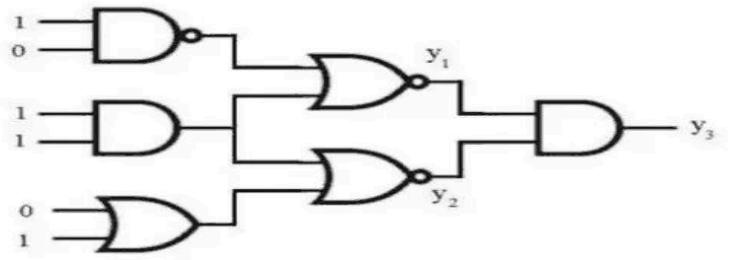
Six logic gates are connected as shown in the figure. The values of y_1, y_2 and y_3 respectively are

(see the figure above)

EdLoop EAPCET

Six logic gates are connected as shown in the figure. The values of y_1, y_2 and y_3 respectively are

ఆరు తర్క ద్వారాలు పటంలో చూపిన విధంగా కలుపబడినాయి. y_1, y_2 మరియు y_3 విలువలు వరుసగా



Options :

1. $(0,1,0)$
2. $(1,0,0)$
3. $(0,0,1)$
4. $(0,0,0)$

(A) $(0,1,0)$
(B) $(1,0,0)$
(C) $(0,0,1)$
(D) $(0,0,0)$

Answer: (D) $(0,0,0)$ · The council's preliminary key

Q53 TS EAPCET 2025 · 2 May · Shift 2 MCQ

10^{10} electrons enter the emitter of a junction transistor in a time of $0.4\ \mu s$. If 5% of the electrons are lost in the base, then the collector current is

(A) $3.0\ \mathrm{mA}$
(B) $3.2\ \mathrm{mA}$
(C) $3.6\ \mathrm{mA}$
(D) $3.8\ \mathrm{mA}$

Answer: (D) $3.8\ \mathrm{mA}$ · The council's preliminary key

Q54 TS EAPCET 2025 · 2 May · Shift 2 MCQ

An electron in n-region of a p-n junction moves towards the junction with a speed of $5 \times 10^5\ \mathrm{ms}^{-1}$. If the barrier potential of the junction is 0.45 V, then the speed with which the electron enters the p-region after penetration through the barrier is
(Charge of the electron $= 1.6 \times 10^{-19}\ \mathrm{C}$ and mass of the electron $= 9 \times 10^{-31}\ \mathrm{kg}$)

(A) $3 \times 10^5\ \mathrm{ms}^{-1}$

(B) $5 \times 10^5\ \mathrm{ms}^{-1}$

(C) $4 \times 10^5\ \mathrm{ms}^{-1}$

(D) $6 \times 10^5\ \mathrm{ms}^{-1}$

Answer: (A) $3 \times 10^5\ \mathrm{ms}^{-1}$ · The council's preliminary key

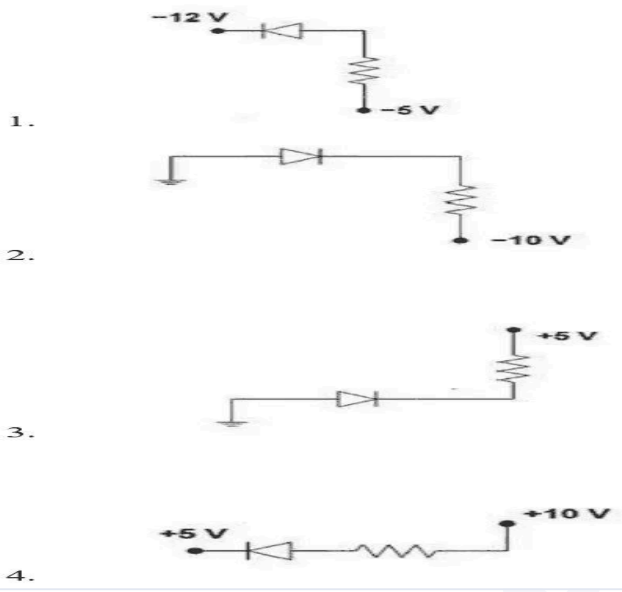
Q55 AP EAPCET 2024 · 23 May · Shift 1 MCQ

In the diodes shown in the diagrams, which one is reverse biased?

In the diodes shown in the diagrams, which one is reverse biased?

క్రింది వాటిలో ఏ పటంలో డయోడ్ విరోధకం లో సంధానం చేయబడింది?

Options :



(A) *see figure*

(B) *see figure*

(C) *see figure*

(D) *see figure*

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

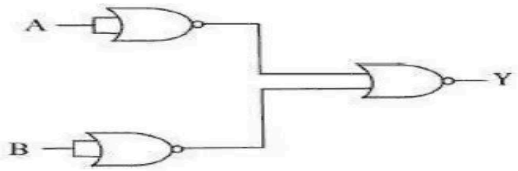
Q56 AP EAPCET 2024 · 23 May · Shift 1 MCQ

The following configuration of gates is equivalent to

(see the figure above)

The following configuration of gates is equivalent to

పటంలో ఇచ్చిన తర్కద్వారాల వలయమునకు తుల్యమైన తర్కద్వారం



Options :

1. $NAND$
2. XoR
3. AND
4. OR

(A) $NAND$
(B) XoR
(C) AND
(D) OR

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

Q57 AP EAPCET 2024 · 22 May · Shift 1 MCQ

The current gain of a transistor in common emitter configuration is 80. The resistances in collector and base sides of the circuit are $5\ \mathrm{k\Omega}$ and $1\ \mathrm{k\Omega}$ respectively. If the input voltage is $2\ \mathrm{mV}$, the output voltage is

(A) $4\ \mathrm{V}$
(B) $0.4\ \mathrm{V}$
(C) $0.8\ \mathrm{V}$
(D) $8\ \mathrm{V}$

Answer: (C) $0.8\ \mathrm{V}$ · The council's preliminary key

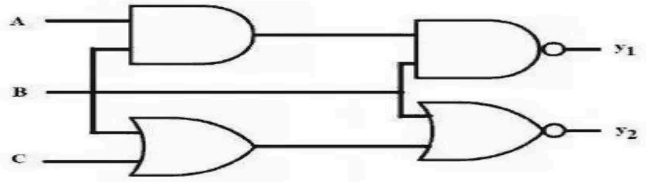
Q58 AP EAPCET 2024 · 22 May · Shift 1 MCQ

Four logic gates are connected as shown in the figure. If the inputs are $A = 0, B = 1$ and $C = 1$, then the values of y_1 and y_2 respectively are

(see the figure above)

Four logic gates are connected as shown in the figure. If the inputs are $A = 0, B = 1$ and $C = 1$, then the values of y_1 and y_2 respectively are

నాలుగు తర్క ద్వారాలు పటంలో చూపిన విధంగా కలపబడినవి. నివేశాలు $A = 0, B = 1$ మరియు $C = 1$ అయిన y_1 మరియు y_2 విలువలు వరుసగా



Options :

1. 1, 0
2. 1, 1
3. 0, 1
4. 0, 0

(A) $1, 0$
(B) $1, 1$
(C) $0, 1$
(D) $0, 0$

Answer: (A) $1, 0$ · The council's preliminary key

Q59 AP EAPCET 2024 · 22 May · Shift 2 MCQ

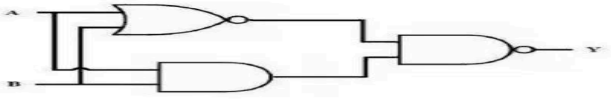
Truth table for the given circuit is

(see the figure above)

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instructi Time : 0

Truth table for the given circuit is

ఇవ్వబడిన వలయం యొక్క సత్యపట్టిక



Options :

1.

A	B	Y
0	0	1
0	1	0
1	0	1
1	1	1

2.

A	B	Y
0	0	1
0	1	1
1	0	0
1	1	1

3.

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	1

4.

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

(A)
A B Y
0 0 1
0 1 0
1 0 1
1 1 1

(B)
A B Y
0 0 1
0 1 1
1 0 0
1 1 1

(C)
A B Y
0 0 1
0 1 1
1 0 1
1 1 1

(D)
A B Y
0 0 0
0 1 1
1 0 1
1 1 1

Answer: (C)
A B Y
0 0 1
0 1 1
1 0 1
1 1 1
· The council's preliminary key

Q60 AP EAPCET 2024 · 22 May · Shift 2 MCQ

If R_c and R_B are respectively the resistances of in collector and base sides of the circuit, and β is the current amplification factor, then the voltage gain of a transistor amplifier in common emitter configuration is

(A) $\beta R_c R_B$
(B) $\dfrac{\beta}{R_c R_B}$
(C) $\dfrac{\beta R_B}{R_c}$
(D) $\dfrac{\beta R_c}{R_B}$

Answer: (D) $\dfrac{\beta R_c}{R_B}$ · The council's preliminary key

Q61 AP EAPCET 2024 · 21 May · Shift 1 MCQ

The semiconductor used for fabrication of visible LEDs must at least have a band gap of

(A) 0.6 eV
(B) 1.2 eV
(C) 1.8 eV
(D) 0.9 eV

Answer: (C) 1.8 eV · The council's preliminary key

Q62 AP EAPCET 2024 · 21 May · Shift 1 MCQ

In a common emitter amplifier, a.c. current gain is 40 and input resistance is $2\ \text{k}\Omega$. The load resistance is given as $10\ \text{k}\Omega$. Then the voltage gain is

(A) 52
(B) 125
(C) 178
(D) 200

Answer: (D) 200 · The council's preliminary key

Q63 AP EAPCET 2024 · 21 May · Shift 2 MCQ

Pure silicon at 300 K has equal electron and hole concentration of $1.5 \times 10^{16}\ \text{m}^{-3}$. If the hole concentration increases to $3 \times 10^{22}\ \text{m}^{-3}$, then electron concentration in the silicon is

(A) $0.75 \times 10^{9}\ \text{m}^{-3}$
(B) $750\ \text{m}^{-3}$
(C) $75\ \text{m}^{-3}$
(D) $7.5 \times 10^{9}\ \text{m}^{-3}$

Answer: (D) $7.5 \times 10^{9}\ \text{m}^{-3}$ · The council's preliminary key

Q64 AP EAPCET 2024 · 21 May · Shift 2 MCQ

In $n-p-n$ transistor circuit, the collector current is 10 mA. If 95% of the electrons emitted reach the collector, then the base current is nearly

(A) 5.3 mA
(B) 53 mA
(C) 35 mA
(D) 0.53 mA

Answer: (D) 0.53 mA · The council's preliminary key

Q65 AP EAPCET 2024 · 20 May · Shift 1 MCQ

A full wave rectifier circuit is operating from 50 Hz mains, the fundamental frequency in the ripple output will be

(A) 50 Hz
(B) 70.7 Hz
(C) 100 Hz
(D) 25 Hz

Answer: (C) 100 Hz · The council's preliminary key

Q66 AP EAPCET 2024 · 20 May · Shift 1 MCQ

A PN junction diode is used as

(A) An amplifier
(B) A rectifier
(C) An oscillator
(D) A modulator

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

Q67 AP EAPCET 2024 · 20 May · Shift 2 MCQ

The voltage gain and current gain of a transistor amplifier in common emitter configuration are respectively 150 and 50. If the resistance in the base circuit is 850 Ω, then the resistance in the collector circuit is

(A) $1700\ \Omega$
(B) $2250\ \Omega$
(C) $2550\ \Omega$
(D) $3000\ \Omega$

Answer: (C) $2550\ \Omega$ · The council's preliminary key

Q68 AP EAPCET 2024 · 20 May · Shift 2 MCQ

If the energy gap of a substance is 5.4 eV, then the substance is

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(A) Insulator
(B) Conductor
(C) p-type semiconductor
(D) n-type semiconductor

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

Q69 AP EAPCET 2024 · 19 May · Shift 2 MCQ

When a signal is applied to the input of a transistor it was found that output signal is phase- shifted by 180°. The transistor configuration is

(A) CB – configuration
(B) CE – configuration
(C) CC – configuration
(D) Both CB and CC – configuration

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

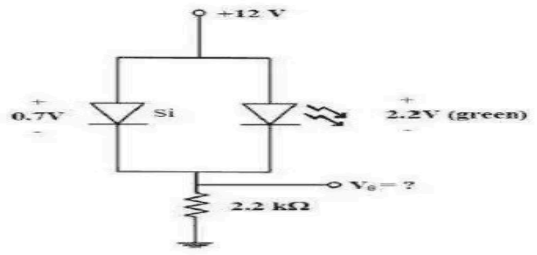
Q70 AP EAPCET 2024 · 19 May · Shift 2 MCQ

The voltage V_o in the network shown is

(see the figure above)

Time : 0

The voltage V_o in the network shown is
పటంలో చూపిన వలయంలో వోల్టేజ్ V_o



Options :

1. $V_o = 11.3$ V
2. $V_o = 9.8$ V
3. $V_o = 12.0$ V
4. $V_o = 0.7$ V

(A) $V_o = 11.3\ \text{V}$
(B) $V_o = 9.8\ \text{V}$
(C) $V_o = 12.0\ \text{V}$
(D) $V_o = 0.7\ \text{V}$

Answer: (A) $V_o = 11.3\ \text{V}$ · The council's preliminary key

Q71 AP EAPCET 2024 · 18 May · Shift 1 MCQ

If n_e and n_h are concentrations of electrons and holes in a semi-conductor, then the intrinsic carrier concentration (n_i) in thermal equilibrium is

(A) $n_i = \sqrt{n_e/n_h}$
(B) $n_i = \dfrac{n_h}{n_e}$
(C) $n_i = \sqrt{n_e n_h}$
(D) $n_i = n_e + n_h$

Answer: (C) $n_i = \sqrt{n_e n_h}$ · The council's preliminary key

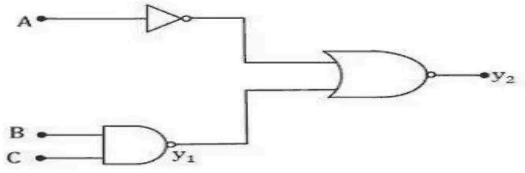
Q72 AP EAPCET 2024 · 18 May · Shift 1 MCQ

In the given digital circuit if the inputs are $A = 1, B = 1$ and $C = 1$ then the values of y_1 and y_2 are respectively

(see the figure above)

In the given digital circuit if the inputs are A = 1, B = 1 and C = 1 then the values of y_1 and y_2 are respectively

క్రింద ఇచ్చిన డిజిటల్ వలయములో నివేశాలు A = 1, B = 1 మరియు C = 1 అయిన y_1 మరియు y_2 విలువలు వరుసగా



Options :

1. 0, 1
2. 0, 0
3. 1, 1
4. 1, 0

(A) $0, 1$
(B) $0, 0$
(C) $1, 1$
(D) $1, 0$

Answer: (A) $0, 1$ · The council's preliminary key

Q73 TS EAPCET 2024 · 11 May · Shift 1 MCQ

Match the devices given in List-I with their uses given in List-II

List – I		List – II	
a	Transistor	e	Filter circuit
b	Diode	f	Voltage regulator
c	Zener diode	g	Rectifier
d	Capacitor	h	Amplifier

The correct answer is

(A) a – h, b – g, c – e, d – f
(B) a – h, b – f, c – e, d – g
(C) a – h, b – g, c – f, d – e
(D) a – e, b – h, c – g, d – f

Answer: (C) a – h, b – g, c – f, d – e · The council's preliminary key

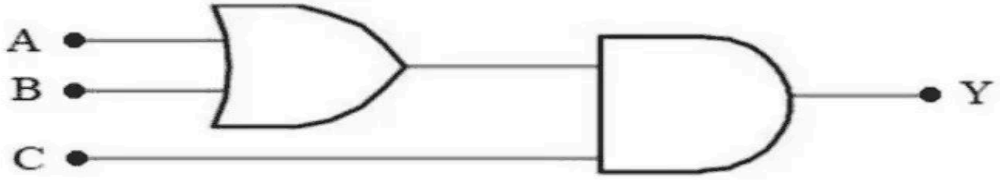
Q74 TS EAPCET 2024 · 11 May · Shift 1 MCQ

To get output 1 for the following logic circuit, the correct choice of the inputs is

(see the figure above)

EdLoop EAPCET

To get output 1 for the following logic circuit, the correct choice of the inputs is
క్రింది తర్క వలయంలో నిర్గమం 1 పొందడానికి సరియైన నివేశములు



Options :

1. $A = 1, B = 1, C = 0$
2. $A = 0, B = 1, C = 0$
3. $A = 1, B = 0, C = 1$
4. $A = 0, B = 0, C = 1$

(A) $A = 1, B = 1, C = 0$
(B) $A = 0, B = 1, C = 0$
(C) $A = 1, B = 0, C = 1$
(D) $A = 0, B = 0, C = 1$

Answer: (C) $A = 1, B = 0, C = 1$ · The council's preliminary key

Q75 TS EAPCET 2024 · 10 May · Shift 1 MCQ

The voltage gain of a transistor in common emitter configuration is 160. The resistances in base and collector sides of the circuit are $1\,\mathrm{k\Omega}$ and $4\,\mathrm{k\Omega}$ respectively. If the change in base current is $100\,\mu\mathrm{A}$, then the change in output current is

(A) $4\,\mathrm{mA}$
(B) $4\,\mu\mathrm{A}$
(C) $40\,\mathrm{mA}$
(D) $40\,\mu\mathrm{A}$

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

Q76 TS EAPCET 2024 · 10 May · Shift 1 MCQ

Normally a capacitor is connected across the output terminals of a rectifier to

(A) convert AC to DC
(B) convert DC to AC
(C) to get a varying DC output
(D) to get a steady DC output

Answer: (D) to get a steady DC output · The council's preliminary key

Q77 TS EAPCET 2024 · 10 May · Shift 2 MCQ

In an n-type semiconductor, electrons are majority charge carriers and holes are minority charge carriers. The charge of an n-type semiconductor is

(A) negative
(B) positive
(C) neutral
(D) depends on the dopant

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

Q78 TS EAPCET 2024 · 10 May · Shift 2 MCQ

The region in the output voltage versus input voltage graph where a transistor can be used as an amplifier is

(A) active region
(B) cut off region
(C) saturation region
(D) passive region

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

Q79 TS EAPCET 2024 · 9 May · Shift 1 MCQ

The concentration of electrons in an intrinsic semiconductor is $6 \times 10^{15}\,\mathrm{m}^{-3}$. On doping with an impurity the electron concentration increases to $4 \times 10^{22}\,\mathrm{m}^{-3}$. In thermal equilibrium, the concentration of the holes in the doped semiconductor is

(A) $18 \times 10^{-8}\,\mathrm{m}^{-3}$
(B) $1.5 \times 10^{-7}\,\mathrm{m}^{-3}$
(C) $9 \times 10^{8}\,\mathrm{m}^{-3}$
(D) $\frac{2}{3} \times 10^{7}\,\mathrm{m}^{-3}$

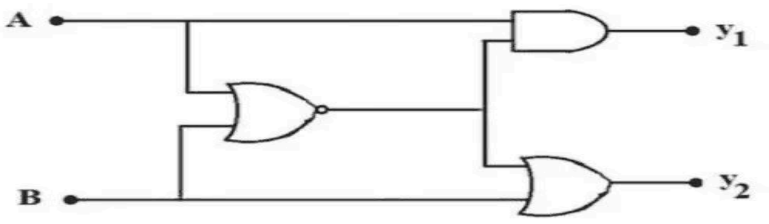
Answer: (C) $9 \times 10^{8}\,\mathrm{m}^{-3}$ · The council's preliminary key

Q80 TS EAPCET 2024 · 9 May · Shift 1 MCQ

Three logic gates are connected as shown in the figure. If the inputs are A=1 and B=1, then the values of y_1 and y_2 respectively are

(see the figure above)

Three logic gates are connected as shown in the figure. If the inputs are A=1 and B=1, then the values of y_1 and y_2 respectively are
మూడు తర్క ద్వారాలు పటంలో చూపిన విధంగా కలుపబడినవి. నివేశాలు A=1 మరియు B=1 అయిన y_1 మరియు y_2 విలువలు వరుసగా



Options :

1. 0, 0
2. 0, 1
3. 1, 0
4. 1, 1

(A) 0, 0
(B) 0, 1
(C) 1, 0
(D) 1, 1

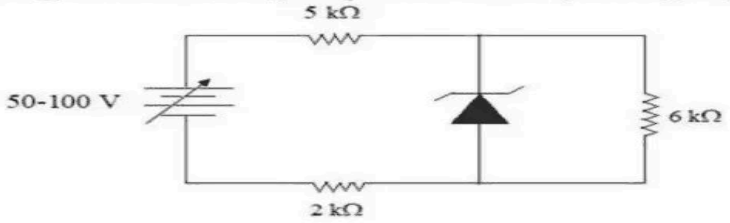
Answer: (B) 0, 1 · The council's preliminary key

Q81 TS EAPCET 2024 · 9 May · Shift 2 MCQ

A zener diode of zener voltage 30 V is connected in a circuit as shown in the figure. The maximum current through the zener diode is

(see the figure above)

A zener diode of zener voltage 30 V is connected in a circuit as shown in the figure. The maximum current through the zener diode is
పటంలో చూపిన విధంగా, 30 V జెన్నర్ వోల్టేజి గల ఒక జెన్నర్ డయోడ్ ఒక వలయంలో కలుపబడింది. జెన్నర్ డయోడ్ ద్వారా ప్రవహించే గరిష్ఠ విద్యుత్ ప్రవాహం



Options :

1. 5 mA
2. 14 mA
3. 9 mA
4. 7 mA

(A) 5 mA
(B) 14 mA
(C) 9 mA
(D) 7 mA

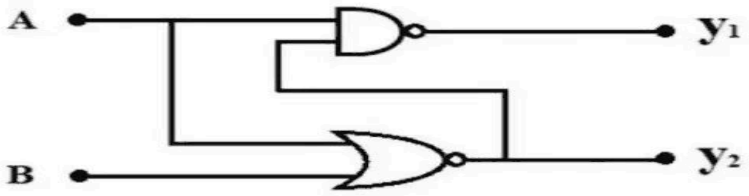
Answer: (A) 5 mA · The council's preliminary key

Q82 TS EAPCET 2024 · 9 May · Shift 2 MCQ

Two logic gates are connected as shown in the figure. If the inputs are $A = 1$ and $B = 0$, then the values of y_1 and y_2 respectively are

(see the figure above)

Two logic gates are connected as shown in the figure. If the inputs are A = 1 and B = 0, then the values of y_1 and y_2 respectively are



రెండు తర్క ద్వారాలు పటంలో చూపిన విధంగా కలుపబడినవి. నివేశాలు A = 1 మరియు B = 0 అయిన y_1 మరియు y_2 విలువలు వరుసగా

Options :

1. 1, 1
2. 1, 0
3. 0, 1
4. 0, 0

(A) 1, 1
(B) 1, 0
(C) 0, 1
(D) 0, 0

Answer: (B) 1, 0 · The council's preliminary key

Q83 AP EAPCET 2023 · 19 May · Shift 1 MCQ

In a CE transistor when the base current increases by 60 μA, change in base-emitter voltage is 1.2 V. Then the input resistance is

(A) 1000 Ω
(B) 5000 Ω
(C) 2000 Ω
(D) 20000 Ω

Answer: (D) 20000 Ω · The council's preliminary key

Q84 AP EAPCET 2023 · 19 May · Shift 1 MCQ

The photo current in a photo diode depends on

(A) applied electric field
(B) frequency of the incident light
(C) wave length of incident light
(D) intensity of incident light

Answer: (D) intensity of incident light · The council's preliminary key

Q85 AP EAPCET 2023 · 18 May · Shift 1 MCQ

A reverse biased zener diode when operated in the breakdown region works as

(A) an amplifier
(B) an oscillator
(C) a voltage regulator
(D) a rectifier

Answer: (C) a voltage regulator · The council's preliminary key

Q86 AP EAPCET 2023 · 18 May · Shift 1 MCQ

The current amplification factor and the collector current in a CE transistor circuit are 100 and 2.2 mA respectively. Then the base current is

(A) $0.22\ \mu\text{A}$
(B) $22\ \mu\text{A}$
(C) $220\ \mu\text{A}$
(D) $2.2\ \mu\text{A}$

Answer: (B) $22\ \mu\text{A}$ · The council's preliminary key

Q87 AP EAPCET 2023 · 18 May · Shift 2 MCQ

In a transistor circuit, if emitter and collector connections are interchanged then

(A) emitter current will increase.
(B) base current decreases.
(C) collector current increases.
(D) no current flows in the circuit.

Answer: (B) base current decreases. · The council's preliminary key

Q88 AP EAPCET 2023 · 17 May · Shift 1 MCQ

In the given circuit, when $A = 1$, $B = 1$ the values of X and Y respectively are

(see the figure above)

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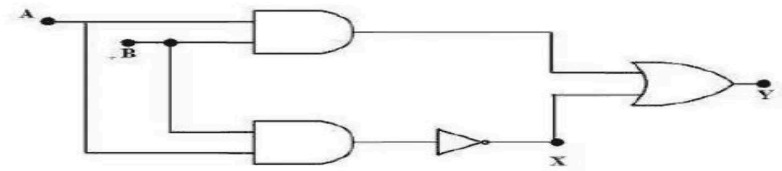
In the given circuit, when $A = 1, B = 1$ the values of X and Y respectively are

ఇచ్చిన వలయంలో $A = 1, B = 1$ అయిన X, Y ల విలువలు వరుసగా



Options :

1. 1, 0
2. 1, 1
3. 0, 1
4. 0, 0

(A) $1, 0$
(B) $1, 1$
(C) $0, 1$
(D) $0, 0$

Answer: (C) $0, 1$ · The council's preliminary key

Q89 AP EAPCET 2023 · 17 May · Shift 1 MCQ

In a transistor amplifier, the voltage gain is

(A) same for all frequencies.
(B) high for high frequencies and low for low frequencies.
(C) low for high frequencies and high for low frequencies.
(D) low for high and low frequencies and constant at mid frequencies.

Answer: (D) low for high and low frequencies and constant at mid frequencies. · The council's preliminary key

Q90 AP EAPCET 2023 · 17 May · Shift 2 MCQ

The hole and the free electron concentrations in a pure silicon at room temperature are given by $1.4 \times 10^{16}\ \mathrm{m}^{-3}$ each under equilibrium. When it is doped with indium and the hole concentration is $n_h = 4 \times 10^{22}\ \mathrm{m}^{-3}$, the electron concentration is

(A) $0.49 \times 10^{10}\ \mathrm{m}^{-3}$
(B) $0.14 \times 10^{10}\ \mathrm{m}^{-3}$
(C) $0.36 \times 10^{10}\ \mathrm{m}^{-3}$
(D) $0.72 \times 10^{10}\ \mathrm{m}^{-3}$

Answer: (A) $0.49 \times 10^{10}\ \mathrm{m}^{-3}$ · The council's preliminary key

Q91 AP EAPCET 2023 · 17 May · Shift 2 MCQ

When A = 0 and B = 1, the output is 0 for

(A) AND gate
(B) OR gate
(C) X-OR gate
(D) NAND gate

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

Q92 AP EAPCET 2023 · 16 May · Shift 1 MCQ

When the temperature of a semiconductor increases then

(A) number of free electrons only increases
(B) number of holes only increases
(C) both number of free electrons and number of holes increase
(D) both number of free electrons and number of holes decrease

Answer: (C) both number of free electrons and number of holes increase · The council's preliminary key

Q93 AP EAPCET 2023 · 16 May · Shift 1 MCQ

For a CE transistor amplifier, the current amplification factor is 59 and the emitter current is 6.6 mA. Then the base current is

(A) 0.11 mA
(B) 1.1 mA
(C) 11 μA
(D) 0.11 A

Answer: (A) 0.11 mA · The council's preliminary key

Q94 AP EAPCET 2023 · 16 May · Shift 2 MCQ

The device that can detect optical signals is

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(A) zener diode
(B) photo diode
(C) light emitting diode
(D) transistor

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

Q95 AP EAPCET 2023 · 16 May · Shift 2 MCQ

The load resistance and the base-emitter voltage of a transistor in CE configuration are $5\ \mathrm{k}\Omega$ and $0.02\ \mathrm{V}$ respectively. If the collector current is $2\ \mathrm{mA}$, then its voltage gain is

(A) 1000
(B) 500
(C) 1500
(D) 50

Answer: (B) 500 · The council's preliminary key

Q96 AP EAPCET 2023 · 15 May · Shift 1 MCQ

A p-n junction diode is reverse biased with a voltage of 8 V. If the resistance of the diode is $4 \times 10^7\ \Omega$, then the reverse saturation current is

(A) $32\ \mu\mathrm{A}$
(B) $2\ \mu\mathrm{A}$
(C) $0.2\ \mu\mathrm{A}$
(D) $0.5\ \mu\mathrm{A}$

Answer: (C) $0.2\ \mu\mathrm{A}$ · The council's preliminary key

Q97 AP EAPCET 2023 · 15 May · Shift 1 MCQ

In a p-n-p transistor

(A) emitter is heavily doped and collector is moderately doped.
(B) emitter is moderately doped and collector is heavily doped.
(C) both emitter and collector are heavily doped.
(D) both emitter and collector are moderately doped.

Answer: (A) emitter is heavily doped and collector is moderately doped. · The council's preliminary key

Q98 AP EAPCET 2023 · 15 May · Shift 2 MCQ

The material used in the fabrication of infrared LED's is

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(A) silicon
(B) germanium
(C) gallium arsenide phospide
(D) carbon dioxide

Answer: (C) gallium arsenide phospide · The council's preliminary key

Q99 AP EAPCET 2023 · 15 May · Shift 2 MCQ

In a transistor, when the emitter current changes by 9.85 mA, the collector current changes to 9.5 mA. Then the base current is

(A) 0.05 mA
(B) 0.85 mA
(C) 0.8 mA
(D) 0.35 mA

Answer: (D) 0.35 mA · The council's preliminary key

Q100 TS EAMCET 2023 · 14 May · Shift 1 MCQ

Photodiodes are mostly operated in reverse biased condition because

(A) Fractional change in minority carriers produce higher forward current
(B) Fractional change in majority carriers produce higher reverse current
(C) Fractional change in minority carriers produce higher reverse current
(D) Fractional change in majority carriers produce higher forward current

Answer: (C) Fractional change in minority carriers produce higher reverse current · The council's preliminary key

Q101 TS EAMCET 2023 · 14 May · Shift 1 MCQ

Which of the following statements is true about LEDs?

(A) High operational voltage
(B) Warm-up time is required
(C) Bandwidth of light is 4000 Å – 7000 Å
(D) Fast on-off switching

Answer: (D) Fast on-off switching · The council's preliminary key

Q102 TS EAMCET 2023 · 14 May · Shift 2 MCQ

When an n-type semiconductor is heated

(A) number of electrons increases while that of holes decreases
(B) number of holes increases while that of electrons decreases
(C) number of holes and electrons do not change
(D) number of holes and electrons increases equally

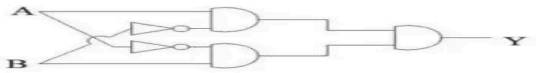
Answer: (D) number of holes and electrons increases equally · The council's preliminary key

Q103 TS EAMCET 2023 · 14 May · Shift 2 MCQ

5 logic gates are connected as shown in the figure. If A and B are the inputs, Y is the output then the truth table of the circuit is

(see the figure above)

5 logic gates are connected as shown in the figure. If A and B are the inputs, Y is the output then the truth table of the circuit is
పటములో చూపినట్లు 5 తర్క ద్వారాలను కలిపారు. A, B లు నివేశాలు, Y నిర్గమము అయిన వలయం యొక్క నిజ పట్టిక



Options :

1.

A	B	Y
0	0	0
1	0	0
0	1	0
1	1	0

2.

A	B	Y
0	0	1
1	0	0
0	1	0
1	1	1

3.

A	B	Y
0	0	0
1	0	1
0	1	1
1	1	1

4.

A	B	Y
0	0	1
1	0	1
0	1	1
1	1	1

(A)

A	B	Y
0	0	0
1	0	0
0	1	0
1	1	0

(B)

A	B	Y
0	0	1
1	0	0
0	1	0
1	1	1

(C)

A	B	Y
0	0	0
1	0	1
0	1	1
1	1	1

(D)

A	B	Y
0	0	1
1	0	1
0	1	1
1	1	1

Answer: (A)

A	B	Y
0	0	0
1	0	0
0	1	0
1	1	0

· The council's preliminary key

Q104 TS EAMCET 2023 · 13 May · Shift 1 MCQ

The phase difference between the input voltage and the output voltage in a common emitter amplifier is

(A) 0°
(B) 90°
(C) 120°
(D) 180°

Answer: (D) 180° · The council's preliminary key

Q105 TS EAMCET 2023 · 13 May · Shift 1 MCQ

The built-in potential of a p-n junction diode is 0.7 V. If the diode is forward biased and the applied voltage is 0.3 V, the effective barrier height is

(A) 0.7 V
(B) 0.3 V
(C) 0.4 V
(D) 1 V

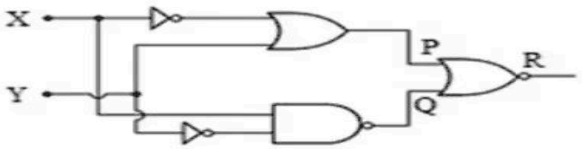
Answer: (C) 0.4 V · The council's preliminary key

Q106 TS EAMCET 2023 · 13 May · Shift 2 MCQ

In the logic circuit given below, if X=1 and Y=1 then the values of P, Q and R are

(see the figure above)

In the logic circuit given below, if X=1 and Y=1 then the values of P, Q and R are



క్రింద ఇవ్వబడిన లాజిక్ సర్క్యూట్‌లో, X=1 మరియు Y=1 అయితే, P, Q మరియు R విలువలు ఏమిటి?

Options :

1. $P = 1, Q = 1, R = 0$
2. $P = 0, Q = 1, R = 0$
3. $P = 1, Q = 0, R = 1$
4. $P = 1, Q = 1, R = 1$

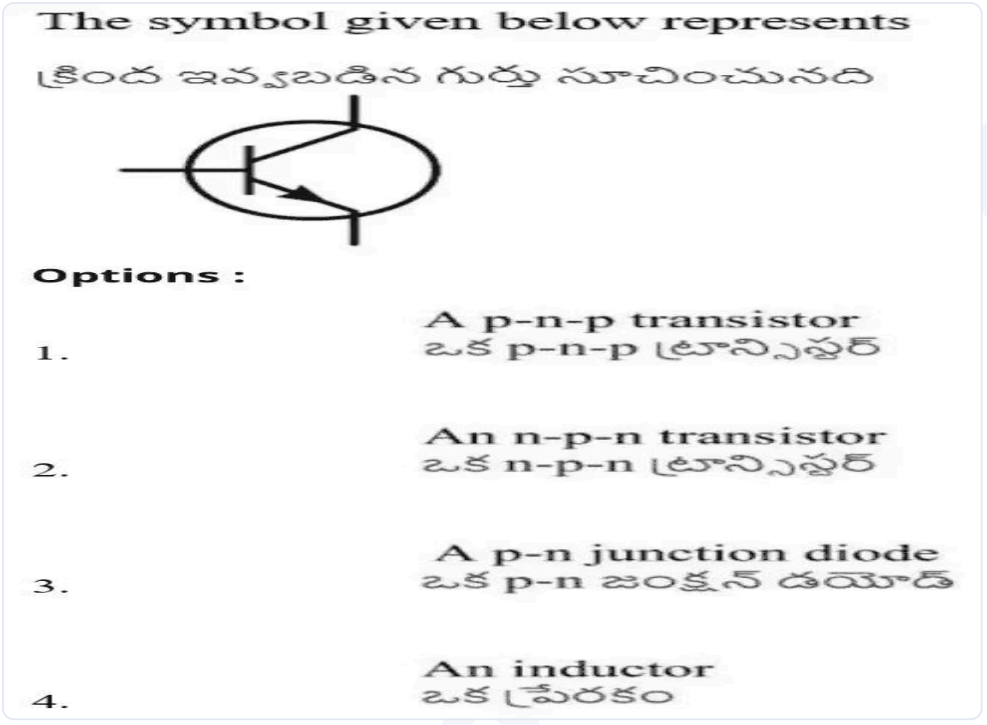
(A) P = 1, Q = 1, R = 0
(B) P = 0, Q = 1, R = 0
(C) P = 1, Q = 0, R = 1
(D) P = 1, Q = 1, R = 1

Answer: (A) P = 1, Q = 1, R = 0 · The council's preliminary key

Q107 TS EAMCET 2023 · 13 May · Shift 2 MCQ

The symbol given below represents

(see the figure above)



(A) A p-n-p transistor
(B) An n-p-n transistor
(C) A p-n junction diode
(D) An inductor

Answer: (B) An n-p-n transistor · The council's preliminary key

Q108 TS EAMCET 2023 · 12 May · Shift 1 MCQ

In a transistor, the base current is $10\ \mu\text{A}$ and the emitter current is $1\ \text{mA}$, then the collector current is

(A) $990\ \mu\text{A}$
(B) $100\ \mu\text{A}$
(C) $1010\ \mu\text{A}$
(D) $90\ \mu\text{A}$

Answer: (A) $990\ \mu\text{A}$ · The council's preliminary key

Q109 TS EAMCET 2023 · 12 May · Shift 1 MCQ

If the output of a NAND gate is given as input to a NOT gate, the resultant gate is

(A) AND
(B) OR
(C) NOR
(D) NOT

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

Q110 TS EAMCET 2023 · 12 May · Shift 2 MCQ

If the ratio of electron and hole currents in a semiconductor is $\frac{7}{4}$ and the ratio of drift velocities of electrons and holes is $\frac{5}{4}$, then ratio of concentrations of electrons and holes will be

(A) 5:7
(B) 7:5
(C) 5:9
(D) 9:5

Answer: (B) 7:5 · The council's preliminary key

Q111 TS EAMCET 2023 · 12 May · Shift 2 MCQ

When a semiconductor is doped with donor impurity

(A) the hole concentration decreases and electron concentration increases
(B) the hole concentration increases and electron concentration decreases
(C) both hole concentration and electron concentration increase
(D) both hole concentration and electron concentration decrease

Answer: (A) the hole concentration decreases and electron concentration increases · The council's preliminary key

Q112 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

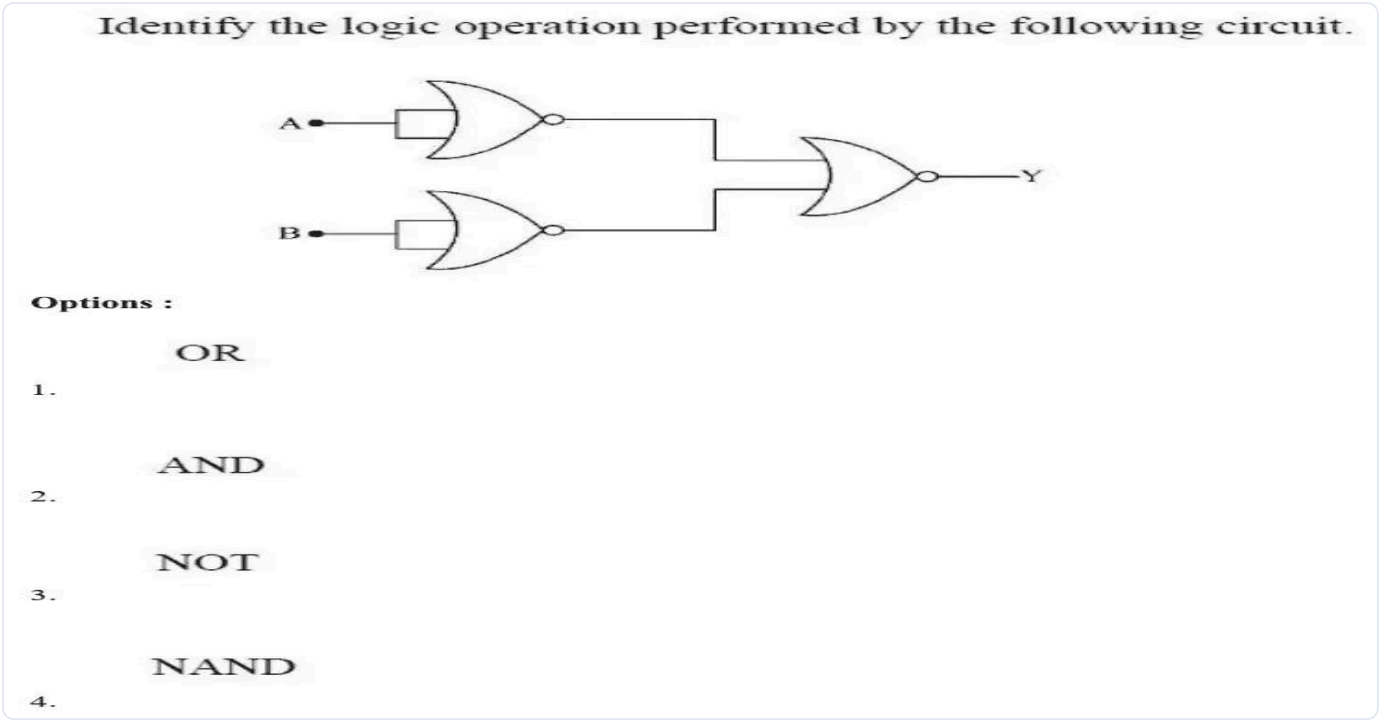
A p−n junction is fabricated from a semiconductor with band gap of 2.8 eV. What approximate wavelength it cannot detect? [use h = 6×10^{-34} m^2 kg/s]

(A) 100 nm
(B) 200 nm
(C) 400 nm
(D) 600 nm

Answer: (D) 600 nm · The council's preliminary key

Q113 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

Identify the logic operation performed by the following circuit.
(see the figure above)



(A) OR
(B) AND
(C) NOT
(D) NAND

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

Q114 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

The band gap in a semi-conductor is 0.6 eV. The maximum wavelength of electromagnetic radiation which can create a hole-electron pair in this semiconductor is equal to
[Use $hc = 1242$ eV- nm]

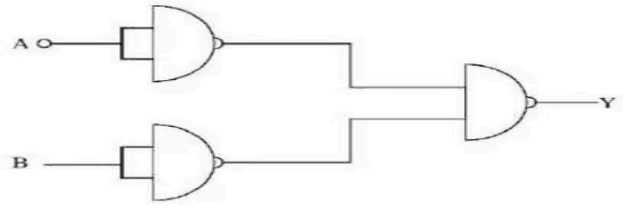
(A) 2450 nm
(B) 1150 nm
(C) 2070 nm
(D) 1050 nm

Answer: (C) 2070 nm · The council's preliminary key

Q115 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

Identify the logic gate from the following with the same truth table characteristics of the logic circuit below.
(see the figure above)

Identify the logic gate from the following with the same truth table characteristics of the logic circuit below.



Options :

1. NAND
2. NOR
3. AND
4. OR

(A) NAND
(B) NOR
(C) AND
(D) OR

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

Q116 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

Current I through a given p - n junction when a voltage V is applied across it is given to be $\mathrm{I} = \mathrm{I}_0 \left(e^{\frac{V}{2V_T}} - 1\right)$ where I_0 and V_T are constants. If $r_d(\mathrm{I})$ is the dynamic resistance of the junction, then $r_d(1000\,\mathrm{I}_0) = \alpha\, r_d(10\,\mathrm{I}_0)$, where α is approximately equal to

(A) 10
(B) $1/10$
(C) $1/100$
(D) $1/1000$

Answer: (C) $1/100$ · The council's preliminary key

Q117 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

For an n-p-n transistor structure which of the following statements is NOT true?

(A) Emitter is heavily doped and moderate in size
(B) Base is lightly doped and thin in size
(C) Collector is lightly doped and large in size
(D) Collector is moderately doped and large in size

Answer: (C) Collector is lightly doped and large in size · The council's preliminary key

Q118 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

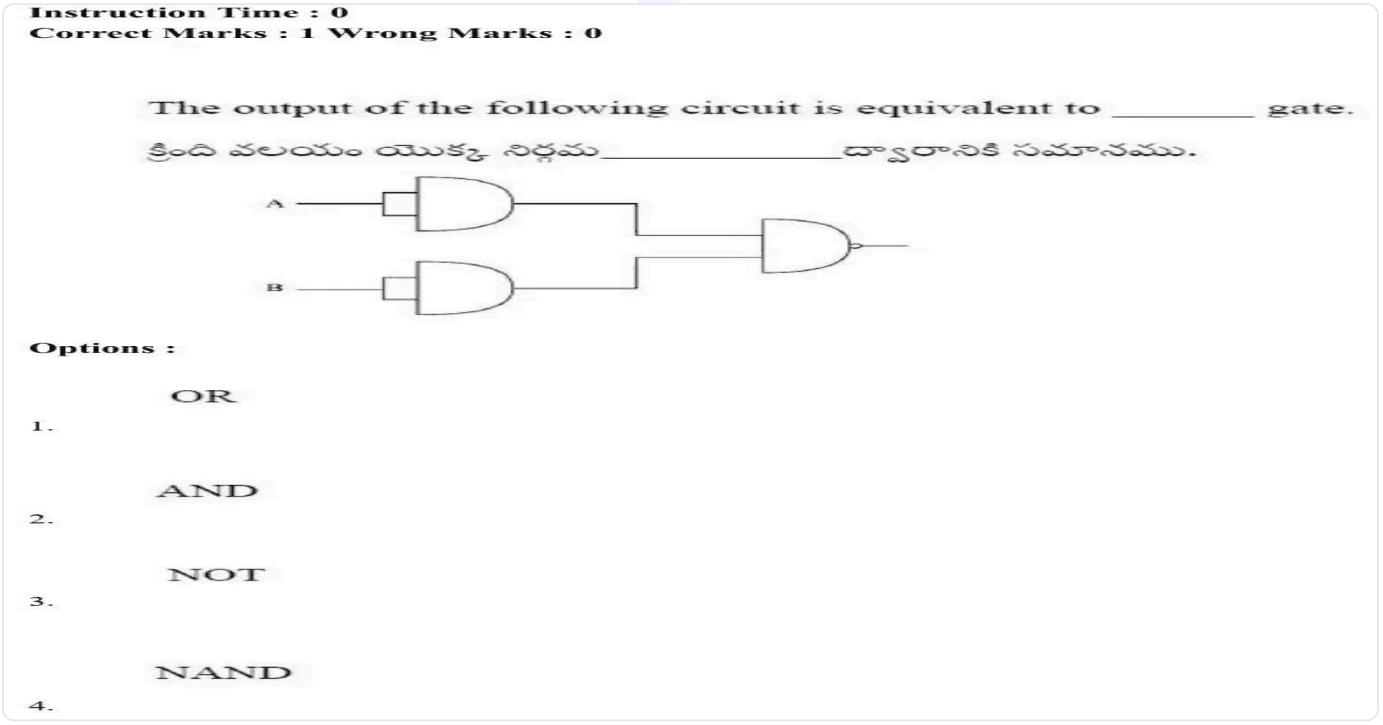
The number of silicon atoms per m^3 is 5×10^{28}. This is doped with 4.5×10^{22} atoms/m^3 of Arsenic. The ratio of number of electrons to number of holes after doping is
(Take n_i = Number of thermally-generated electrons$= 1.5 \times 10^{16}/\mathrm{m}^3$)

(A) 4.5×10^{12}
(B) 8×10^{14}
(C) 9×10^{12}
(D) 9×10^{11}

Answer: (C) 9×10^{12} · The council's preliminary key

Q119 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

The output of the following circuit is equivalent to _____ gate.
(see the figure above)



(A) OR
(B) AND
(C) NOT
(D) NAND

Options (1) or (4) were accepted. More than one answer was accepted. · The council's preliminary key

Q120 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

In a p-type semiconductor, which of the following statement is true?

(A) Holes are majority carriers and trivalent atoms are the dopants
(B) Electrons are minority carriers and pentavalent atoms are the dopants
(C) Electrons are majority carriers and trivalent atoms are the dopants
(D) Holes are minority carriers and pentavalent atoms are the dopants

Answer: (A) Holes are majority carriers and trivalent atoms are the dopants · The council's preliminary key

Q121 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

In a NAND Gate, A and B are inputs and Y is the output, then the correct option is

(A) A = 0, B = 0; Y = 0
(B) A = 0, B = 1; Y = 0
(C) A = 1, B = 0; Y = 0
(D) A = 1, B = 1; Y = 0

Answer: (D) A = 1, B = 1; Y = 0 · The council's preliminary key

Q122 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

The resistivity of a material is found to be $10^8\ \Omega - m$. Then the material would be

(A) Only insulator
(B) Only metal
(C) Only semiconductor
(D) Only Superconductor

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

Q123 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

The behaviour of the circuit is like _____ gate

(see the figure above)

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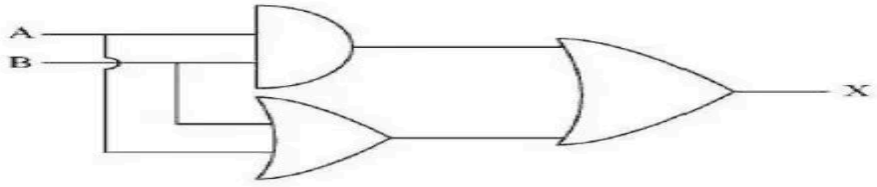
The behaviour of the circuit is like _____gate



Options :

1. OR

2. NOR

3. NAND

4. AND

(A) OR
(B) NOR
(C) NAND
(D) AND

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

Q124 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

In a CE transistor amplifier, the signal voltage across the collector resistance is 2.5 V. The input signal voltage is 0.02 V. If the base and collector resistances are $1.5\ \text{k}\Omega$ and $2.5\ \text{k}\Omega$, then the current amplification factor is

(A) 100
(B) 50
(C) 75
(D) 125

Answer: (C) 75 · The council's preliminary key

Q125 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

The class of materials having the largest band gap in the following is

(A) Metals
(B) Semi-metals
(C) Semi-Conductors
(D) Insulators

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

Q126 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

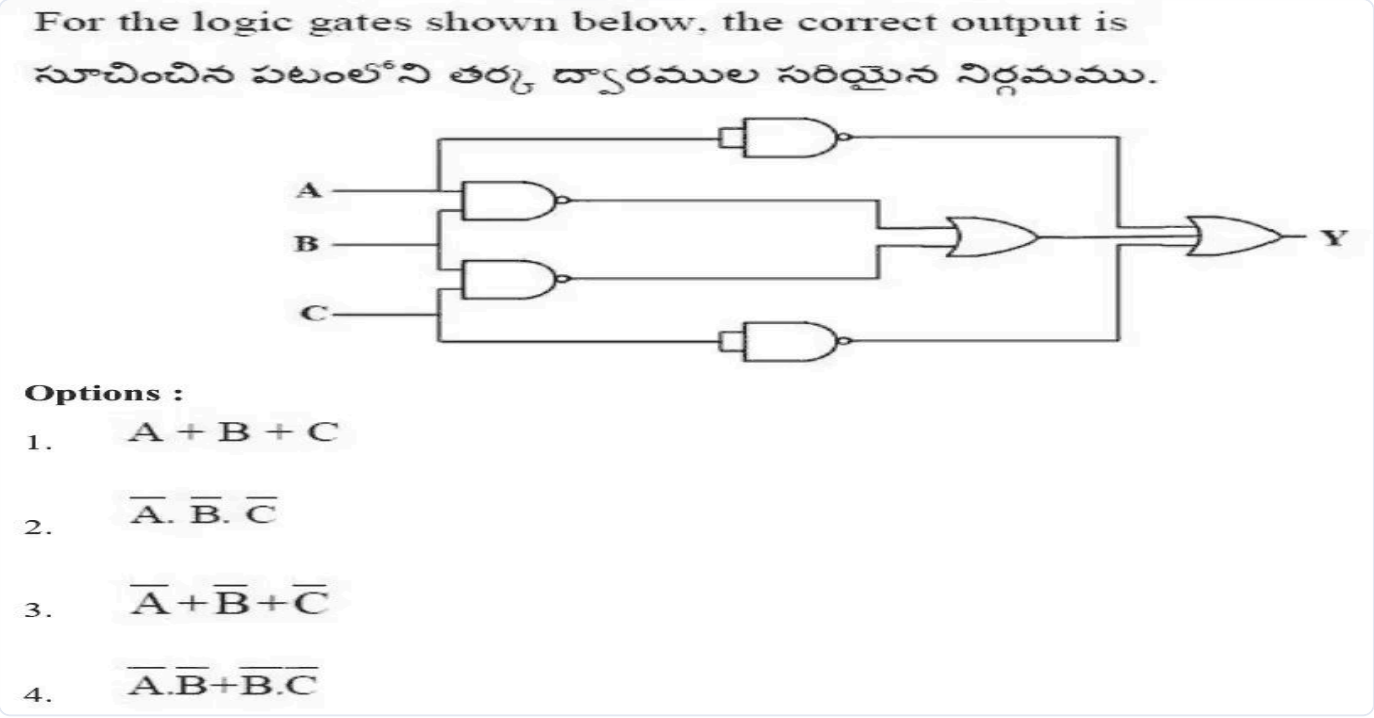
Consider the following statements
Statement (A): The resistance of an ideal diode in forward biased condition is zero.
Statement (B): In a half wave rectifier, the load current flows only for every half cycle of the input signals.
Statement (C): In the breakdown region, a zener diode behaves as a constant voltage source.

(A) A, B & C are all true.
(B) A, B true but C is false
(C) A, C true but B is false
(D) B, C true but A is false

Answer: (A) A, B & C are all true. · The council's preliminary key

Q127 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

For the logic gates shown below, the correct output is
(see the figure above)



(A) $A + B + C$
(B) $\overline{A}.\overline{B}.\overline{C}$
(C) $\overline{A} + \overline{B} + \overline{C}$
(D) $\overline{A}.\overline{B} + \overline{B}.\overline{C}$

Answer: (C) $\overline{A} + \overline{B} + \overline{C}$ · The council's preliminary key

Q128 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

A pure semiconductor crystal has 8×10^{28} $\frac{\text{atoms}}{\text{m}^3}$. It is doped by 2 ppm concentration of pentavalent atoms. The number of holes formed in the semiconductor crystal is
(Intrinsic carrier concentration, $n_i = 1 \times 10^{16}\ \text{m}^{-3}$).

(A) $4.5 \times 10^{9}\ \text{m}^{-3}$
(B) $6.25 \times 10^{8}\ \text{m}^{-3}$
(C) $2.5 \times 10^{9}\ \text{m}^{-3}$
(D) $1.25 \times 10^{8}\ \text{m}^{-3}$

Answer: (B) $6.25 \times 10^{8}\ \text{m}^{-3}$ · The council's preliminary key

Q129 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

The energy of a photon in a monochromatic light of wavelength 621 nm matches with the band gap of a semiconducting material. Then the minimum energy required to create an electron-hole pair from the semiconductor is
[Take hc = 1242 eV − nm, where h is Planck's constant and c is speed of light in vacuum]

(A) 3.4 eV
(B) 1.7 eV
(C) 2 eV
(D) 2.2 eV

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

Q130 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

The logic gates in which all the inputs must be low to get a high output are

(A) NAND and AND
(B) NOR and NAND
(C) OR and AND
(D) AND and NOR

Answer: (B) NOR and NAND · The council's preliminary key

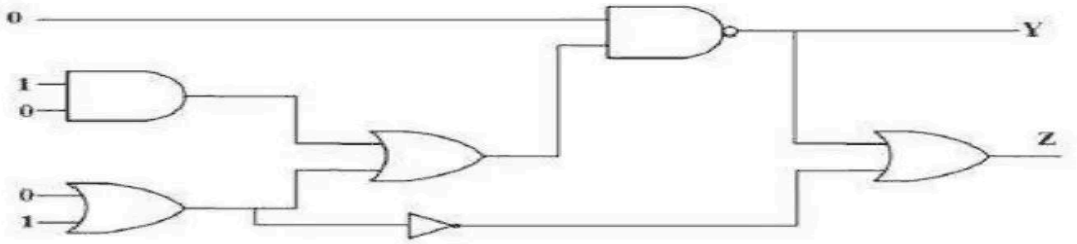
Q131 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

The values of Y and Z in the given logic circuit are

(see the figure above)

The values of Y and Z in the given logic circuit are

క్రింద ఇచ్చిన తర్క వలయంలో Y మరియు Z విలువలు



Options :

1. $Y = 1, \quad Z = 1$
2. $Y = 0, \quad Z = 1$
3. $Y = 1, \quad Z = 0$
4. $Y = 0, \quad Z = 0$

(A) $Y = 1, \quad Z = 1$
(B) $Y = 0, \quad Z = 1$
(C) $Y = 1, \quad Z = 0$
(D) $Y = 0, \quad Z = 0$

Answer: (A) $Y = 1, \quad Z = 1$ · The council's preliminary key

Q132 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

Output of following logic circuit is

(see the figure above)

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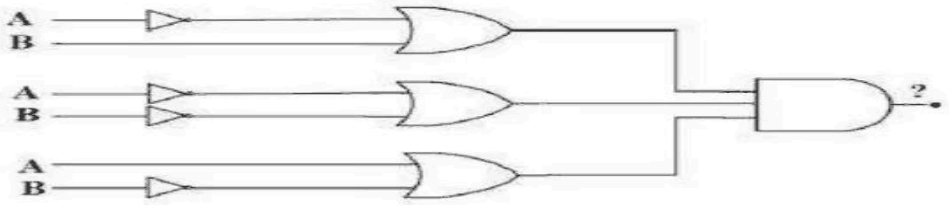
Output of following logic circuit is

క్రింది తర్క వలయంలో నిర్గమము విలువ



Options :

1. $(\overline{A}+B)+(\overline{A}+\overline{C})+(B+\overline{C})$
2. $(A+\overline{B}).(A+C).(\overline{B}+\overline{C})$
3. $(\overline{A}+B).(\overline{A}+\overline{C}).(B+\overline{C})$
4. $(\overline{A}+B)-(\overline{A}+\overline{C})-(B+\overline{C})$

(A) $(\overline{A}+B)+(\overline{A}+\overline{C})+(B+\overline{C})$
(B) $(A+\overline{B}).(A+C).(\overline{B}+\overline{C})$
(C) $(\overline{A}+B).(\overline{A}+\overline{C}).(B+\overline{C})$
(D) $(\overline{A}+B)-(\overline{A}+\overline{C})-(B+\overline{C})$

Answer: (C) $(\overline{A}+B).(\overline{A}+\overline{C}).(B+\overline{C})$ · The council's preliminary key

Q133 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

Consider the statements
In a semi conductor
(A) There are no free electrons at 0 K.
(B) There are no free electrons at any temperature
(C) The number of free electrons increases with temperature.
(D) The number of free electrons is less than that in a conductor.

(A) B, C, D are true but A is false
(B) A, B, C are true but D is false
(C) A, C, D are true but B is false.
(D) A, B, C and D are all true.

Answer: (C) A, C, D are true but B is false. · The council's preliminary key

Q134 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

The current gain for a transistor working as common-base amplifier is 0.96. If the emitter current is $7.2\ \mathrm{mA}$, then the base current is _____

(A) $0.29\ \text{mA}$
(B) $0.35\ \text{mA}$
(C) $0.39\ \text{mA}$
(D) $10\ \text{mA}$

Answer: (A) $0.29\ \text{mA}$ · The council's preliminary key

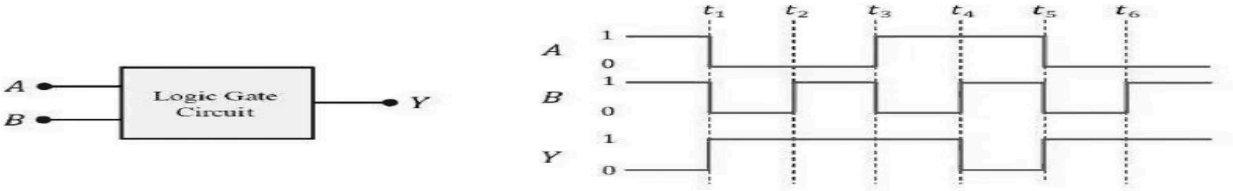
Q135 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

The following figure shows a logic gate circuit with inputs 'A' and 'B' and output 'Y'. If the voltage wave forms of A, B and Y are as given, then the logic gate is _____ *(see the figure above)*

Mandatory : No

The following figure shows a logic gate circuit with inputs 'A' and 'B' and output 'Y'. If the voltage wave forms of A, B and Y are as given, then the logic gate is _____

పటము రెండు నివేశములు 'A' మరియు 'B', నిర్గమము 'Y'గల తర్క ద్వారాన్ని చూపును. నివేశ A, Bల మరియు నిర్గమ Y ల వోల్టేజీ తరంగములు ఇవ్వబడ్డాయి. ఈ తర్క ద్వారము _____



Options :

1. NOR gate
2. OR gate
3. AND gate
4. NAND gate

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(A) NOR gate
(B) OR gate
(C) AND gate
(D) NAND gate

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

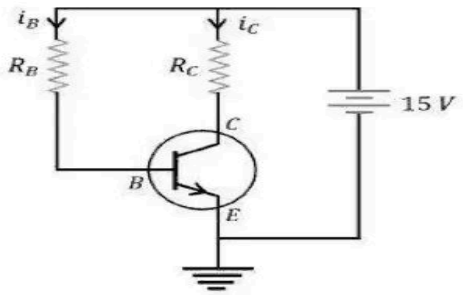
Q136 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

In the following common emitter circuit, if $\beta = 100$, $V_{CE} = -7\ \text{V}$, V_{BE} is negligible, $R_C = 2\ \text{k}\Omega$, then $I_B =$?
(see the figure above)

Mandatory : No

In the following common emitter circuit, if $\beta = 100$, $V_{CE} = -7\ V$, V_{BE} is negligible, $R_C = 2\ k\Omega$, then $I_B = ?$

పటములో ఉమ్మడి ఉద్గార వలయము చూపినారు. $\beta = 100$, $V_{CE} = -7\ V$ అయితే $I_B =$ _____ (V_{BE} విస్మరించవచ్చు)



Options :

1. $0.01\ mA$
2. $0.04\ mA$
3. $0.02\ mA$
4. $0.03\ mA$

(A) 0.01 mA
(B) 0.04 mA
(C) 0.02 mA
(D) 0.03 mA

Answer: (B) 0.04 mA · The council's preliminary key

Q137 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

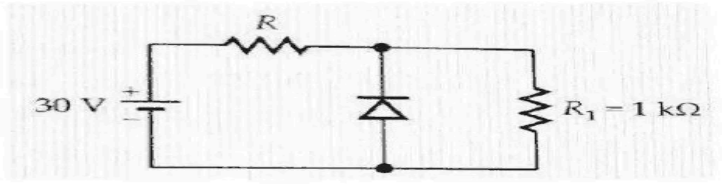
If current in diode is five times that in R_1 and breakdown voltage of diode is $6\ V$, find the value of R? *(see the figure above)*

Mandatory : No

AP EAPCET 2021
AP EAPCET 2021

If current in diode is five times that in R_1 and breakdown voltage of diode is $6\ V$, find the value of R?

నిరోధము లోని R_1 విద్యుత్ ప్రవాహానికి 5 రెట్లు విద్యుత్ డయోడ్ గుండా ప్రవహిస్తున్నది. డయోడ్ యొక్క భంజన వోల్టేజ్ $6\ V$ అయితే, R విలువ ఎంత?



Options :

1. $2000\ \Omega$
2. $\frac{2000}{3}\ \Omega$
3. $1000\ \Omega$
4. $\frac{1000}{3}\ \Omega$

(A) $2000\ \Omega$

(B) $\frac{2000}{3}\ \Omega$

(C) $1000\ \Omega$

(D) $\frac{1000}{3}\ \Omega$

Answer: (B) $\frac{2000}{3}\ \Omega$ · The council's preliminary key

Q138 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

The curve between charge density (ρ) and distance (r) near a p-n junction is best represented by:

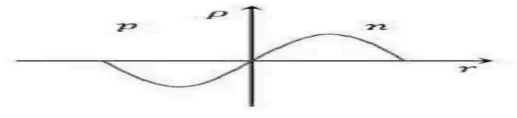
Mandatory : No

The curve between charge density (ρ) and distance (r) near a p-n junction is best represented by:

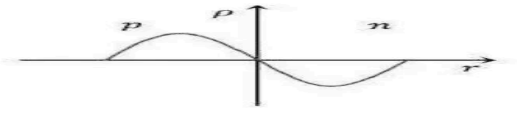
p-n సంధి దగ్గర ఆవేశ సాంద్రత (ρ) మరియు దూరము (r) మధ్య వక్రము _____

Options :

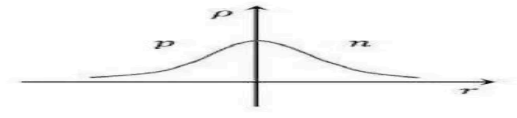
1.



2.



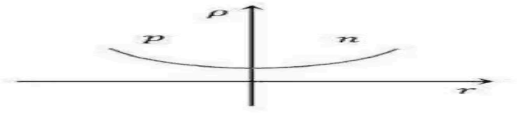
3.



AP EAPCET 2021

AP EAPCET 2021

4.



(A) *see figure*

(B) *see figure*

(C) *see figure*

(D) *see figure*

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

Q139 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

In the circuit shown for the given input voltage V_i, the maximum output voltage V_o is:

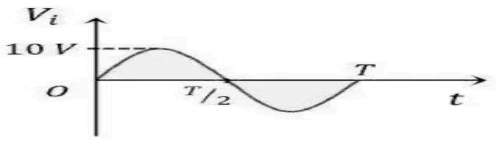
(see the figure above)

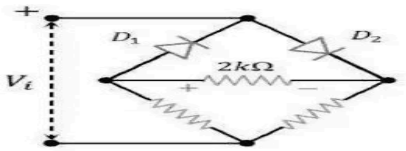
Mandatory : No

AP EAPCET 2021
AP EAPCET 2021

In the circuit shown for the given input voltage V_i, the maximum output voltage V_o is:

క్రింది చూపిన వలయములో V_i అనేది నిరోధన వోల్టేజ్ అయితే, గరిష్ట నిర్గమన వోల్టేజ్ V_o _____





Options :

1. 0 V
2. 5 V
3. 10 V
4. $\frac{5}{\sqrt{2}}$ V

(A) 0 V

(B) 5 V

(C) 10 V

(D) $\frac{5}{\sqrt{2}}V$

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

Q140 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

The process of increasing the strength of a signal using an electronic circuit is called _____

(A) Amplification

(B) Modulation

(C) Demodulation

(D) Attenuation

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

Q141 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

The truth table given below corresponds to _____ logic gate.

(see the figure above)

Mandatory : No

The truth table given below corresponds to _____ logic gate.

ఈ క్రింద చూపబడిన సత్యపట్టిక ఏ తర్క ద్వారాన్ని సూచిస్తుంది?

A	B	X
0	0	0
0	1	1
1	0	1
1	1	1

Options :

1. NAND
2. OR
3. AND
4. XOR

(A) NAND
(B) OR
(C) AND
(D) XOR

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

Q142 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

The output current versus time curve of a rectifier is shown in the figure. The average value of output current in this case is _____

(see the figure above)

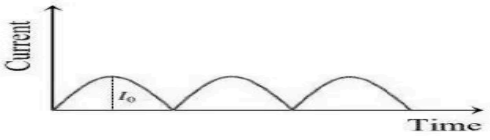
Mandatory : No

AP EAPCET 2021

AP EAPCET 2021

The output current versus time curve of a rectifier is shown in the figure. The average value of output current in this case is _____

ఒక వికధిక్కరిణి యొక్క నిర్గమ ప్రవాహానికి, కాలమునకు గీసిన గ్రాఫ్ పటములో చూపినారు. ఈ సందర్భములో నిర్గమ ప్రవాహము యొక్క సగటు విలువ _____



Options :

1. 0
2. $\frac{I_0}{2}$
3. $\frac{2I_0}{\pi}$
4. I_0

(A) 0
(B) $\frac{I_0}{2}$
(C) $\frac{2I_0}{\pi}$
(D) I_0

Answer: (C) $\frac{2I_0}{\pi}$ · The council's preliminary key

Q143 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

A change of $0.04\ volts$ takes place between the base and the emitter when an input signal is connected to the common emitter transistor amplifier. As a result, $20\ \mu A$ change takes place in the base current and a change of $2\ mA$ takes place in the collector current. The input resistance and AC current gain are _____

(A) $1\ k\Omega\ \&\ 100$
(B) $2\ k\Omega\ \&\ 100$
(C) $2\ k\Omega\ \&\ 1000$
(D) $1\ k\Omega\ \&\ 200$

Answer: (B) $2\ k\Omega\ \&\ 100$ · The council's preliminary key

Q144 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

A transistor is connected in common emitter configuration. The collector supply is $8\ V$ and the voltage drop across a resistor of $800\ \Omega$ in the collector circuit is $0.5\ V$. If the current gain factor 'α' is 0.96, the base current is _____

(A) $2.6 \times 10^{-5}\ A$
(B) $3.6 \times 10^{-5}\ A$
(C) $5.6 \times 10^{-5}\ A$
(D) $6.6 \times 10^{-5}\ A$

Answer: (A) $2.6 \times 10^{-5}\ A$ · The council's preliminary key

Q145 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

The length of germanium rod is $0.925\ \text{cm}$ and its area of cross section is $1\ \text{mm}^2$. If for germanium $n_i = 2.5 \times 10^{19}\ \text{m}^{-3}$, $\mu_h = 0.19\ \text{m}^2/\text{v} - \text{s}$, $\mu_e = 0.39\ \text{m}^2/\text{v} - \text{s}$, then the resistance of the rod is _____

(A) $2.5\ \Omega$
(B) $4.0\ \text{k}\Omega$
(C) $5.0\ \Omega$
(D) $10.0\ \Omega$

Answer: (B) $4.0\ \text{k}\Omega$ · The council's preliminary key

Q146 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

Which of the following is correct with respect to the following statements? Due to diffusion of electrons from n to p - side _____

(I) electrons are accumulated in the depletion region

(II) electron drift current is from p - side to n - side

(III) an ionised donor is left in the n -region

(IV) electrons of n - side comes to p - side and electron- hole combination takes in p - side

Select the correct option from the following.

(A) (I) and (II)

(B) (I) and (III)

(C) (I) and (IV)

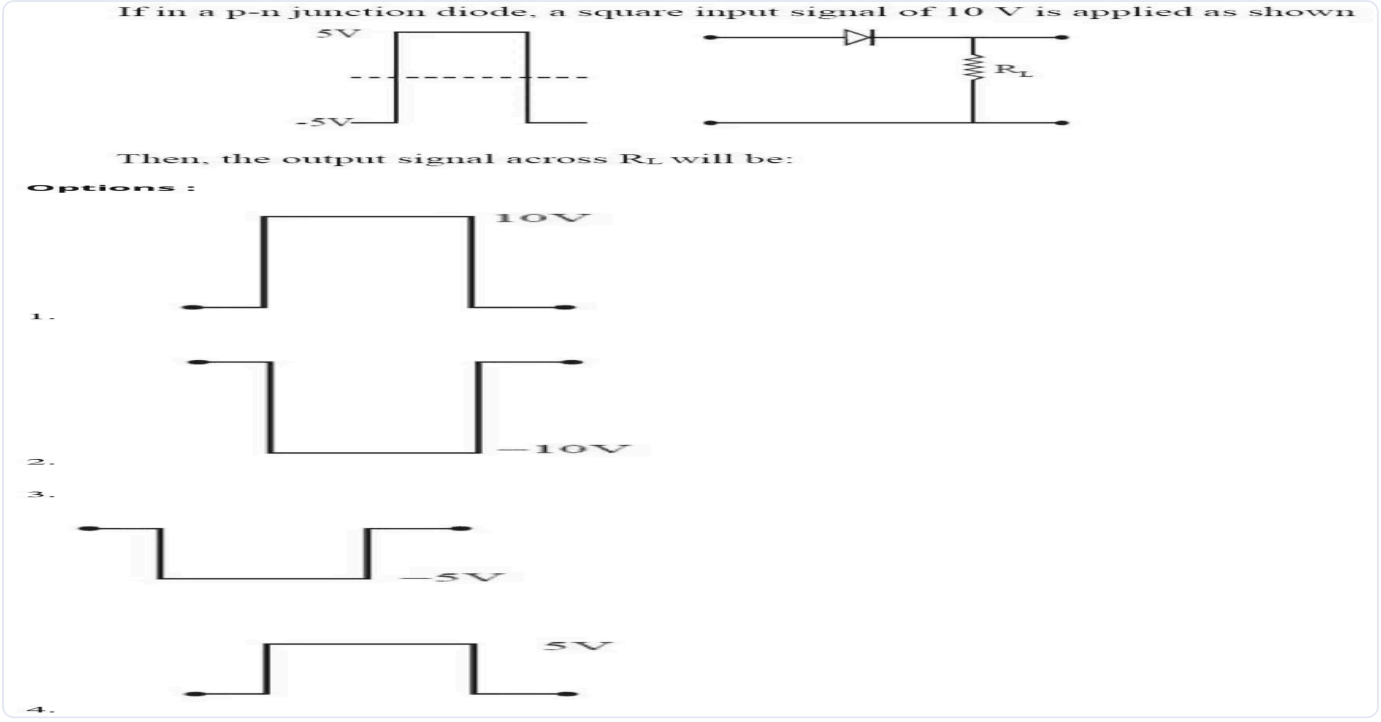
(D) (II), (III) and (IV)

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

Q147 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

If in a p-n junction diode, a square input signal of 10 V is applied as shown *(see the figure above)*

Then, the output signal across R_L will be:



(A) *see figure*

(B) *see figure*

(C) *see figure*

(D) *see figure*

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

Q148 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

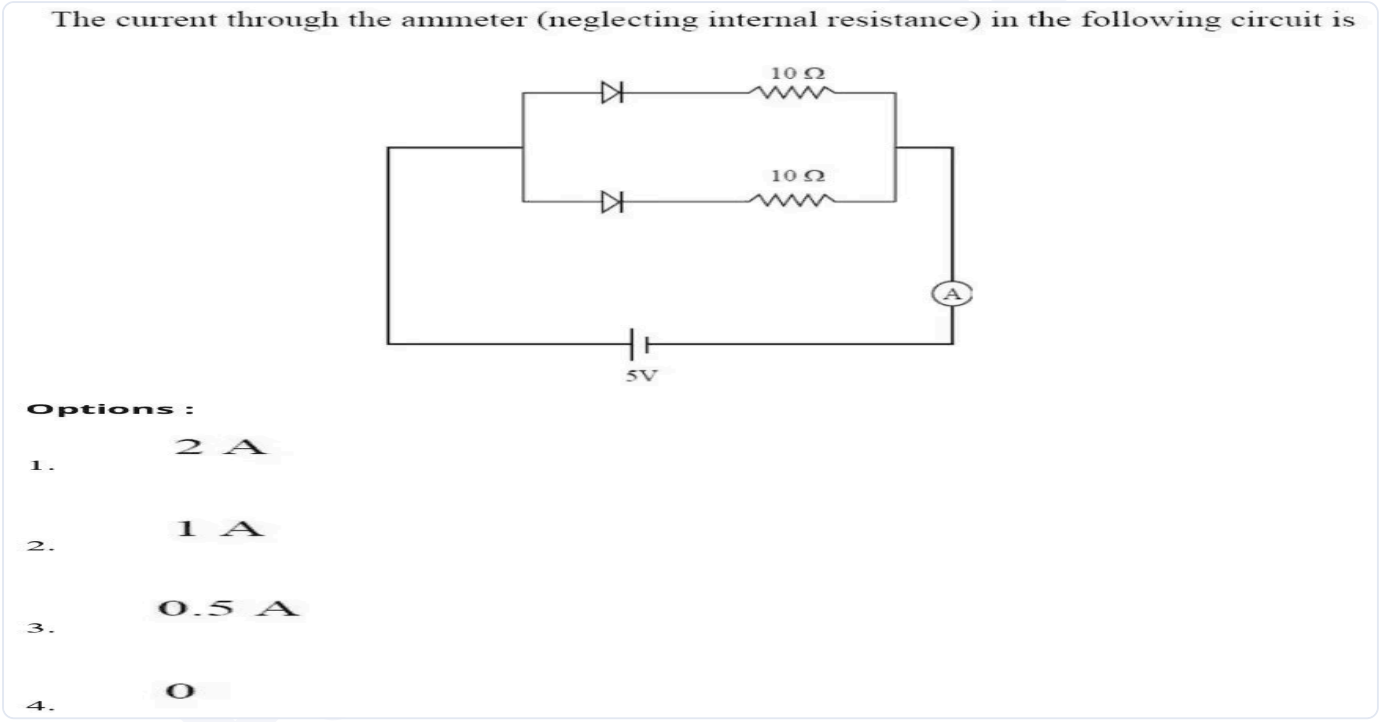
What is the maximum wavelength of electromagnetic radiation that create a electron-hole pair in material with band gap $0.7\ \text{eV}$? Planck's constant $4.136 \times 10^{-15}\ \text{eV-Sec}$, velocity of light $= 3 \times 10^{8}\ \text{m/s}$.

(A) $1773 \times 10^{-8}\ \text{m}$
(B) $1773 \times 10^{-9}\ \text{m}$
(C) $1873 \times 10^{-9}\ \text{m}$
(D) $1873 \times 10^{-8}\ \text{m}$

Answer: (B) $1773 \times 10^{-9}\ \text{m}$ · The council's preliminary key

Q149 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

The current through the ammeter (neglecting internal resistance) in the following circuit is *(see the figure above)*



(A) $2\ \text{A}$
(B) $1\ \text{A}$
(C) $0.5\ \text{A}$
(D) 0

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

Q150 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

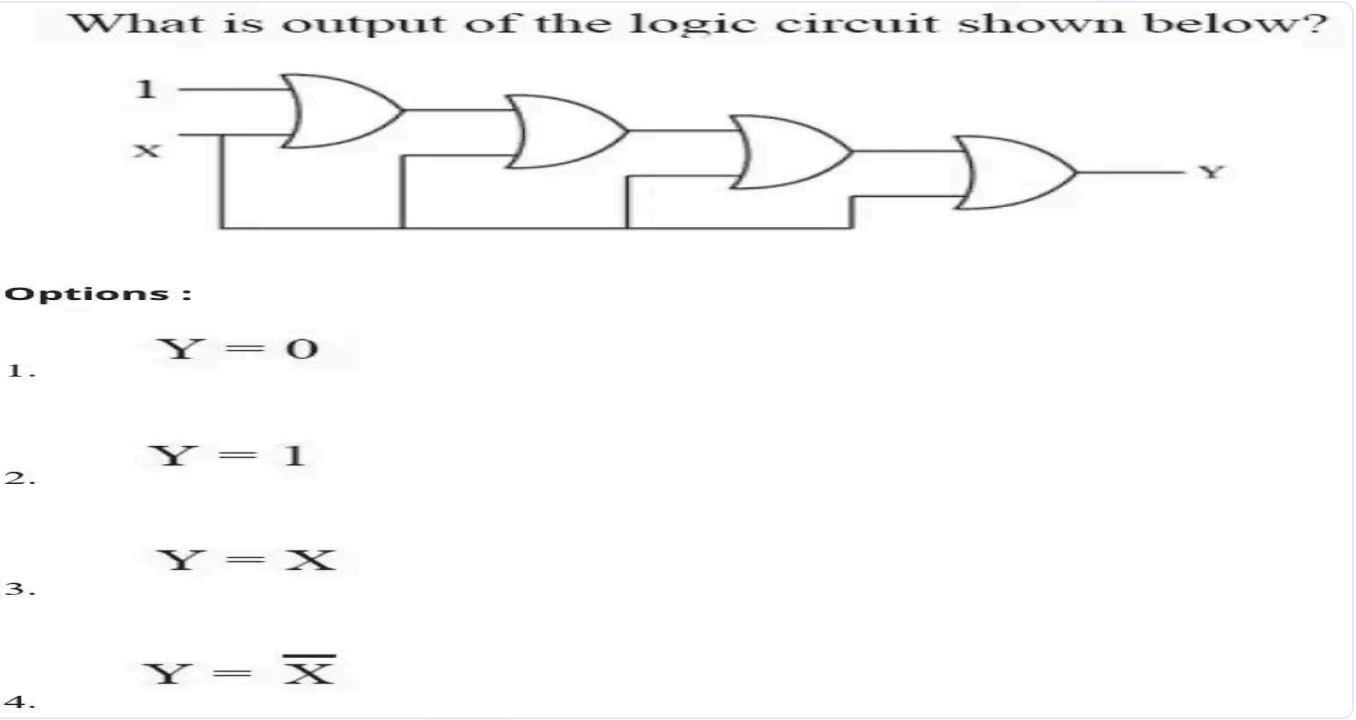
The length of germanium rod is 0.928 cm and its area of cross section is 1 mm^2. If for germanium $n_i = 2.5 \times 10^{19}\ \text{m}^{-3}$, $\mu_n = 0.15\ \text{m}^2\text{V}^{-1}\text{s}^{-1}$, $\mu_e = 0.35\ \text{m}^2\text{V}^{-1}\text{s}^{-1}$ then resistivity is

(A) $50\ \Omega$ cm
(B) $25\ \Omega$ cm
(C) $50\ \Omega$ mm
(D) $100\ \Omega$ m

Answer: (A) $50\ \Omega$ cm · The council's preliminary key

Q151 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

What is output of the logic circuit shown below?
(see the figure above)



(A) Y = 0
(B) Y = 1
(C) Y = X
(D) $Y = \overline{X}$

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

Q152 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

In an intrinsic semi conductor at room temperature number of electrons and holes are

(A) equal
(B) zero
(C) unequal
(D) electrons more than holes

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

Q153 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

Identify the logic gate for which the output is 0, when any of the inputs is 1

(A) NOR
(B) NAND
(C) AND
(D) OR

Answer: (A) NOR · The council's preliminary key

Q154 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

If the temperature of the semi-conductor is increased, which of the following is correct statement?

(A) It's resistance increases
(B) The number of electrons in valence band increases
(C) The number of electrons in conduction band increases
(D) The number of holes in valence band decreases

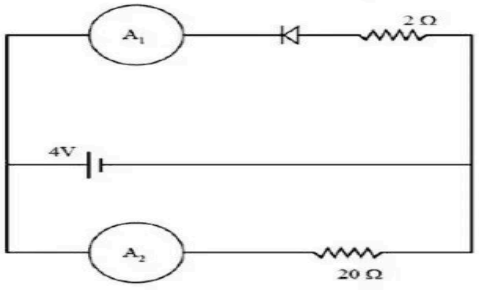
Answer: (C) The number of electrons in conduction band increases · The council's preliminary key

Q155 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

Two ammeters A_1 and A_2 are connected as shown in the given figure. By neglecting the internal resistance of the ammeters, the reading in the meter A_1 is

(see the figure above)

Two ammeters A_1 and A_2 are connected as shown in the given figure. By neglecting the internal resistance of the ammeters, the reading in the meter A_1 is



Options :

1. 2 A
2. 0 A
3. 1 A
4. 4 A

(A) 2 A
(B) 0 A
(C) 1 A
(D) 4 A

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

Q156 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

In a p-n junction, an electric field of $5 \times 10^5\ \mathrm{V/m}$ exists in the depletion region. The minimum kinetic energy of a conduction electron, in order to diffuse from n-side to the p-side, is found to be $3.2 \times 10^{-20}\ \mathrm{J}$. The width of the depletion region is

(A) $2 \times 10^{-4}\ \mathrm{cm}$
(B) $8 \times 10^{-5}\ \mathrm{cm}$
(C) $5 \times 10^{-6}\ \mathrm{cm}$
(D) $4 \times 10^{-5}\ \mathrm{cm}$

Answer: (D) $4 \times 10^{-5}\ \mathrm{cm}$ · The council's preliminary key

Q157 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

A typical integrated circuit (IC) consisting of logic gates ≤ 1000 is termed as

(A) SSI
(B) VLSI
(C) LSI
(D) MSI

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

Q158 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

The two combinations of 'NAND' gates shown in the figure are equivalent to _____ *(see the figure above)*

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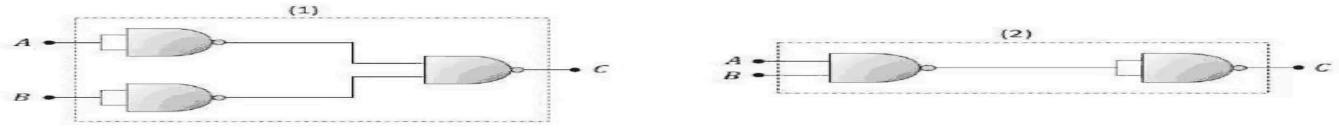
Orientation : Vertical

AP EAMCET 2020
AP EAMCET 2020

The two combinations of '*NAND*' gates shown in the figure are equivalent to _____

పటములో చూపిన *NAND* ద్వారముల రెండు కలయికలకు సమానమయిన రీతులు తెలుపండి.



Options :

1. (1)- *OR* gate, (2)- *AND* gate
   (1)- *OR* ద్వారము, (2)- *AND* ద్వారము
2. (1)- *AND* gate, (2)- *NOT* gate
   (1)- *AND* ద్వారము, (2)- *NOT* ద్వారము
3. (1)- *NOT* gate, (2)- *AND* gate
   (1)- *NOT* ద్వారము, (2)- *AND* ద్వారము
4. (1)- *AND* gate, (2)- *OR* gate
   (1)- *AND* ద్వారము, (2)- *OR* ద్వారము

(A) (1)- OR gate, (2)- AND gate

(B) (1)- AND gate, (2)- NOT gate

(C) (1)- NOT gate, (2)- AND gate

(D) (1)- AND gate, (2)- OR gate

Answer: (A) (1)- OR gate, (2)- AND gate · The council's preliminary key

Q159 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

A Zener diode is made by _____

(A) Heavily doping both p and n sides of a $p-n$ junction diode.

(B) Heavily doping the p side and lightly doping the n side of a $p-n$ junction diode.

(C) Lightly doping the p side and heavily doping the n side of a $p-n$ junction diode.

(D) Lightly doping both p and n sides of a $p-n$ junction diode.

Answer: (A) Heavily doping both p and n sides of a $p-n$ junction diode. · The council's preliminary key

Q160 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

In a photodiode, the value of the $e.m.f.$ produced by a monochromatic light beam is proportional to

(A) The barrier potential at $p-n$ junction

(B) The intensity of light falling on the photodiode

(C) The frequency of light falling on the photodiode

(D) The voltage applied at the $p-n$ junction

Answer: (B) The intensity of light falling on the photodiode · The council's preliminary key

Q161 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

Assuming that the junction diode is ideal, the current in the arrangement shown is
(see the figure above)

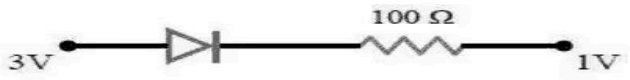
Orientation : Vertical

AP EAMCET 2020

AP EAMCET 2020

Assuming that the junction diode is ideal, the current in the arrangement shown is

ఆదర్శసంధి డయోడ్ గా ఊహిస్తూ, క్రింది అమరికలో విద్యుత్ ప్రవాహము కనుగొనండి.



Options :

1. 2 mA
2. 20 mA
3. 30 mA
4. 10 mA

(A) 2 mA
(B) 20 mA
(C) 30 mA
(D) 10 mA

Answer: (B) 20 mA · The council's preliminary key

Q162 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

In a p-n-p transistor working as a common-base amplifier, when the current gain is 0.96 and emitter current is 7.2 mA, the base current is _____

(A) 0.4 mA
(B) 0.2 mA
(C) 0.29 mA
(D) 0.35 mA

Answer: (C) 0.29 mA · The council's preliminary key

Q163 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

The current gain of a transistor is 0.98. If the transistor is used in a common emitter arrangement what would be the change in collector current corresponding to a change of 0.5 mA in the base current.

(A) 24.5 mA
(B) 47.5 mA
(C) 32.5 mA
(D) 28.5 mA

Answer: (A) 24.5 mA · Official TGCHE final key

Q164 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

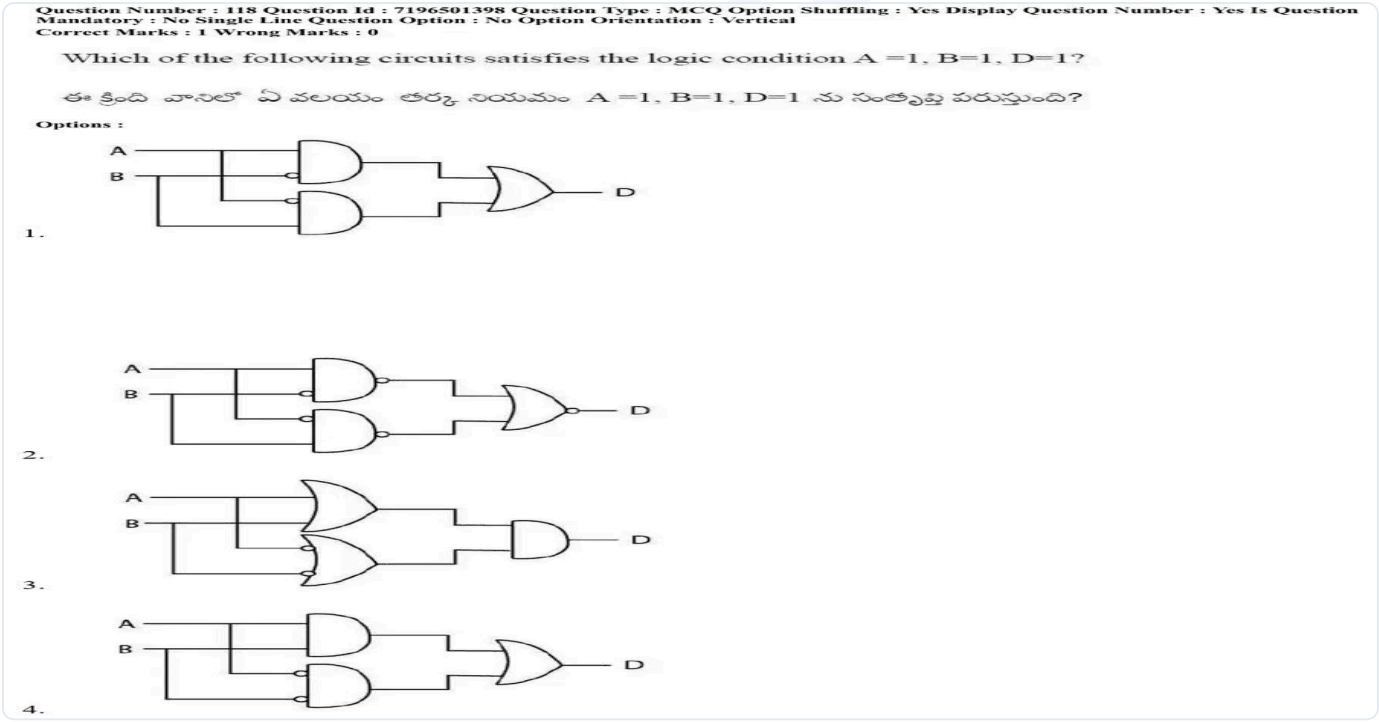
In a p-n-p transistor, the current carriers are

(A) Acceptor ions
(B) Donor ions
(C) Free electrons
(D) Holes

Answer: (D) Holes · Official TGCHE final key

Q165 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

Which of the following circuits satisfies the logic condition A =1, B=1, D=1?



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

Answer: (D) · Official TGCHE final key

Q166 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

In an n-p-n transistor, 95 % of emitted electrons reach the collector. If the base current is 2mA, then collector current is

(A) 19 mA
(B) 38 mA
(C) 9.5 mA
(D) 48 mA

Answer: (B) 38 mA · Official TGCHE final key

Q167 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

A p-n junction diode can withstand upto 20 mA current under forward bias. The diode has a potential difference of 0.5V across it, which is assumed to be independent of current. What is the maximum voltage of the battery used to forward bias the diode when a resistance of 125 Ω is connected in series with it?

(A) 3.0 V
(B) 2.5 V
(C) 3.2 V
(D) 2.0 V

Answer: (A) 3.0 V · Official TGCHE final key

Q168 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

In a Zener diode

(A) only p-region is heavily doped
(B) only n-region is heavily doped
(C) both p & n region are heavily doped
(D) both p & n region are lightly doped

Answer: (C) both p & n region are heavily doped · Official TGCHE final key

Q169 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

In P-N-P transistor the collector current is

(A) equal to emitter current
(B) slightly less than emitter current
(C) greater than emitter current
(D) half of emitter current

Answer: (B) slightly less than emitter current · Official TGCHE final key

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Q170 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

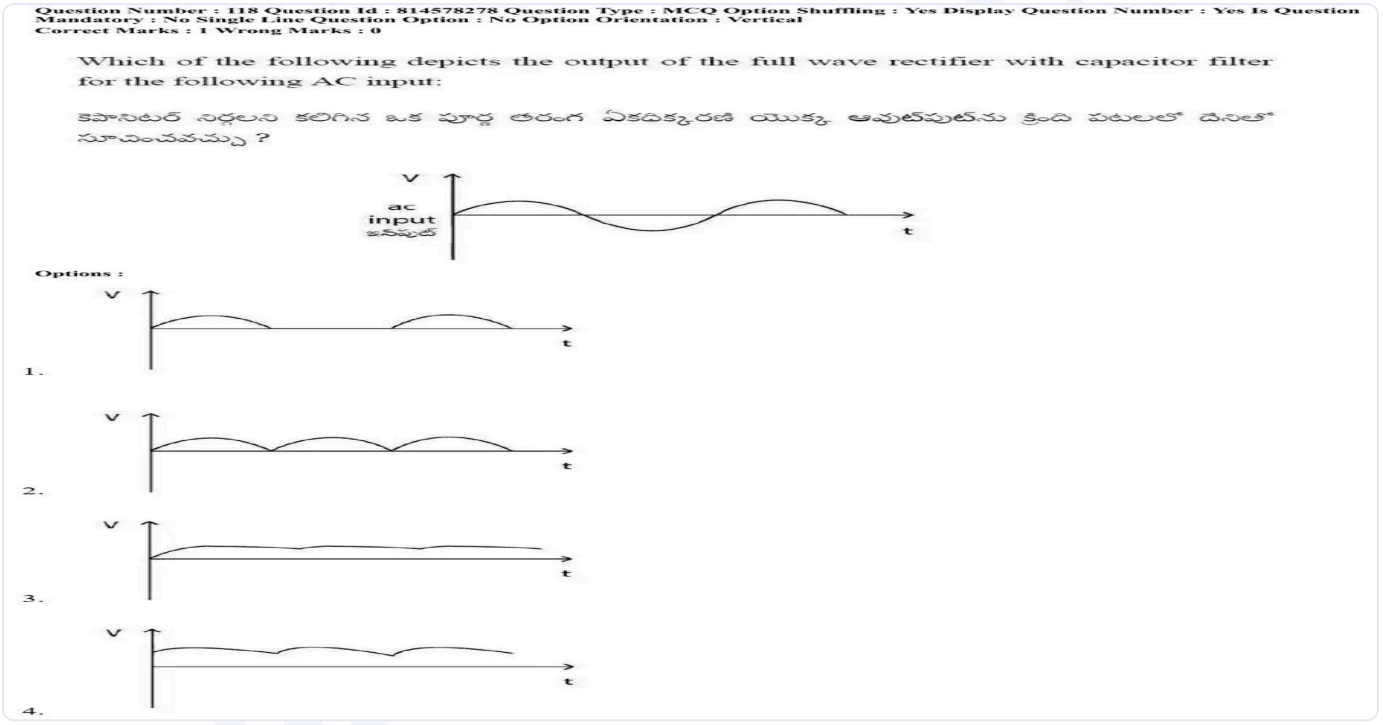
The output of a NOR gate is HIGH when

(A) all inputs are HIGH
(B) any input is HIGH
(C) any input is LOW
(D) all inputs are LOW

Answer: (D) all inputs are LOW · Official TGCHE final key

Q171 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

Which of the following depicts the output of the full wave rectifier with capacitor filter for the following AC input:
(see the figure above)



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

Answer: (C) · Official TGCHE final key

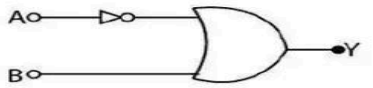
Q172 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

The Boolean expression for the circuit given in figure is
(see the figure above)

Question Number : 119 Question Id : 814578279 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

The Boolean expression for the circuit given in figure is

క్రింది ఇవ్వబడిన వలయం యొక్క బూలియన్ సమీకరణం



Options :

1. $Y = A + \overline{B}$

2. $Y = \overline{A + B}$

3. $Y = \overline{A} + B$

4. $Y = A + B$

(A) $Y = A + \overline{B}$
(B) $Y = \overline{A + B}$
(C) $Y = \overline{A} + B$
(D) $Y = A + B$

Answer: (C) $Y = \overline{A} + B$ · Official TGCHE final key

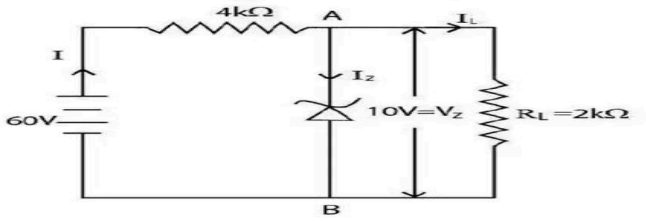
Q173 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

A Zener diode is connected to a battery and a load resistance as shown below:
(see the figure above)
The currents I, Iz and I_L respectively are

Question Number : 118 Question Id : 719650598 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 Zener diode is connected to a battery and a load resistance as shown below:

క్రింది చూపిన విధంగా ఒక జీనార్ డయోడ్ బ్యాటరీ మరియు భార నిరోధము కలుపబడింది.



The currents I, Iz and IL respectively are

విద్యుత్ ప్రవాహాలు I, Iz మరియు IL లు వరుసగా

Options :

1. 10 mA, 5 mA, 5 mA
2. 15 mA, 7.5 mA, 7.5 mA
3. 12.5 mA, 5 mA, 7.5 mA
4. 12.5 mA, 7.5 mA, 5 mA

(A) 10 mA, 5 mA, 5 mA
(B) 15 mA, 7.5 mA, 7.5 mA
(C) 12.5 mA, 5 mA, 7.5 mA
(D) 12.5 mA, 7.5 mA, 5 mA

Answer: (D) 12.5 mA, 7.5 mA, 5 mA · Official TGCHE final key

Q174 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

A semiconductor is doped with phosphorous atoms as impurity. The impurity levels created in the semiconductor are close to the

(A) top of the valence band
(B) bottom of the conduction band
(C) bottom of the valence band
(D) top of the conduction band

Answer: (B) bottom of the conduction band · Official TGCHE final key

Q175 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

Which of the following statements is incorrect?

(A) The resistance of intrinsic semiconductors decrease with increase of temperature
(B) Doping pure Si with trivalent impurities give p-type semiconductors
(C) The majority carriers in n-type semiconductors are holes
(D) A p-n junction can act as a semiconductor device

Answer: (C) The majority carriers in n-type semiconductors are holes · Official TGCHE final key

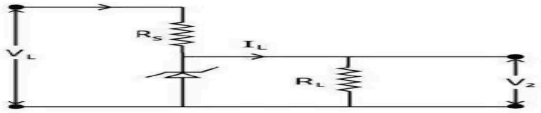
Q176 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

In a Zener regulated power supply a Zener diode with V_z = 6 V is used for regulation. The load current is 4 mA and the unregulated input voltage is 10 V. To get a Zener current five times the load current the value of series resistor R_s is nearly *(see the figure above)*

Question Number : 118 Question Id : 719650438 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

In a Zener regulated power supply a Zener diode with V_z = 6 V is used for regulation. The load current is 4 mA and the unregulated input voltage is 10 V. To get a Zener current five times the load current the value of series resistor R_s is nearly

జనార్ నియంత్రిత వోల్టేజ సరఫరా పరికరములో నియంత్రణ కోసము V_z = 6 V వున్న జనార్ డయోడ్‌ను వాడారు. భార నిరోధం ద్వారా విద్యుత్ ప్రవాహము 4 mA మరియు నియంత్రణ కాని నివేశ వోల్టేజ 10 V. భార విద్యుత్ ప్రవాహము కంటే జనార్ ప్రవాహము 5 రెట్లుగా వుండాలంటే శ్రేణి నిరోధము R_s విలువ ఎంత వుండాలి



Options :

1. 150 Ω
2. 167 Ω
3. 175 Ω
4. 159 Ω

(A) 150 Ω
(B) 167 Ω
(C) 175 Ω
(D) 159 Ω

Answer: (B) 167 Ω · Official TGCHE final key

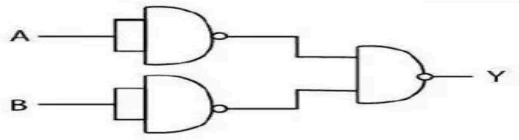
Q177 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

Identify the equivalent logic gate for the following circuit *(see the figure above)*

Question Number : 119 Question Id : 719650439 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

Identify the equivalent logic gate for the following circuit

ఈ క్రింది ఇవ్వబడిన వలయం యొక్క సరిసమానమైన తర్క ద్వారమును గుర్తించండి



Options :

1. AND
2. NOR
3. OR
4. NAND

(A) AND
(B) NOR
(C) OR
(D) NAND

Answer: (C) OR · Official TGCHE final key

Q178 TS EAMCET 2019 · 6 May · Shift 1 MCQ

A person applies a sine wave and square wave to an AND gate as shown in figure (i) and (ii). Assuming that both the voltages are applied in phase, the person observes the output at E and F on (i) and (ii) respectively.
(Assume minimum voltage of 5 V is equivalent to logic '1')
(see the figure above)

Question Number : 118 Question Id : 7512365078 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A person applies a sine wave and square wave to an AND gate as shown in figure (i) and (ii). Assuming that both the voltages are applied in phase, the person observes the output at E and F on (i) and (ii) respectively.
(Assume minimum voltage of 5 V is equivalent to logic '1')

పటము (i) మరియు (ii)లలో చూపినట్లుగా సైన్ తరంగము మరియు చతురస్ర తరంగాలను ఒక వ్యక్తి అనువర్తింపజేసినాడు. రెండు తరంగాల పాటెన్షియల్‌లు ఒకే దశలో నున్నాయని భావించిన ఆ వ్యక్తి E మరియు F ల వద్ద గమనించిన ఔట్‌పుట్‌లు విలువలు (i) మరియు (ii) లలో పరుసగా
(5 V ల కనిష్ఠ వోల్టేజ్‌ను తర్కము '1' కి సర్వసమానమనుకొనుము)



Options :

1. Square wave at 50 Hz and square wave at 100 Hz
50 Hz వద్ద చతురస్ర తరంగం మరియు 100 Hz ల వద్ద చతురస్ర తరంగం

2. Sine wave at 50 Hz and square wave at 100 Hz
50 Hz వద్ద సైన్ తరంగం మరియు 100 Hz ల వద్ద చతురస్ర తరంగం

3. No output and sine wave at 100 Hz
ఔట్‌పుట్ లేకుండా మరియు 100 Hz వద్ద సైన్ తరంగం

4. No output and pulsed wave at 100 Hz
ఔట్‌పుట్ లేకుండా మరియు 100 Hz వద్ద స్పందన తరంగం

TS EAMCET 2019

(A) Square wave at 50 Hz and square wave at 100 Hz
(B) Sine wave at 50 Hz and square wave at 100 Hz
(C) No output and sine wave at 100 Hz
(D) No output and pulsed wave at 100 Hz

Answer: (D) No output and pulsed wave at 100 Hz · Official TGCHE final key

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Q179 TS EAMCET 2019 · 6 May · Shift 1 MCQ

Consider an amplifier circuit in which a transistor is used in common-emitter mode. The load resistance is 3 kΩ. When a signal of 30 mV is added to the base-emitter voltage, the base current is changed by 30 μA and the collector current is changed by 3 mA. The power gain in this circuit will be

(A) 10000
(B) 20000
(C) 30000
(D) 40000

Answer: (C) 30000 · Official TGCHE final key

Q180 TS EAMCET 2019 · 4 May · Shift 1 MCQ

Assertion (A) : Si and GaAs are the preferred materials for solar cells.
Reason (R) : Both these materials have energy band gaps much below the energy level corresponding to the maximum solar irradiance in the solar spectrum.
The correct answer is

(A) (A) is correct but (R) is incorrect.

(B) Both (A) and (R) are correct and (R) is the correct explanation of (A).

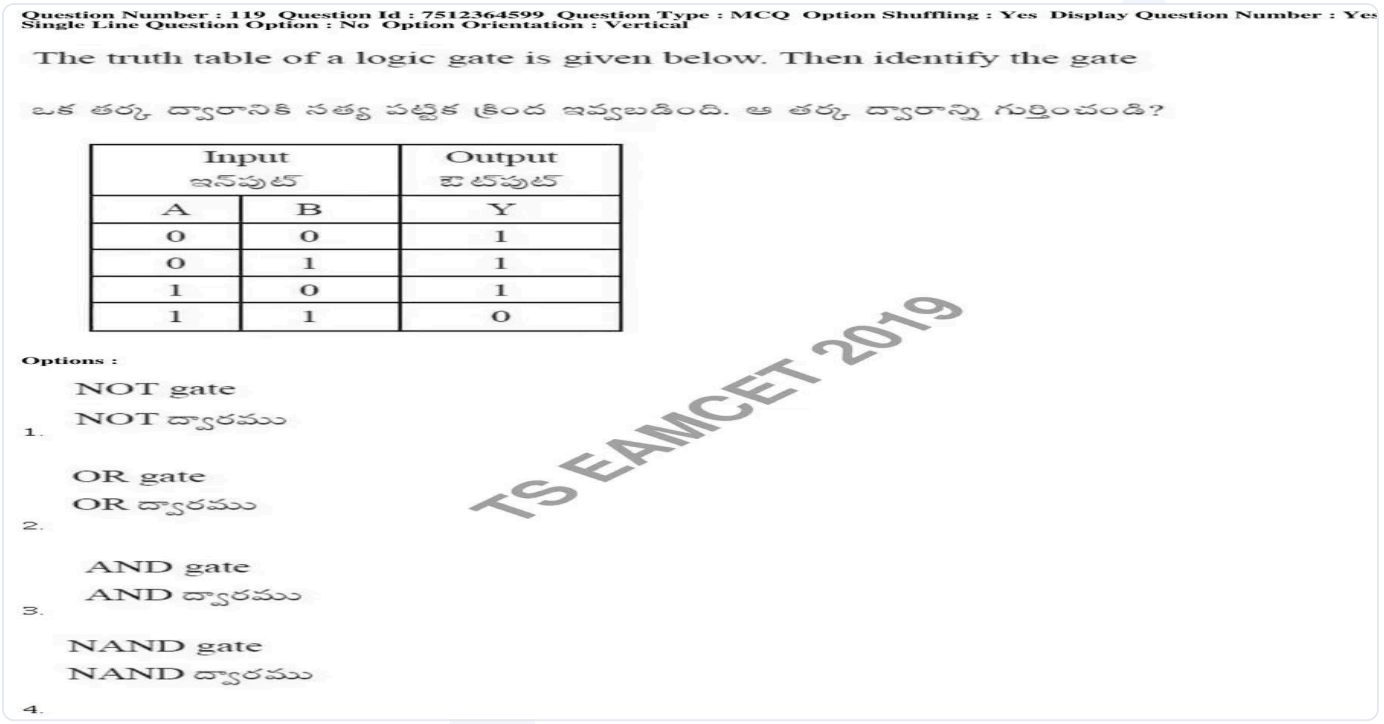
(C) Both (A) and (R) are correct but (R) is not the correct explanation of (A).

(D) Both (A) and (R) are incorrect.

Answer: (A) (A) is correct but (R) is incorrect. · Official TGCHE final key

Q181 TS EAMCET 2019 · 4 May · Shift 1 MCQ

The truth table of a logic gate is given below. Then identify the gate
(see the figure above)


Question Number : 119 Question Id : 7512364599 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The truth table of a logic gate is given below. Then identify the gate

ఒక తర్క ద్వారానికి సత్య పట్టిక క్రింద ఇవ్వబడింది. ఆ తర్క ద్వారాన్ని గుర్తించండి?

Input ఇన్‌పుట్		Output అవుట్‌పుట్
A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

Options :

1. NOT gate NOT ద్వారము
2. OR gate OR ద్వారము
3. AND gate AND ద్వారము
4. NAND gate NAND ద్వారము

TS EAMCET 2019

(A) NOT gate

(B) OR gate

(C) AND gate

(D) NAND gate

Answer: (D) NAND gate · Official TGCHE final key

Q182 TS EAMCET 2019 · 4 May · Shift 2 MCQ

For a given truth table A, B, C are inputs and Y is the output, then the functional form of the circuit is
(see the figure above)

Question Number : 118 Question Id : 7512364917 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a given truth table A, B, C are inputs and Y is the output, then the functional form of the circuit is

క్రింద ఇచ్చిన సత్యపట్టికలో A, B మరియు C లు నివేశాలు, నిర్గమము Y అయిన, దాని క్రియాత్మక రూపం:

A	B	C	Y
0	0	0	1
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	0

Options :

1. $\overline{A}$
2. $\overline{B}$
3. $\overline{A} + BC$
4. $A + B + C$

TS EAMCET 2019

(A) $\overline{A}$

(B) $\overline{B}$

(C) $\overline{A} + BC$

(D) $A + B + C$

Answer: (B) $\overline{B}$ · Official TGCHE final key

Q183 TS EAMCET 2019 · 4 May · Shift 2 MCQ

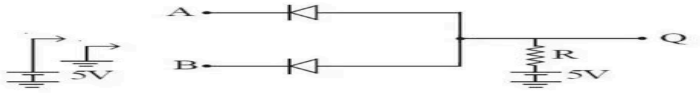
Two diodes are connected in the following fashion. Provision is made to connect either +5 V or ground (0 V) to the points A and B. The output Q will act as

(see the figure above)

Question Number : 119 Question Id : 7512364919 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Two diodes are connected in the following fashion. Provision is made to connect either +5 V or ground (0 V) to the points A and B. The output Q will act as

రెండు డయోడ్‌లు క్రింది విధంగా అనుసంధానం చేయబడినవి. A మరియు B బిందువులకు +5 V లేదా భూధార పొటెన్షియల్ (0 V) లలో ఒకదానిని అనుసంధానం చేయు వెసులుబాటు ఉంది. ఔట్‌పుట్ Q పనిచేయు విధము



Options :

1. OR gate
   OR ద్వారము
2. AND gate
   AND ద్వారము
3. XOR gate
   XOR ద్వారము
4. NAND gate
   NAND ద్వారము

TS EAMCET 2019

(A) OR gate
(B) AND gate
(C) XOR gate
(D) NAND gate

Answer: (B) AND gate · Official TGCHE final key

Q184 TS EAMCET 2019 · 3 May · Shift 1 MCQ

When a zener diode is used as a regulator with zener voltage of 10 V, nearly five times the load current passes through the zener diode. What should be the series resistance for the zener diode, if load resistance is 2 kΩ and the unregulated voltage supplied is 16 V

(A) 500 Ω
(B) 400 Ω
(C) 200 Ω
(D) 800 Ω

Answer: (C) 200 Ω · Official TGCHE final key

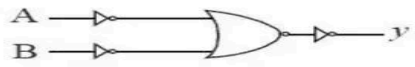
Q185 TS EAMCET 2019 · 3 May · Shift 1 MCQ

The logic circuit below has the truth table, same as that of
(see the figure above)

Question Number : 119 Question Id : 7512364279 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The logic circuit below has the truth table, same as that of

ఏ తర్క ద్వారం యొక్క సత్య పట్టిక, ఈ క్రింది తర్క వలయానికి గల సత్య పట్టికతో ఏకీభవించును?



Options :

1. NOR gate
NOR ద్వారం

2. NAND gate
NAND ద్వారం

3. AND gate
AND ద్వారం

4. OR gate
OR ద్వారం

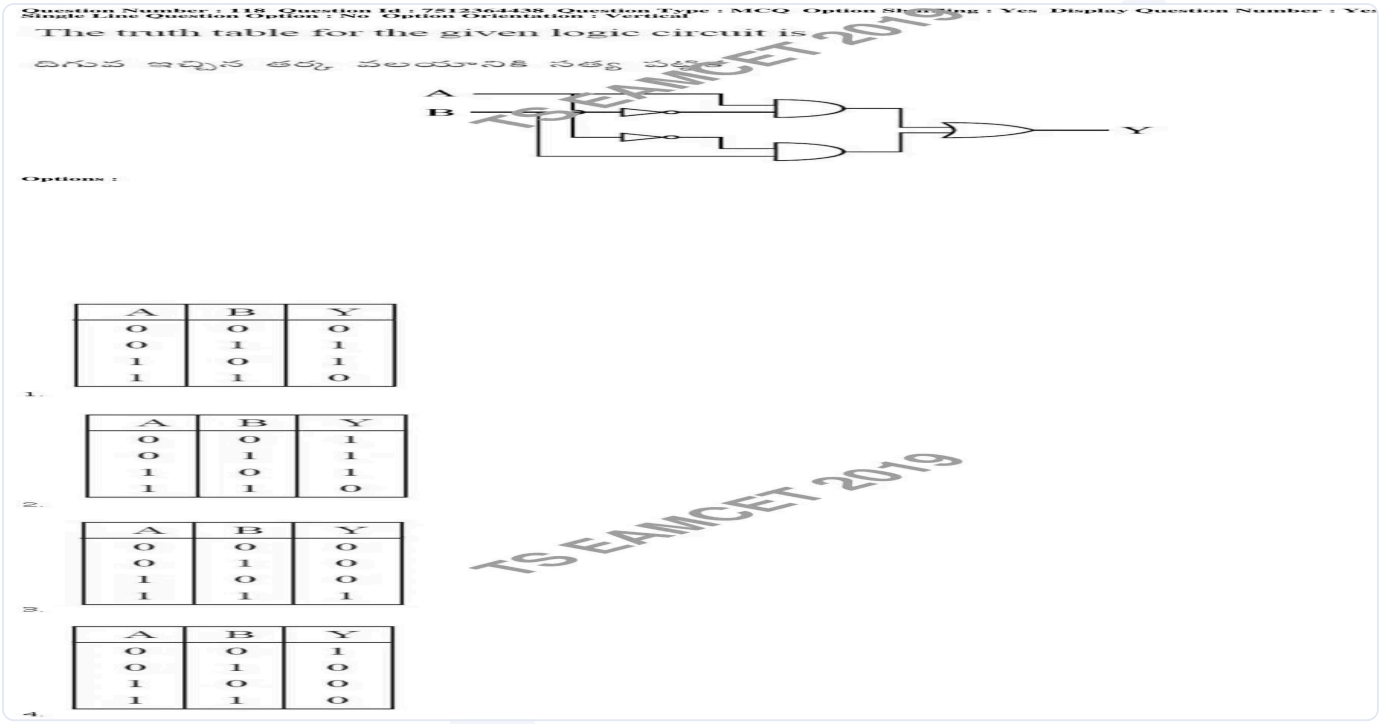
TS EAMCET 2019

(A) NOR gate
(B) NAND gate
(C) AND gate
(D) OR gate

Answer: (B) NAND gate · Official TGCHE final key

Q186 TS EAMCET 2019 · 3 May · Shift 2 MCQ

The truth table for the given logic circuit is
(see the figure above)



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

Answer: (A) · Official TGCHE final key

Q187 TS EAMCET 2019 · 3 May · Shift 2 MCQ

In a transistor circuit, the collector current is changed by $8.9\ \mathrm{mA}$, if the emitter current is changed to $9.0\ \mathrm{mA}$. The value of current amplification factor, β is

(A) 89
(B) 92
(C) 84
(D) 96

Answer: (A) 89 · Official TGCHE final key

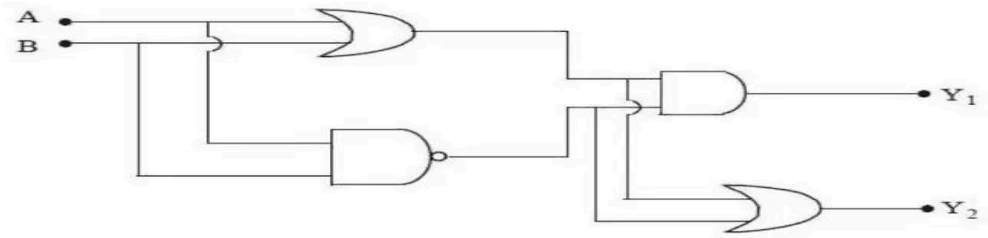
Q188 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

The values of Y_1 and Y_2 respectively in the following logic circuit if both A and B are 1 are *(see the figure above)*

Question Number : 119 Question Id : 1874634759 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The values of Y_1 and Y_2 respectively in the following logic circuit if both A and B are 1 are

ఇవ్వబడిన తర్క వలయంలో A, B లు రెండూ 1 అయితే Y_1 మరియు Y_2 ల విలువలు వరుసగా



Options :
1. 1, 1
2. 1, 0
3. 0, 1
4. 0, 0

(A) 1, 1
(B) 1, 0
(C) 0, 1
(D) 0, 0

Answer: (C) 0, 1 · Official APSCHE final key

Q189 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

Three amplifiers with voltage gains 10, 20 and 30 are connected in series. If the input signal has a peak value of 1 mV then the peak value of the output voltage is

(A) 6 V
(B) 60 V
(C) 0.6 V
(D) 0.06 V

Answer: (A) 6 V · Official APSCHE final key

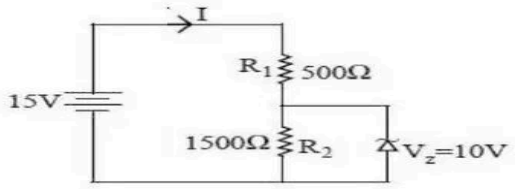
Q190 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

In the circuit given, the current through Zener diode is
(see the figure above)

Question Number : 119 Question Id : 1874634599 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the circuit given, the current through Zener diode is

ఇవ్వబడిన వలయంలో, జీనార్ డయోడు గుండా విద్యుత్ ప్రవాహం



Options :
1. 10 mA
2. 6.67 mA
3. 3.33 mA
4. 5 mA

(A) $10\ \text{mA}$
(B) $6.67\ \text{mA}$
(C) $3.33\ \text{mA}$
(D) $5\ \text{mA}$

Answer: (C) $3.33\ \text{mA}$ · Official APSCHE final key

Q191 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

For an LED to emit light in visible region of electromagnetic spectrum, it can have energy band gap in the range of (Plank's constant = 6.6×10^{-34} J-s and speed of light = $3 \times 10^{8}\ \text{ms}^{-1}$ in vacuum)

(A) 0.1 eV to 0.4 eV
(B) 0.9 eV to 1.6 eV
(C) 1.7 eV to 3.1 eV
(D) 0.5 eV to 0.8 eV

Answer: (C) 1.7 eV to 3.1 eV · Official APSCHE final key

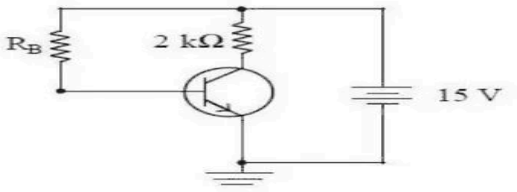
Q192 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

In the following common emitter circuit, $\beta = 100$ and $V_{CE} = 7$ V. If V_{BE} is negligible, then the base current is
(see the figure above)

Question Number : 119 Question Id : 1874634279 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the following common emitter circuit, $\beta = 100$ and $V_{CE} = 7$ V. If V_{BE} is negligible, then the base current is

పటములో చూపిన ఉమ్మడి ఎమిటర్ వలయంలో $\beta = 100$ మరియు $V_{CE} = 7$ V. V_{BE} విస్మరించ దగినది అయిన, బేస్ విద్యుత్ ప్రవాహము



Options :
1. 0.01 mA
2. 0.04 mA
3. 0.02 mA
4. 0.03 mA

(A) 0.01 mA
(B) 0.04 mA
(C) 0.02 mA
(D) 0.03 mA

Answer: (B) 0.04 mA · Official APSCHE final key

Q193 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

In a p-type semiconductor the donor level is at 50 meV above the valence band. To produce one electron, the maximum wavelength of light photon required is
(Planck's constant = 6.6×10^{-34} J-s and speed of light in vacuum = 3×10^{8} ms^{-1})

(A) 0.0248 μm
(B) 0.248 μm
(C) 2.48 μm
(D) 24.8 μm

Answer: (D) 24.8 μm · Official APSCHE final key

Q194 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

In a transistor, the value of 'α' varies between $\frac{20}{21}$ and $\frac{100}{101}$. Then the value of 'β' varies between

(A) 1 and 10
(B) 0.95 and 0.99
(C) 20 and 100
(D) 200 and 300

Answer: (C) 20 and 100 · Official APSCHE final key

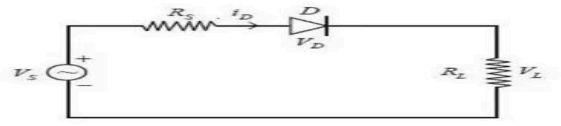
Q195 TS EAMCET 2018 · 7 May · Shift 1 MCQ

In the diode-based rectifier circuit given below, if $V_s = V_m \sin \omega t$ and the diode is ideal, the average value of V_L is *(see the figure above)*

Question Number : 118 Question Id : 4928632678 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct : 1 Wrong : 0

In the diode-based rectifier circuit given below, if $V_s = V_m \sin \omega t$ and the diode is ideal, th average value of V_L is

క్రింద ఇవ్వబడిన డయోడ్ ఆధారిత ఏకదిక్కారిణి వలయంలో $V_s = V_m \sin \omega t$ అయిన్ మరియు డయో ఆదర్శలక్షణాలు కలిగి ఉంటే, V_L యొక్క సరాసరి విలువ



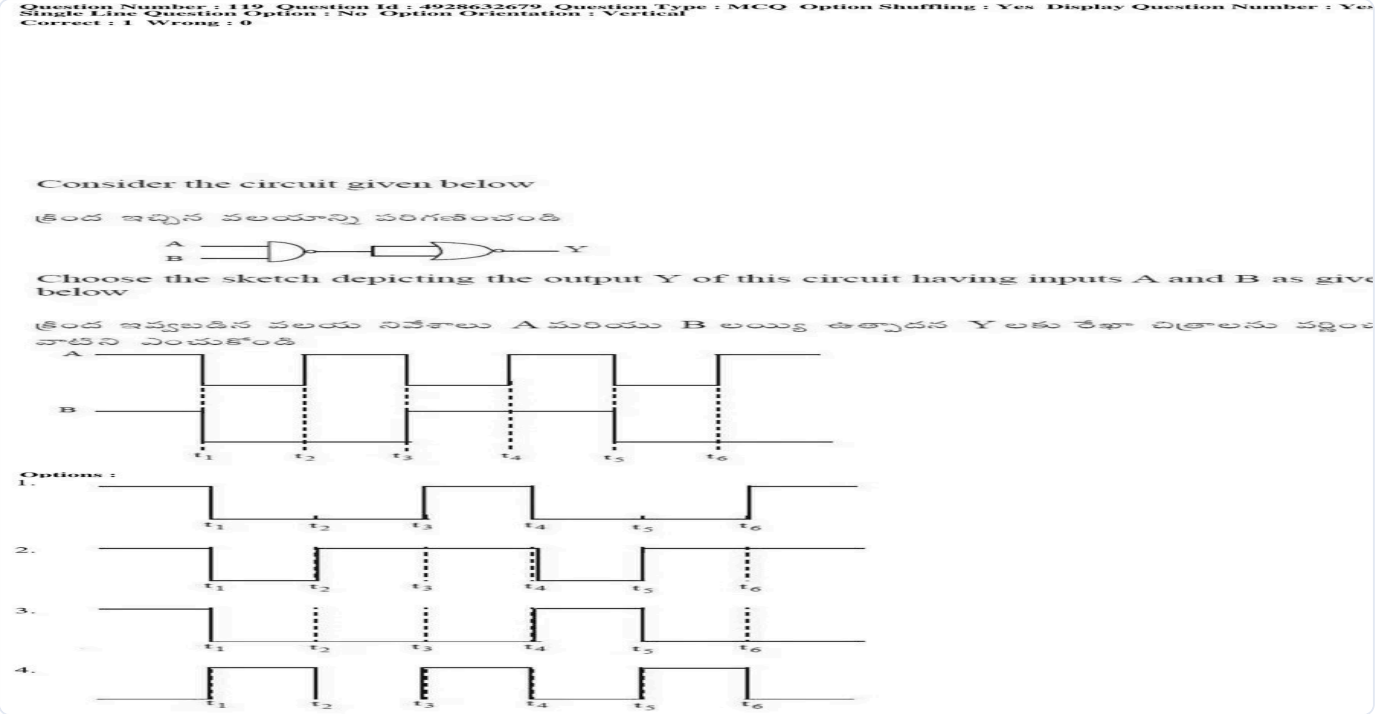
Options :
1. $\frac{R_L}{(R_L + R_S)} \frac{V_m}{\pi}$
2. $R_L V_m \sin \omega t$
3. $\frac{R_L}{(R_L + R_S)} V_m$
4. $\frac{R_L}{(R_L + R_S)} V_m \sin \omega t$

(A) $\frac{R_L}{(R_L+R_S)} \frac{V_m}{\pi}$
(B) $R_L V_m \sin \omega t$
(C) $\frac{R_L}{(R_L+R_S)} V_m$
(D) $\frac{R_L}{(R_L+R_S)} V_m \sin \omega t$

Answer: (A) $\frac{R_L}{(R_L+R_S)} \frac{V_m}{\pi}$ · The council's preliminary key

Q196 TS EAMCET 2018 · 7 May · Shift 1 MCQ

Consider the circuit given below *(see the figure above)* Choose the sketch depicting the output Y of this circuit having inputs A and B as given below *(see the figure above)*



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

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

Q197 TS EAMCET 2018 · 5 May · Shift 1 MCQ

The logic operation performed by the following circuit is

(A) NOR
(B) AND
(C) NAND
(D) OR

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

Q198 TS EAMCET 2018 · 5 May · Shift 1 MCQ

Which of the following statements is true?

(A) A solid is an insulator or semiconductor if its conduction band is partially filled
(B) A solid is necessarily an insulator if its conduction band is empty
(C) A solid is necessarily a semiconductor if its conduction band is empty
(D) A solid is a conductor if its conduction band is partially filled

Answer: (D) A solid is a conductor if its conduction band is partially filled · The council's preliminary key

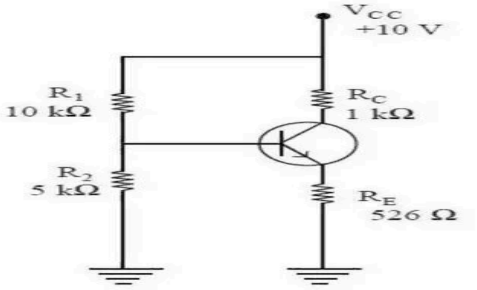
Q199 TS EAMCET 2018 · 5 May · Shift 2 MCQ

Determine V_{CE} in the following Silicon-based transistor circuit
(see the figure above)

Question Number : 118 Question Id : 4928632358 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct : 1 Wrong : 0

Determine V_{CE} in the following Silicon-based transistor circuit

క్రింది సిలికాన్ ట్రాన్సిస్టర్ వలయంలో V_{CE} విలువ



Options :
1. 6.8 V
2. 2.0 V
3. 5.9 V
4. 2.4 V

(A) 6.8 V
(B) 2.0 V
(C) 5.9 V
(D) 2.4 V

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

Q200 TS EAMCET 2018 · 5 May · Shift 2 MCQ

The voltage-current characteristic of a diode during forward bias is given by $I = 7.8 \times 10^{-5} e^{6.9V_D}$, where I is the current in mA and V_D is the diode voltage in V. The dynamic resistance of the diode in Ω, when the current is $4\ \mathrm{mA}$, is

(A) 18.6
(B) 21.7
(C) 28.2
(D) 36.2

Answer: (D) 36.2 · The council's preliminary key

Q201 TS EAMCET 2018 · 4 May · Shift 1 MCQ

Consider an amplifier circuit wherein a transistor is used in common emitter mode. The change in collector current and base current respectively are 4 mA and 20 μA when a signal of 40 mV is added to the base-emitter voltage. If the load resistance is 10 kΩ, then power gain in the circuit is

(A) 1×10^4
(B) 2×10^5
(C) 8×10^5
(D) 1×10^6

Answer: (B) 2×10^5 · The council's preliminary key

Q202 TS EAMCET 2018 · 4 May · Shift 1 MCQ

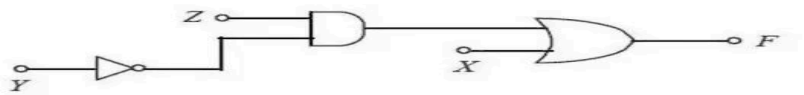
The output 'F' of the logic circuit given below is

(see the figure above)

Question Number : 119 Question Id : 4928631719 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct : 1 Wrong : 0

The output 'F' of the logic circuit given below is

క్రింది తర్క వలయం యొక్క ఔట్‌పుట్ 'F' విలువ



Options :
1. $X + \overline{Y} \cdot Z$
2. $(Y + Z) \cdot X$
3. $(\overline{Y} + Z) + X$
4. $X + \overline{Y} + Z$

(A) $X + \overline{Y} \cdot Z$
(B) $(Y + Z) \cdot X$
(C) $(\overline{Y} + Z) + X$
(D) $X + \overline{Y} + Z$

Answer: (A) $X + \overline{Y} \cdot Z$ · The council's preliminary key

Q203 TS EAMCET 2018 · 4 May · Shift 2 MCQ

In a junction transistor, the collector current changes by 6.8 mA if the emitter current changed by 7 mA. For such transistor the current amplification factor is

(A) 30
(B) 34
(C) 40
(D) 45

Answer: (B) 34 · The council's preliminary key

Q204 TS EAMCET 2018 · 4 May · Shift 2 MCQ

In a p-n junction diode, an electric field of magnitude 2×10^5 V/m exists in the depletion region. A particle with charge $-3|e|$ can diffuse from n-side to p-side, if it has minimum kinetic energy 0.6 eV. The width of the depletion region of the p-n junction is

(A) 300 nm
(B) 600 nm
(C) 1000 nm
(D) 1200 nm

Answer: (C) 1000 nm · The council's preliminary key

Q205 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

Match the following List-I and List-II
List - I
A) Small Scale Integration (SSI)
B) Medium Scale Integration (MSI)
C) Large Scale Integration (LSI)
D) Very Large Scale Integration (VLSI)
List - II
I) Logic gates < 100
II) Logic gates > 1000
III) Logic gates ≤ 10
IV) Logic gates < 1000
The correct answer is

(A) A-II, B-III, C-I, D-IV
(B) A-IV, B-I, C-II, D-III
(C) A-I, B-IV, C-III, D-II
(D) A-III, B-I, C-IV, D-II

Answer: (D) A-III, B-I, C-IV, D-II · The council's preliminary key

Q206 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

In a common emitter amplifier, the output resistance is $5000\ \Omega$ and the input resistance is $2000\ \Omega$. If the peak value of input signal voltage is $100\ \mathrm{mV}$ and $\beta = 50$, then the peak value of output voltage is _____

(A) $5 \times 10^{-6}\ \mathrm{V}$
(B) $12.5 \times 10^{-4}\ \mathrm{V}$
(C) $12.5\ \mathrm{V}$
(D) $1.25\ \mathrm{V}$

Answer: (C) $12.5\ \mathrm{V}$ · The council's preliminary key

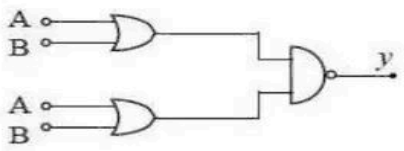
Q207 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

For the combination of logic gates shown in the figure, the equivalent logic gate is
(see the figure above)

Question Number : 119 Question Id : 4557344119 Question Type : MCQ Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For the combination of logic gates shown in the figure, the equivalent logic gate is

పటములో చూపబడిన తర్క ద్వారాల సంధానమునకు తుల్యమైన తర్క ద్వారము



Options :

1. AND
2. NOT
3. NAND
4. NOR

(A) AND
(B) NOT
(C) NAND
(D) NOR

Answer: (D) NOR · The council's preliminary key

Q208 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

In the common base configuration a transistor has current amplification factor 0.95. If the transistor is used in common emitter configuration and the base current changes by $2\ \mu A$, then the change in the collector current is

(A) $19\ \mu A$
(B) $0.91\ \mu A$
(C) $1.9\ \mu A$
(D) $38\ \mu A$

Answer: (D) $38\ \mu A$ · The council's preliminary key

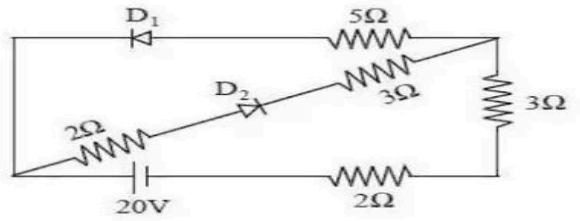
Q209 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

If the diodes are ideal in the circuit given below, then the current through the cell is
(see the figure above)

Question Number : 119 Question Id : 4557343799 Question Type : MCQ Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the diodes are ideal in the circuit given below, then the current through the cell is

క్రింద ఇవ్వబడిన వలయంలో డయోడులు ఆదర్శమైనవి అనుకుంటే ఘటంగుండా ప్రవహించే విద్యుత్తు



Options :
1. 4 A
2. 1.5 A
3. 2 A
4. 3 A

(A) 4 A
(B) 1.5 A
(C) 2 A
(D) 3 A

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

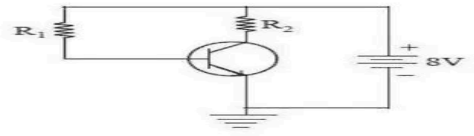
Q210 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

An npn transistor is connected in common emitter configuration as shown in the figure. If the collector current is 5 mA, $V_{BE} = 0.6$ V, $V_{CE} = 3$ V and common emitter current amplification factor is 50, then the values of R_1 and R_2 are respectively
(see the figure above)

Question Number : 119 Question Id : 4557343959 Question Type : MCQ Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An npn transistor is connected in common emitter configuration as shown in the figure. If the collector current is 5 mA, $V_{BE} = 0.6$ V, $V_{CE} = 3$ V and common emitter current amplification factor is 50, then the values of R_1 and R_2 are respectively

ఒక npn ట్రాన్సిస్టర్ పటంలో చూపిన విధంగా ఉమ్మడి ఉద్గారక విన్యాసంలో కలుపబడింది. సేకరిణి ప్రవాహం 5 mA, $V_{BE} = 0.6$ V, $V_{CE} = 3$ V మరియు ఉమ్మడి ఉద్గార ప్రవాహ వృద్ధి కారకం 50 అయితే, R_1 మరియు R_2 విలువలు వరుసగా



Options :
1. 1 kΩ , 74 kΩ
2. 74 kΩ , 1 kΩ
3. 37 kΩ , 2 kΩ
4. 2 kΩ , 37 kΩ

(A) 1 kΩ, 74 kΩ
(B) 74 kΩ, 1 kΩ
(C) 37 kΩ, 2 kΩ
(D) 2 kΩ, 37 kΩ

Answer: (B) 74 kΩ, 1 kΩ · The council's preliminary key

Q211 TS EAMCET 2017 · 12 May · Offline MCQ

Which of the following statement is not true?

(A) the resistance of an intrinsic semiconductor decreases with increase in temperature
(B) doping pure Si with trivalent impurities gives p-type semiconductor
(C) the majority carriers in n-type semiconductors are holes
(D) a p-n junction can act as a semiconductor diode

Answer: (C) the majority carriers in n-type semiconductors are holes · The council's preliminary key

Q212 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

A zener diode voltage regulator operated in the range 120 - 180 V produces a constant supply of 110 V and 250 mA to the load. If the maximum current is equally shared between the load and the zener diode, then the values of load resistance (R_L) and series resistance (R_S) are respectively

(A) $R_L = 70\ \Omega,\ R_S = 280\ \Omega$
(B) $R_L = 440\ \Omega,\ R_S = 140\ \Omega$
(C) $R_L = 440\ \Omega,\ R_S = 1400\ \Omega$
(D) $R_L = 280\ \Omega,\ R_S = 70\ \Omega$

Answer: (B) $R_L = 440\ \Omega,\ R_S = 140\ \Omega$ · The council's preliminary key

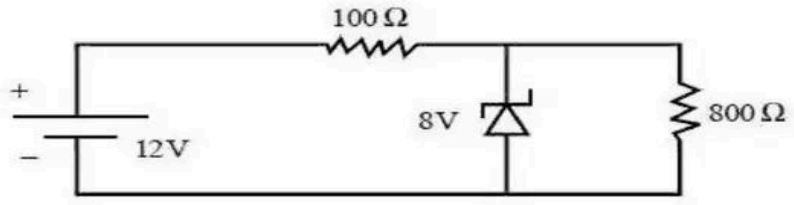
Q213 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

In the following circuit, the power dissipated in the zenar (sic) diode is
(see the figure above)

Question Number : 119 Question Id : 1017174759 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the following circuit, the power dissipated in the zenar diode is

క్రింది వలయములో, జెన్నర్ డయోడ్‌లో దుర్వ్యయమైన సామర్థ్యం



Options :
1. 0.12 W
2. 0.18 W
3. 0.24 W
4. 0.36 W

(A) 0.12 W
(B) 0.18 W
(C) 0.24 W
(D) 0.36 W

Answer: (C) 0.24 W · The council's preliminary key

Q214 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

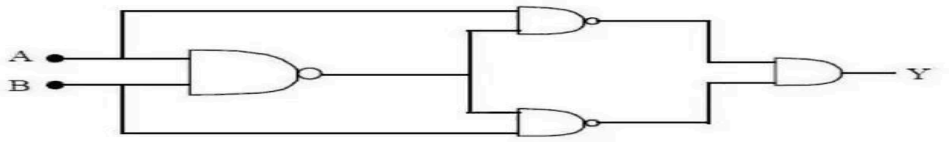
To have the output Y = 1, the possible combinations of inputs are
a) A = 0, B = 1
b) A = 1, B = 0
c) A = 0, B = 0
d) A = 1, B = 1
(see the figure above)

Question Number : 119 Question Id : 1017174279 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

To have the output $Y = 1$, the possible combinations of inputs are

నిర్గమ విలువ $Y = 1$ కావడానికి నివేశానికి సాధ్యమయ్యే సంయోగాలు

a) $A = 0, B = 1$ b) $A = 1, B = 0$
c) $A = 0, B = 0$ d) $A = 1, B = 1$



Options :
1. a & b
2. b & c
3. c & d
4. d & a

(A) a & b
(B) b & c
(C) c & d
(D) d & a

Answer: (C) c & d · The council's preliminary key

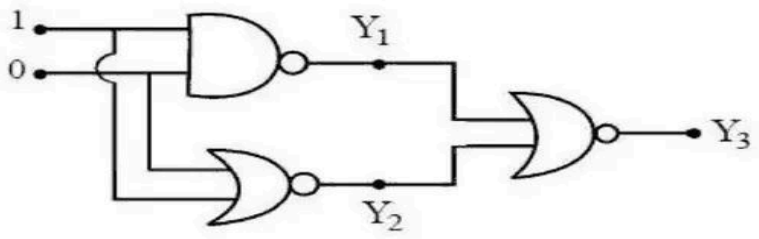
Q215 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

In the following logic circuit, the values of Y_1, Y_2 and Y_3 are respectively
(see the figure above)

Question Number : 119 Question Id : 1017174439 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the following logic circuit, the values of Y_1, Y_2 and Y_3 are respectively

క్రింది లాజిక్ వలయంలో Y_1, Y_2, Y_3 ల విలువలు వరుసగా,



Options :

1. 1, 1, 1
2. 1, 0, 0
3. 1, 1, 0
4. 0, 1, 1

(A) 1, 1, 1
(B) 1, 0, 0
(C) 1, 1, 0
(D) 0, 1, 1

Answer: (B) 1, 0, 0 · The council's preliminary key

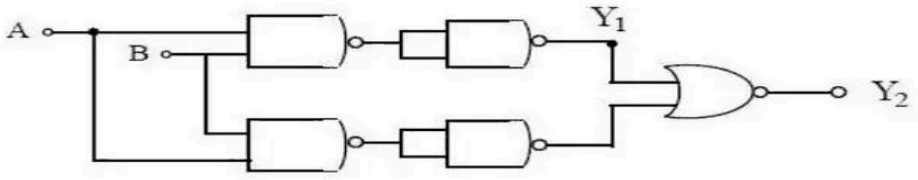
Q216 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

In the given logic circuit $A = 1$ and $B = 0$. The values of Y_1 and Y_2 are respectively.
(see the figure above)

Question Number : 119 Question Id : 1017173799 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the given logic circuit A = 1 and B = 0. The values of Y_1 and Y_2 are respectively.

ఇచ్చిన లాజిక్ వలయంలో A = 1 మరియు B = 0 అయిన Y_1 మరియు Y_2 విలువలు వరుసగా



Options :

1. 1, 0
2. 0, 1
3. 1, 1
4. 0, 0

(A) $1, 0$
(B) $0, 1$
(C) $1, 1$
(D) $0, 0$

Answer: (B) $0, 1$ · The council's preliminary key

Q217 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

In a CE-transistor feed back oscillator circuit, the phase difference between input and output signal is

(A) π
(B) $\frac{\pi}{4}$
(C) $\frac{\pi}{2}$
(D) 0

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

Q218 TS EAMCET 2016 · 15 May · Offline MCQ

The change in current through a junction diode is 1.2 mA when the forward bias voltage is changed by 0.6 V. The dynamic resistance is

(A) $500\ \Omega$
(B) $300\ \Omega$
(C) $150\ \Omega$
(D) $250\ \Omega$

Answer: (A) $500\ \Omega$ · Official TGCHE final key

Q219 TS EAMCET 2016 · 15 May · Offline MCQ

A semiconductor has equal electron and hole concentration of $2 \times 10^8\ \mathrm{m}^{-3}$. On doping with a certain impurity, the electron concentration increases to $4 \times 10^{10}\ \mathrm{m}^{-3}$, then the new hole concentration of the semiconductor is

(A) $10^6\ \mathrm{m}^{-3}$
(B) $10^8\ \mathrm{m}^{-3}$
(C) $10^{10}\ \mathrm{m}^{-3}$
(D) $10^{12}\ \mathrm{m}^{-3}$

Answer: (A) $10^6\ \mathrm{m}^{-3}$ · Official TGCHE final key

Q220 AP EAMCET 2016 · 29 Apr · Offline MCQ

For a common-emitter transistor amplifier, the current gain is 60. If the emitter current is 6.6 mA then its base current is

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(A) 6.492 mA
(B) 0.108 mA
(C) 4.208 mA
(D) 0.343 mA

Answer: (B) 0.108 mA · The council's preliminary key

Q221 AP EAMCET 2014 · 22 May · Offline MCQ

A crystal of intrinsic silicon at room temperature has a carrier concentration of $1.6 \times 10^{16}/\mathrm{m}^3$. If the donor concentration level is $4.8 \times 10^{20}/\mathrm{m}^3$, then the concentration of holes in the semiconductor is

(A) $53 \times 10^{12}/\mathrm{m}^3$
(B) $4 \times 10^{11}/\mathrm{m}^3$
(C) $4 \times 10^{12}/\mathrm{m}^3$
(D) $5.3 \times 10^{11}/\mathrm{m}^3$

Answer: (D) $5.3 \times 10^{11}/\mathrm{m}^3$ · The council's preliminary key

Q222 AP EAMCET 2014 · 22 May · Offline MCQ

The output characteristics of an n-p-n transistor represent, [I_C = Collector current, V_{CE} = potential difference between collector and emitter, I_B = Base current, V_{BB} = voltage given to base; V_{BE} = the potential difference between base and emitter]

(A) Change in I_C as I_B and V_{BB} are changed
(B) Changes in I_C with changes in V_{CE} (I_B = constant)
(C) Changes in I_B with changes in V_{CE}
(D) Change in I_C as V_{BE} is changed

Answer: (B) Changes in I_C with changes in V_{CE} (I_B = constant) · The council's preliminary key

Q223 AP EAMCET 2013 · 10 May · Offline MCQ

The base current in a transistor circuit changes from 45 μA to 140 μA. Accordingly, the collector current changes from 0.2 mA to 4.00 mA. The gain in current is

(A) 9.5
(B) 1
(C) 40
(D) 20

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

Q224 AP EAMCET 2013 · 10 May · Offline MCQ

Of the following, NAND gate is
(see the figure above)

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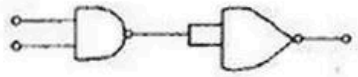
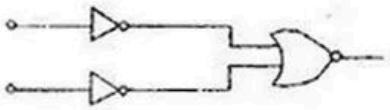
120. Of the following, NAND gate is
క్రింది వానిలో NAND ద్వారం

(1) 

(2) 

(3) 

(4) 

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

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

Q225 AP EAMCET 2012 · 12 May · Offline MCQ

In a transistor if $\frac{I_C}{I_E} = \alpha$ and $\frac{I_C}{I_B} = \beta$. If α varies between $\frac{20}{21}$ and $\frac{100}{101}$, then the value of β lies between

(A) 1-10
(B) 0.95-0.99
(C) 20-100
(D) 200-300

Answer: (C) 20-100 · Official APSCHE final key

Q226 AP EAMCET 2011 · 8 May · Offline MCQ

In a p-n junction diode the thickness of depletion layer is 2×10^{-6} m and barrier potential is 0.3 V. The intensity of the electric field at the junction is :

(A) $0.6 \times 10^{-6}\ \mathrm{Vm}^{-1}$ from n to P side
(B) $0.6 \times 10^{-6}\ \mathrm{Vm}^{-1}$ from P to n side
(C) $1.5 \times 10^{5}\ \mathrm{Vm}^{-1}$ from n to P side
(D) $1.5 \times 10^{5}\ \mathrm{Vm}^{-1}$ from P to n side

Answer: (C) $1.5 \times 10^{5}\ \mathrm{Vm}^{-1}$ from n to P side · The council's preliminary key

Q227 AP EAMCET 2010 · 30 May · Offline MCQ

A transistor having a β equal to 80 has a change in base current of 250 μA, then the change in collector current is :

(A) 20,000 mA
(B) 200 mA
(C) 2000 mA
(D) 20 mA

Answer: (D) 20 mA · Official APSCHE final key

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