

TEST NO. 11**1ST HALF BOOK.(CHAPTER NO. 12 - 17)**

Physics (New Scheme)	Inter Part II	Group- I / II
Time : 20 Min.	Objective Type	Marks:17

Note:- You have four choices for each objective type question as A,B,C and D. The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero in that question.

- 1.1 How many electrons will have a charge of one coulomb?
 (a) 6.2×10^{18} (b) 6.2×10^{19} (c) 5.2×10^{18} (d) 5.2×10^{19}
2. If $\phi_e = E \cdot \vec{A}$ then maximum value of flux is obtained if angle between $\vec{E}$ and $\vec{A}$ is.
 (a) 90° (b) 180° (c) 270° (d) 0°
3. The parallel wires carrying current in the same direction.
 (A) Attract each other (B) Repel each other (C) Cancel their fields (D) No effect on each other
4. Lenz's law is a consequence of the law of conservation of.
 (A) Charge (B) Current (C) Energy (D) Momentum
5. Energy stored in the inductor is
 (A) $\frac{1}{2} L^2 I$ (B) $\frac{1}{2} LI$ (C) $\frac{1}{2} LI^2$ (D) $\frac{1}{2} L^2 I^2$
6. The S.I unit of induced emf is
 (A) $\frac{VS}{A}$ (B) Tesla (C) Henry (D) Volt
7. The power dissipated in AC circuit is given by $P = I_{rms} V_{rms} \cos \phi$ in this relation $\cos \phi$ is called.
 (A) Phase factor (B) Gain factor (C) Loss factor (D) Power factor
8. The frequency range for F.M is given by
 (A) 88 MHz -108 MHz (B) 88 KHz -108 KHz (C) 540 MHz- 1600 MHz (D) 540 KHz -1600 Kz
9. If I_0 is the peak value of AC supply, then its rms value is given
 (A) $\frac{I_0}{\sqrt{2}}$ (B) $\frac{I_0}{0.707}$ (C) $I_0 \sqrt{2}$ (D) $\frac{7N}{8}$
10. An Indicator may store energy in
 (A) Its magnetic field (B) It electric field (C) Its coil (D) A neighboring circuit
11. During each cycle AC voltage reaches a peak value.
 (A) One (B) Twice (C) Thrice (D) Four times
12. NC-1 is the SI unit of.
 (a) Force (b) Charge (c) Current (d) Electric intensity
13. The value of ϵ_0 permittivity for free space is.
 (a) $8.85 \times 10^{-12} C^2 N^{-3} m^{-2}$ (b) $8.85 \times 10^{-12} N m_2 C_2$ (c) $8.85 \times 10^{-12} NmC_2$ (d) $8.85 \times 10^{12} m_2 N_3 m_2$
14. Relative permittivity for air is.
 (a) 1.06 (b) 1.006 (c) 1.0006 (d) 1.6
15. Heat generated by a 40-watt bulb in one hour is.
 (A) 4800 J (B) 14400 J (C) 44000 J (D) 1440 J
16. The critical temperature for

(A) 7.2 k

(B) 4.2 k

(C) 1.18 k

(D) 3.7 k

17. The SI unit of strain is.

(A) Nm

(B) Nm^{-2}

(C) No unit

(D) Kgms^{-2} **TEST NO. 11****1ST HALF BOOK.(CHAPTER NO. 12 - 17)**

Physics (New Scheme)	Inter Part II	Group- I / II
Time : 2:40 hours.	Subjective Type	Marks:68

SECTION - I

2. Write short answers to any EIGHT (8) questions.

(8x2=16)

- Describe the force on a positive point charge when placed between parallel plates with opposite and equal charges.
- What are the difficulties in testing whether the filament of a lighted bulb obeys ohm's law?
- Describe the change in magnetic field inside a solenoid carrying a steady current I , if the length of the solenoid is double but the number of turns remains the same.
- Show that $\frac{\epsilon \wedge \Delta \phi}{\Delta t}$ have the same units.
- A sinusoidal current has rms value of 10 A. What is the maximum or peak value?
- Distinguish between crystalline and amorphous or glassy solids.
- Electric lines of force never cross why?
- Is the filament resistance lower or higher in a 500 watt, 220 volt light bulb than in a 100 watt, 220 volt bulb?
- Distinguish between magnetic flux and magnetic flux density. Write their SI Unit.
- Does the induced emf always act to decrease the magnetic flux through a circuit.
- How does doubling the frequency affect the reactance of an inductor and a capacitor.
- Discuss the mechanism of electrical conduction by holes and electrons in a pure semiconductor.

3. Write Short answers to any EIGHT (8) questions.

(8 x 2 =16)

- If a point charge q of mass m is released in a non-uniform electric field with field lines pointing in the same direction, will it make a rectilinear motion?
- Describe a circuit that will give continuously varying potential.
- Why does the picture on a TV screen become distorted when a magnet is brought near the screen?
- Four unmarked wires emerged from a transformer. What steps would you take to determine the

- turns ratio?
- v. How the reception of particular radio station is selected on your radio set?
 - vi. Suppose that you follow an electric line due to a positive point charge. Do electric field intensity and the potential increase or decrease?
 - vii. Why the terminal potential difference of a battery decreases when the current drawn from it is increased?
 - ix. If a charge particle moves in a straight line through some region of space, can you say that
- How can current loop be used to determine the pressure of a magnetic field in a given region of space? magnetic field in the region is zero?
- x. Can a step-up transformer increase the power level?
 - xi. Differentiate between peak value of peak to peak value
 - xii. Distinguish between soft magnetic materials and hard magnetic materials.
- 4. Write Short answers to any SIX (6) questions. (6 x 2 = 12)**
- i. Do electrons tend to go to region of high potential or low potential?
 - ii. A potential difference is applied across the ends of a copper wire. What is the effect on the drift velocity of free electrons by decreasing the length and temperature of the wire?
 - iii. How can you use a magnetic field to separate isotopes of chemical element?
 - iv. Can D.C motor be turned into a D.C. generator? What changes are required to be done?
 - v. What is modulation? Name its types.
 - vi. How n-type semi-conductors are formed?
 - vii. The potential is constant throughout a given region of space. Is electric field zero or non-zero in this region.
 - viii. What is wheat stone bridge? Write down its relation for finding unknown resistance?
 - ix. Why the resistance of an ammeter should be very low?

SECTION – II

Note: Attempt any THREE (3) questions:

(3 x 8 = 24)

5. (a) State Gauss's law. Derive relation for electric intensity at a point near an infinite sheet of charge.
- (b) Find the electric field strength required to hold a suspended particle of mass 1.0×10^{-6} kg and charge $1.0 \mu\text{C}$ between two plates 10.0 cm apart.
6. (a) What is wheat stone bridge? Explain and prove the principle of wheat stone bridge.
- (b) A rectangular bar of Iron is 2 cm in cross section and 40 cm long. Calculate its resistance if the resistivity of Iron is $11 \times 10^{-8} \Omega\text{m}$
7. (a) Derive expressions of force on a current carrying conductor placed in a uniform magnetic field?
- (b) What current should pass through a solenoid that is 50 cm long with 10000 turns of copper wire so that it will have a magnetic field of 0.4 T?
8. (a) Derive a relation for energy stored in an inductor and energy density.

- (b) Find the value of the current and inductive reactance when AC Voltage of 220 volt at 50 Hz is passed through an inductor of 10 H.
9. (a) What is meant by strain energy? Derive the relation for strain energy in a deformed material from the area under force extension graph.
- (b) What stress would cause a wire to increase in length 0.01 % the young modulus of the wire is 12×10^{10} Pa? What force would produce this stress if the diameter of the wire is 0.56 mm?

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