

PYQSide

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

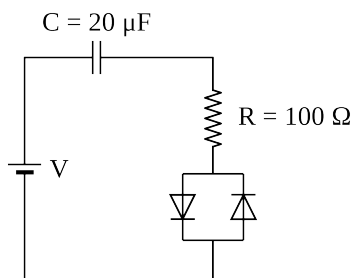
Max. Marks: 20

Questions: 5

Section A (MCQ)

- Q.1** Consider a circuit consisting of a capacitor ($20\ \mu\text{F}$), resistor ($100\ \Omega$) and two identical diodes as shown in figure. The resistance of diode under forward biasing condition is $10\ \Omega$. The time constant of the circuit is $\alpha \times 10^{-3}\ \text{s}$. The value of α is _____.

[JEE Main 2026 (Online) 4th April Morning Shift]



- (1) 2.2 (2) 2.0 (3) 2.1 (4) 2.4

Scan or tap for the full solution



- Q.2** Given below are two statements: one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A): A diode under reverse-biased condition provides very small current which is nearly independent of voltage until a critical limit at which the current increases drastically.

Reason (R): Below the critical voltage limit, only majority charge carriers flow which increases drastically above critical voltage.

Choose the correct answer from the options given below : [JEE Main 2026 (Online) 4th April Evening Shift]

- (1) Both (A) and (R) are true and (R) is the correct explanation of (A)
 (2) Both (A) and (R) are true but (R) is NOT the correct explanation of (A)
 (3) (A) is true but (R) is false
 (4) (A) is false but (R) is true

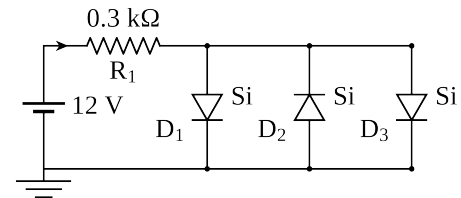
Scan or tap for the full solution



- Q.3** Assuming in forward bias condition there is a voltage drop of $0.7\ \text{V}$ across a silicon diode, the current through diode D_1 in the circuit is _____ mA.

(Assume all diodes in the given circuit are identical)

[JEE Main 2026 (Online) 28th January Morning Shift]



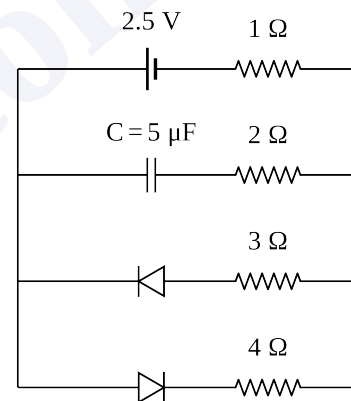
- (1) 17.6 (2) 18.8 (3) 20.15 (4) 11.7

Scan or tap for the full solution



- Q.4** The charge stored by the capacitor C in the given circuit in the steady state is _____ μC .

[JEE Main 2026 (Online) 21st January Evening Shift]



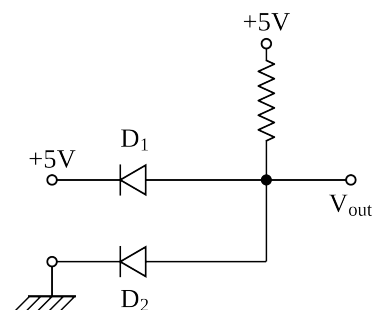
- (1) 7.5 (2) 5 (3) 10 (4) 12.5

Scan or tap for the full solution



- Q.5** The output voltage in the following circuit is (Consider ideal diode case)

[JEE Main 2025 (Online) 8th April Evening Shift]



- (1) 0 V (2) +5 V (3) -5 V (4) 10 V

Scan or tap for the full solution



ANSWER KEY

Ques.	1	2	3	4	5						
Ans.	1	3	2	3	1						