PHYSICS Part-II	Paper Code	Roll No. of the Student						
Time: 20 Minutes Marks: 18	① ② ●	Serial No. Of the Answer Book_____						
Multiple Choice Questions 01 Mark for each								

SECTION-A

Note:

1) Attempting all MCQs is compulsory. This paper along with the OMR sheet must be returned to the superintendent after due time.
2) Fill the circle Ⓐ Ⓑ Ⓒ Ⓓ, which one is correct with blue or black ball point, in this sheet as well as in separate OMR Sheet like ●
3) If more than one circle in the OMR sheet is filled then no credit will be given to such answer.

I. i. In transistor, collector current is controlled by _____.

Ⓐ Collector voltage Ⓑ Base current Ⓒ Collector resistance Ⓓ All of these

ii. A perfect absorber must also be perfect _____.

Ⓐ Cavity Ⓑ Source of radiation Ⓒ Radiator Ⓓ None of these

iii. I amu is equal to _____.

Ⓐ 1.66×10^{-27}kg Ⓑ 1.66×10^{-27} J Ⓒ 3×10^{-7} J Ⓓ None of these

iv. The rest mass of photon is equal to _____.

Ⓐ 9.1×10^{-31}Kg Ⓑ 6.6×10^{-27}Kg Ⓒ 6.6×10^{-31}Kg Ⓓ Zero

v. Unit of decay constant is _____.

Ⓐ ms Ⓑ m^{-1} Ⓒ m Ⓓ s^{-1}

vi. In N-type substances the charge carriers in majority are _____.

Ⓐ Holes(+e) Ⓑ Electrons Ⓒ Protons Ⓓ Positive ions

vii. The circuit in which current & voltage are in phase, the power factor is _____.

Ⓐ Zero Ⓑ 1 Ⓒ -1 Ⓓ 2

viii. The velocity of electromagnetic waves according to Maxwell's is given by _____.

Ⓐ $\sqrt{\epsilon_o\mu_o}$ Ⓑ $\frac{\epsilon_o}{\mu_o}$ Ⓒ $\frac{1}{\sqrt{\epsilon_o\mu_o}}$ Ⓓ None of these

ix. For electromagnetic waves, Maxwell generalized _____.

Ⓐ Gauss's law for magnetism Ⓑ Gauss's law for electricity Ⓒ Ampere Law Ⓓ None of these

x. The energy stored in a charged capacitor is given by _____.

Ⓐ $^1/_2$ Qv Ⓑ $^1/_2$ VC Ⓒ $^1/_2$ CV Ⓓ None of these

xi. In order to convert the galvanometer into ammeter, the shunt resistance is given by _____.

Ⓐ I_gR_g/I_g-1 Ⓑ I_gR_g/I-I_g Ⓒ I_g -1/R_gI Ⓓ None of these

xii. Which of the following quantities remain constant in step up transformer _____.

Ⓐ Current Ⓑ Voltage Ⓒ Power Ⓓ Heat

xiii. If the frequency in RC circuit is doubled then its capacitive reactance will be _____.

Ⓐ constant Ⓑ Double Ⓒ half Ⓓ None of these

xiv. Ampere law is applicable to _____.

Ⓐ Circular path Ⓑ Rectangular path Ⓒ To any closed path Ⓓ None of these

xv. One weber is equal to _____.

Ⓐ $N.A^2/m$ Ⓑ $N.m^2/A$ Ⓒ N.m/A Ⓓ N.A/m

xvi. A wire of uniform cross section (A) length L & resistance R is cut into two equal parts. The resistivty of each part will _____.

Ⓐ Doubled Ⓑ Half Ⓒ Same Ⓓ one forth

xvii. An electron volt is a unit of _____.

Ⓐ Potential difference Ⓑ voltage Ⓒ Electric power Ⓓ Energy

xviii. Two charges of 10μc are separated by a distance of 5cm, the force exerted on each other is _____.

Ⓐ 180 N Ⓑ 18 N Ⓒ 60 dynes Ⓓ 30 N

PHYSCIS Part-II

Note: Time allowed for section B and C is 2 hours and 40 minutes.

SECTION "B" — Marks: 40

II. Attempt any Ten Parts out of the following. Each Part carries equal marks.

i. Voltage are always measured between two points? Why
ii. Define stress, strain & elasticity?
iii. What is the nature of force between two wires carrying current in the same direction?
iv. What is the difference between EMF & Potential difference?
v. State Len'z Law?
vi. Gives formula for the flux linkage in terms of angular orientation?
vii. What factors limit the size of the back emf ?
viii. Water has large dielectric constant but it is rarely used in capacitors? Explain
ix. Can the step-up transformer increase the power level?
x. Define Paramagnetic & Ferromagnetic materials?
xi. Define PN junction & explain the formation of depletion region?
xii. In a RL circuit, will the current lag or lead the voltage? Illustrate your answer by phasor diagram?
xiii. What are isotopes? Explain with examples.

SECTION "C" — Marks: 27

Note: Attempt any Three questions of the following. Each question carries equal Marks.

III. (a) State & explain Gauss's law of electrostatics?

(b) Using Gauss's law to calculate electric field intensity for infinite sheet of charges?

IV. (a) Define & explain the half life of a radioactive element?

(b) Calculate the total energy released of 1kg of U^{235} undergoes fission? Taking the disintegration energy per event to be Q=280 Me.

V. (a) Explain the phenomenon of self-induction? State the factors which determine the value of self-induction?

(b) Back emf of a motor is 120 V when turning at 1680rev/min. What is back emf when the motor turning at 3360 rev/min?

VI. Write a comprehensive note on any two of the following.

a) AC Generator
b) PN Junction
c) Binding Energy & Mass defect