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

 ${\tt PHYSICS-II}$

(For those who joined in July 2016 onwards)

Time: Three hours Maximum: 75 marks

PART A —
$$(10 \times 1 = 10 \text{ marks})$$

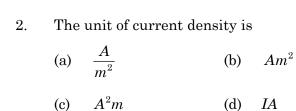
Answer ALL questions.

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)



- 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

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- $Y = A \oplus B$ is equal to 6.
 - $AB + A\overline{B}$ (a)
- $\overline{A}B + A\overline{B}$ (b)
- $\overline{A \cdot B}$ (c)
- (d) None
- 7. Nuclear Force is the
 - (a) Weakest force
- (b) Strongest force
- Gravitational force (d) None (c)
- 8. 1 Curie represents
 - (a) 106 disintegrations per second
 - (b) 10⁹ disintegrations per second
 - 3.7×10^{10} disintegrations per second (c)
 - (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
 - X' = X Vt(a)
- Y' = Y(b)
- Z' = Z(c)
- (d) All

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PART B — $(5 \times 5 = 25 \text{ marks})$

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.

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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 —
$$(5 \times 8 = 40 \text{ marks})$$

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.

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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.

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