

# Assam Board Class 12, 2026 Physics Question Paper

Time Allowed :3 Hours

Maximum Marks :70

Total questions :38

## General Instructions

**Read the following instructions very carefully and strictly follow them:**

1. The paper is divided into Section A and Section B.
2. Section A includes objective-type questions.
3. All questions in Section A are compulsory.
4. Section B includes short answer, and long answer type questions.
5. Answers must be written legibly within the word limit.
6. Use of unfair means or electronic devices is prohibited.
7. Follow the correct format and instructions for each section.

## Section - A

**1. In a full-wave rectifier, the current in each of the diodes flows for:**

- (A) Complete cycle of the input signal
- (B) Half cycle of the input signal
- (C) Less than half cycle of the input signal
- (D) Only for the positive half cycle of the input signal

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**2. (iii) In a full-wave rectifier:**

- (A) Both diodes are forward biased at the same time.
- (B) Both diodes are reverse biased at the same time.
- (C) One is forward biased and the other is reverse biased at the same time.

(D) Both are forward biased in the first half of the cycle and reverse biased in the second half of the cycle.

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**3. Ten capacitors, each of capacitance  $1 \mu F$ , are connected in parallel to a source of  $100 V$ . The total energy stored in the system is equal to:**

- (A)  $10^{-2} J$
  - (B)  $10^{-3} J$
  - (C)  $0.5 \times 10^{-3} J$
  - (D)  $5.0 \times 10^{-2} J$
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**4. A loop carrying a current  $I$  clockwise is placed in  $x - y$  plane, in a uniform magnetic field directed along  $z$ -axis. The tendency of the loop will be to:**

- (A) move along  $x$ -axis
  - (B) move along  $y$ -axis
  - (C) shrink
  - (D) expand
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**5. A galvanometer of resistance  $G \Omega$  is converted into an ammeter of range  $0$  to  $1 A$ . If the current through the galvanometer is  $0.1\%$  of  $1 A$ , the resistance of the ammeter is:**

- (A)  $\frac{G}{999} \Omega$
  - (B)  $\frac{G}{1000} \Omega$
  - (C)  $\frac{G}{1001} \Omega$
  - (D)  $\frac{G}{100.1} \Omega$
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**6. The transition of electron that gives rise to the formation of the second spectral line of the Balmer series in the spectrum of hydrogen atom corresponds to:**

- (A)  $n_f = 2$  and  $n_i = 3$

- (B)  $n_f = 3$  and  $n_i = 4$
  - (C)  $n_f = 2$  and  $n_i = 4$
  - (D)  $n_f = 2$  and  $n_i = \infty$
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**7. The waves associated with a moving electron and a moving proton have the same wavelength  $\lambda$ . It implies that they have the same :**

- (A) momentum
  - (B) angular momentum
  - (C) speed
  - (D) energy
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**8. Ge is doped with As. Due to doping,**

- (A) the structure of Ge lattice is distorted.
  - (B) the number of conduction electrons increases.
  - (C) the number of holes increases.
  - (D) the number of conduction electrons decreases.
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**9. In the four regions, I, II, III and IV, the electric fields are described as:**

Region I :  $E_x = E_0 \sin(kz - \omega t)$

Region II :  $E_x = E_0$

Region III :  $E_x = E_0 \sin kz$

Region IV :  $E_x = E_0 \cos kz$

**The displacement current will exist in the region:**

- (A) I
  - (B) IV
  - (C) II
  - (D) III
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## Section - B

**10. Find the temperature at which the resistance of a wire made of silver will be twice its resistance at  $20^{\circ}\text{C}$ . Take  $20^{\circ}\text{C}$  as the reference temperature and temperature coefficient of resistance of silver at  $20^{\circ}\text{C} = 4.0 \times 10^{-3} \text{ K}^{-1}$ .**

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**11. Monochromatic light of frequency  $5.0 \times 10^{14} \text{ Hz}$  passes from air into a medium of refractive index 1.5. Find the wavelength of the light (i) reflected, and (ii) refracted at the interface of the two media.**

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**12. Consider a neutron (mass  $m$ ) of kinetic energy  $E$  and a photon of the same energy. Let  $\lambda_n$  and  $\lambda_p$  be the de Broglie wavelength of neutron and the wavelength of photon respectively. Obtain an expression for  $\frac{\lambda_n}{\lambda_p}$ .**

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**13. Plot a graph showing the variation of current with voltage for the material GaAs. On the graph, mark the region where: (a) resistance is negative, and (b) Ohm's law is obeyed.**

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**14. Why is the density of a nucleus much more than that of an atom?**

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**15. Show that the density of the nuclear matter is the same for all nuclei.**

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