

FBD-12-1-23

Roll No. : _____

Objective
Paper Code

8475

Intermediate Part Second - 136

PHYSICS (Objective) GROUP - I

Time: 20 Minutes

Marks: 17



Q.No.1

You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given in objective type question paper and leave other circles blank.

S.#	Questions	A	B	C	D
1	If $V = 630 \cos(100\pi t + 60^\circ) V$; the frequency of rotation of generator coil is:	100Hz	314Hz	50Hz	200Hz
2	Unit of self induction is not equivalent to:	VsA^{-1}	WbA^{-1}	JA^{-2}	$Vs^{-1}A$
3	When flux through a coil remains unchanged, induced emf is:	Positive	Negative	Zero	Infinite
4	In a galvanometer, radial magnetic field ensures that iron cylinder and field-lines are always:	Parallel	Perpendicular	Anti-parallel	Oblique
5	Magnetic field due to a long conductor carrying current I at distance r is proportional to:	$\frac{r}{I}$	$\frac{1}{r}$	$\frac{1}{r^2}$	$\frac{I^2}{r}$
6	Which is a unipolar medium?	Extrinsic semi-conductor	Ionized gases	Electrolyte	Metals
7	When plates of an isolated charged capacitor are moved apart, energy stored:	Increases	Decreases	Remains same	Reduces to zero
8	If a +ve point charge q is moved away from a point, the absolute potential at that point:	Increases	Remains same	Decreases	Becomes infinite
9	The ratio of decayed fraction to undecayed fraction after 3 half-lives is:	$\frac{1}{8}$	$\frac{7}{8}$	$\frac{7}{1}$	$\frac{1}{1}$
10	One twelfth of mass of ^{238}U isotope is equal to:	0.0055u	1u	1.008665u	3.016u
11	The energy of _____ electrons is specific.	Free	Orbital	Oscillating	Accelerated
12	Positron was first discovered in _____.	Cosmic rays	Magnetosphere	Gamma ray bursts	Earth's crust
13	A black body is a perfect absorber and _____.	Reflector	Radiator	Anti-reflector	Transmitter
14	Due to high open loop gain, a small potential difference at input _____ output voltage of operational amplifier.	Diminishes	Fluctuates	Saturates	Oscillates
15	Pulsating DC generated by rectifier can be made smooth by using:	Generator	Motor	Filter	Transistor
16	A moving hole is equivalent to a moving:	Proton	Positive ion	Positron	Electron
17	In a series RC circuit; if $\kappa = \frac{1}{\omega C}$, the power factor is:	$\frac{\sqrt{3}}{2}$	1	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$

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PHYSICS (Subjective) GROUP - I

FBD-12-1-23

Time: 02:40 Hours

Marks: 68

SECTION - I**2. Write short answers to any EIGHT parts.**

- How can you identify that which plate of a capacitor is positively charged?
- Electric lines of forces never cross. Why?
- Do electrons tend to go to region of high potential or low potential?
- If the absolute potential at a point is zero, what can you say about the electric intensity there?
- Why is B non-zero outside a solenoid?
- Two charged particles are projected into a region where there is a magnetic field perpendicular to their velocities, if the charges are deflected in opposite directions. What can you say about them?
- Why the resistance of an ammeter should be very low?
- Can a charged particle move through a magnetic field without deflecting? Explain.
- Why are heavy nuclei unstable?
- What factors make a fusion reaction difficult to achieve?
- After 2 half-lives, what percentage of radioactive sample remains?
- Write any two uses of nuclear reactor.

3. Write short answers to any EIGHT parts.

- What are difficulties in testing whether the filament of a lighted bulb obeys Ohm's law?
- Is the filament resistance lower or higher in a 500W, 220V light bulb than in a 100W, 220V bulb?
- How many times per second will an incandescent lamp reach maximum brilliance when connected to 50Hz source?
- How the reception of a particular radio station is selected on your radio set?
- What is diamagnetic substance? Give example.
- What are polymeric solids? Give example.
- What is net charge on a n-type or a p-type substance?
- Why charge carriers are not present in the depletion region?
- What is thermistor? Give two examples.
- What advantage of three phase A.C supply over single phase A.C?
- What is difference between elasticity and plasticity?
- Express by diagram how current flows in n-p-n transistor?

4. Write short answers to any SIX parts.

- Does the induced current depend on the resistance of the circuit?
- Show that ϵ and $\frac{\Delta\Phi}{\Delta t}$ have the same units.
- Can a D.C motor be turned into a D.C generator? What changes are required to be done?
- Can pair production take place in vacuum? Explain.
- Which has lower energy quanta? Radio waves or x-rays.
- What is the rest mass of photon? What you can say about its momentum?
- Why can red light be used in a photographic dark room when developing film, but a blue or white light cannot?
- What are advantages of lasers over ordinary light?
- What is meant by cat-scanner?

SECTION - II

Attempt any THREE questions. Each question carries 08 marks.

- Define resistivity and describe its dependence upon temperature.
 - Two point charges $q_1 = -1.0 \times 10^{-6} \text{C}$ and $q_2 = +4.0 \times 10^{-6} \text{C}$ are separated by a distance of 3.0m. Find and justify the zero field location.
- State Ampere's law and derive relation for magnetic field due to current carrying solenoid.
 - A square coil of side 16cm has 200 turns and rotates in a uniform magnetic field of magnitude 0.05T. If the peak emf is 12V, what is the angular velocity of the coil?

(Continued P/2)

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