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Reg. No. :

**Code No. : 20316 E Sub. Code : JAPH 21/
SAPH 21/AAPH 21**

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2021.

Second/Fourth Semester

Physics — Allied

PHYSICS — II

(For those who joined in July 2016 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer.

1. Unit of electric current is equal to

- (a) CS^{-1} (b) $\frac{C}{S}$
(c) $\frac{q}{t}$ (d) Both (a) and (b)

2. The unit of current density is
- (a) $\frac{A}{m^2}$ (b) Am^2
- (c) A^2m (d) IA
3. The relation between permeability and susceptibility is
- (a) $\mu = (1 + x)$ (b) $\frac{1 + x}{\mu}$
- (c) $\mu = \mu_0(1 + x)$ (d) none
4. Paramagnetic materials have relative permeability
- (a) slightly less than unity
- (b) equal to unity
- (c) slightly more than unity
- (d) equal to ferromagnetic materials
5. Zener diode is operated only at
- (a) avalanche region (b) cut off region
- (c) breakdown region (d) none

6. $Y = A \oplus B$ is equal to
- (a) $AB + A\bar{B}$ (b) $\bar{A}B + A\bar{B}$
(c) $\overline{A \cdot B}$ (d) None
7. Nuclear Force is the
- (a) Weakest force (b) Strongest force
(c) Gravitational force (d) None
8. 1 Curie represents
- (a) 106 disintegrations per second
(b) 10^9 disintegrations per second
(c) 3.7×10^{10} disintegrations per second
(d) None
9. Range on the horizontal plane
- (a) $R = \frac{v^2 \sin 2\alpha}{g}$ (b) $R = U \cos \alpha$
(c) $R = \frac{2U \sin \alpha}{g}$ (d) $\frac{2U^2 \sin \alpha}{g}$
10. Galilean transformation equation are
- (a) $X' = X - Vt$ (b) $Y' = Y$
(c) $Z' = Z$ (d) All

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) (i) Define current density and state Ohm's Law.
(ii) Define Color Coding.

Or

- (b) Write the application of Kirchoff's law in Wheat Stone Bridge.

12. (a) Write the properties of Diamagnetic materials.

Or

- (b) Derive the expression for the self inductance of a long solenoid.

13. (a) Discuss the characteristics of Junction diode.

Or

- (b) Describe the EXOR gate.

14. (a) Write the properties of nuclear forces.

Or

(b) Write a note on Half Life Period.

15. (a) Discuss the range on the inclined plane.

Or

(b) Explain Length Contraction.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Describe the resistor in series and in parallel.

Or

(b) Discuss the conversion of galvanometer into voltmeter.

17. (a) Write the relation connecting μ and K .

Or

(b) Explain Faraday's Law of Electromagnetic Induction.

18. (a) Discuss the action of transistor.

Or

(b) Draw the symbol truth table for NAND gate — Explain.

19. (a) Describe the Mass defect.

Or

(b) State and explain fundamental laws of radioactivity.

20. (a) Explain projectile and time of flight.

Or

(b) Define Frame of reference. State the postulates of special theory of relativity.
