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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 — ($10 \times 1 = 10$ 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) $AB + \overline{AB}$ (b) $\overline{AB} + A\overline{B}$
 (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 — ($5 \times 5 = 25$ 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.
