

PYQSide

NEET SEMICONDUCTOR ELECTRONICS — SEMICONDUCTOR DIODE: FORWARD AND REVERSE BIAS, V-I CHARACTERISTICS — PYQS

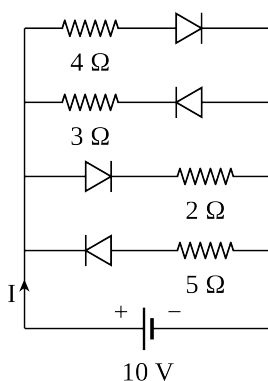
Max. Marks: 80

Questions: 20

Section A (MCQ)

- Q.1** The current I in the circuit shown below is :
(All diodes are ideal and identical)

[NEET (UG) 2026]

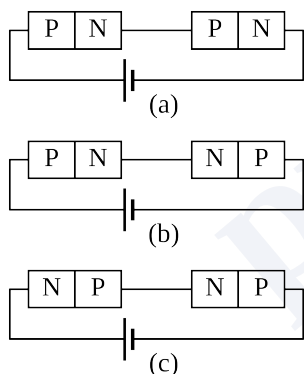


- (1) $\frac{1}{3}$ A (2) $\frac{15}{2}$ A (3) $\frac{5}{3}$ A (4) $\frac{5}{9}$ A

Scan or tap for the full solution



Q.2



In the given circuits (a), (b) and (c), the potential drop across the two p-n junctions are equal in

[NEET (UG) 2022]

- (1) Circuit (a) only
(2) Circuit (b) only
(3) Circuit (c) only
(4) Both circuits (a) and (c)

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- Q.3** The increase in the width of the depletion region in a p-n junction diode is due to : [NEET (UG) 2020]

- (1) reverse bias only
(2) both forward bias and reverse bias
(3) increase in forward current
(4) forward bias only

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- Q.4** In a p-n junction diode, change in temperature due to heating [NEET 2018]

- (1) affects only reverse resistance
(2) affects only forward resistance
(3) does not affect resistance of p-n junction
(4) affects the overall V - I characteristics of p-n junction

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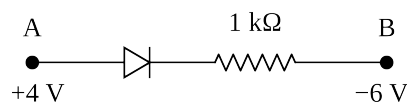
- Q.5** Which one of the following represents forward bias diode ? [NEET 2017]

- (1) -4 V $\rightarrow$ R $\leftarrow -3$ V
(2) -2 V $\rightarrow$ R $\leftarrow +2$ V
(3) 3 V $\rightarrow$ R $\leftarrow 5$ V
(4) 0 V $\rightarrow$ R $\leftarrow -2$ V

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- Q.6** Consider the junction diode as ideal. The value of current flowing through AB is [NEET 2016 (Phase 1)]

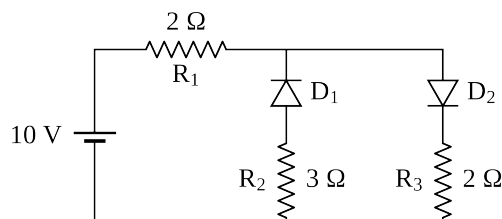


- (1) 10^{-1} A (2) 10^{-3} A (3) 0 A (4) 10^{-2} A

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- Q.7** The given circuit has two ideal diodes connected as shown in the figure. The current flowing through the resistance R_1 will be [NEET 2016 (Phase 2)]



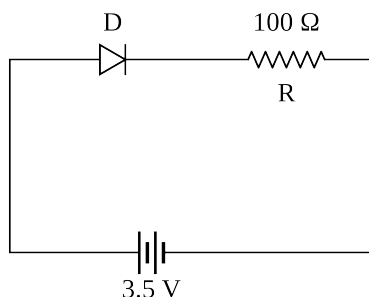
- (1) 2.5 A (2) 10.0 A (3) 1.43 A (4) 3.13 A

Scan or tap for the
full solution



- Q.8** In the given figure, a diode D is connected to an external resistance $R = 100 \Omega$ and an e.m.f. of 3.5 V. If the barrier potential developed across the diode is 0.5 V, the current in the circuit will be

[AIPMT 2015]



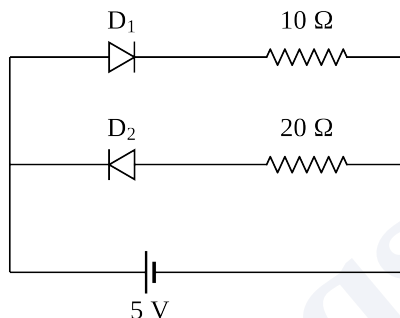
- (1) 20 mA (2) 35 mA (3) 30 mA (4) 40 mA

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- Q.9** Two ideal diodes are connected to a battery as shown in the circuit. The current supplied by the battery is

[AIPMT 2012 (Prelims)]



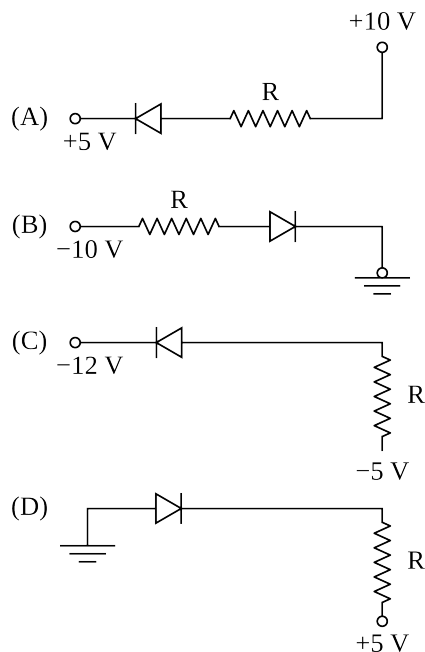
- (1) 0.75 A (2) zero (3) 0.25 A (4) 0.5 A

Scan or tap for the
full solution



- Q.10** In the following figure, the diodes which are forward biased, are

[AIPMT 2011 (Mains)]



- (1) (A), (B) and (D) (2) (C) only
(3) (C) and (A) (4) (B) and (D)

Scan or tap for the
full solution



- Q.11** In forward biasing of the p-n junction

[AIPMT 2011 (Prelims)]

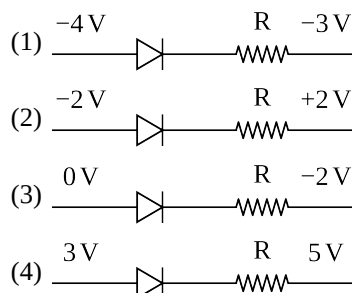
- (1) the positive terminal of the battery is connected to p-side and the depletion region becomes thick.
- (2) the positive terminal of the battery is connected to n-side and the depletion region becomes thin.
- (3) the positive terminal of the battery is connected to n-side and the depletion region becomes thick.
- (4) the positive terminal of the battery is connected to p-side and the depletion region becomes thin.

Scan or tap for the
full solution



- Q.12** Which one of the following represents forward bias diode?

[AIPMT 2007]



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- Q.13** Which one of the following represents forward bias diode ?

[AIPMT 2006]

- (1) -2 V $\rightarrow$ Diode $\rightarrow$ R $\rightarrow$ $+2\text{ V}$
- (2) -4 V $\rightarrow$ Diode $\rightarrow$ R $\rightarrow$ -3 V
- (3) 3 V $\rightarrow$ Diode $\rightarrow$ R $\rightarrow$ 5 V
- (4) 0 V $\rightarrow$ Diode $\rightarrow$ R $\rightarrow$ -2 V

Scan or tap for the full solution



Q.14 Application of a forward bias to a p-n junction

[AIPMT 2005]

- (1) widens the depletion zone
 (2) increases the potential difference across the depletion zone
 (3) increases the number of donors on the n side
 (4) decreases the electric field in the depletion zone.

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Q.15 Of the diodes shown in the following diagrams, which one is reverse biased?

[AIPMT 2004]

- (1) -12 V $\rightarrow$ Diode $\rightarrow$ R $\rightarrow$ -5 V
- (2) Ground $\rightarrow$ Diode $\rightarrow$ R $\rightarrow$ -10 V $\rightarrow$ $+5\text{ V}$
- (3) Ground $\rightarrow$ Diode $\rightarrow$ R $\rightarrow$ $+10\text{ V}$
- (4) $+5\text{ V}$ $\rightarrow$ Diode $\rightarrow$ R $\rightarrow$ $+10\text{ V}$

Scan or tap for the full solution



Q.16 Reverse bias applied to a junction diode

[AIPMT 2003]

- (1) lowers the potential barrier
 (2) raises the potential barrier
 (3) increases the majority carrier current
 (4) increases the minority carrier current

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Q.17 In a p-n junction

[AIPMT 2002]

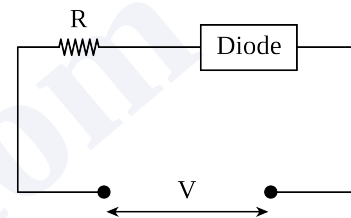
- (1) high potential at n side and low potential at p side
 (2) high potential at p side and low potential at n side
 (3) p and n both are at same potential
 (4) undetermined.

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Q.18 For the given circuit of p-n junction diode, which is correct?

[AIPMT 2002]



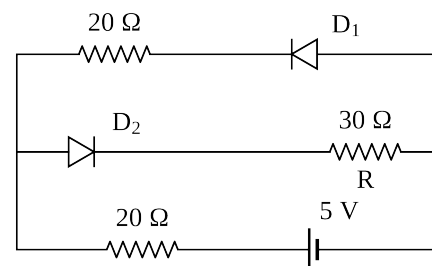
- (1) in forward bias the voltage across R is V
 (2) in reverse bias the voltage across R is V
 (3) in forward bias the voltage across R is $2V$
 (4) in reverse bias the voltage across R is $2V$.

Scan or tap for the full solution



Q.19 The current in the circuit will be

[AIPMT 2001]



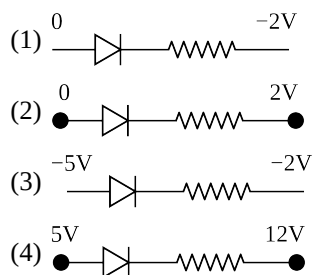
- (1) $\frac{5}{40}\text{ A}$ (2) $\frac{5}{50}\text{ A}$ (3) $\frac{5}{10}\text{ A}$ (4) $\frac{5}{20}\text{ A}$

Scan or tap for the full solution



Q.20 From the following diode circuits, which diode is in forward biased condition?

[AIPMT 2000]



Scan or tap for the
full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	2	4	1	4	4	4	1	3	4	3	4
Ques.	12	13	14	15	16	17	18	19	20		
Ans.	3	4	4	3	2	1	1	2	1		