

Half Yearly Examination 2022-23

Class -12th

Subject - Physics

M.M.70

Time :- 3:00 hrs

Instruction

- (1) All questions are compulsory.
- (2) Q. no 1 to 4 are objective types questions. Each questions carries 1 mark
- (3) Q.No 5 to 12 are very short answerques each questions carries 2 marks (Word limit 30 words)
- (4) Q.No 13 to 16 are short answer type question Each questions carries 3 marks (word limit 75 words)
- (5) Q. no. 17 is analytical questions and carries 4 marks (Word limit 120 words)
- (6) Q.No-18 & 19 are analytical questions each question carries 5 marks (Word limit 150 word)
- (7) Draw labeled diagram wherever required.

Q. 1 Choose the correct answer (7)

- (i) The electric constant of metal is
 - (a) Infinite
 - (b) Zero
 - (c) One
 - (d) None of these
- (ii) The magnetic field produced at the centre of a circular coil carrying current is
 - (a) In the plane of coil
 - (b) Perpendicular to the plane
 - (c) At 45° from the plane of coil
 - (d) At 60° from the plane of coil
- (iii) S.I. unit of magnetic flux is
 - (a) Weber
 - (b) Gauss
 - (c) Oersted
 - (d) tesler
- (iv) Energy in the interference of light is
 - (a) Destroyed
 - (b) Redistributed
 - (c) Produced
 - (d) None
- (v) The relation between peak value V and r.m.s. value v_{rms} of alternating voltage is :
 - (a) $V_o=0.707 v_{rms}$
 - (b) $V_{rms}=0.707V_o$
 - (c) $V_{rms} =0.637V_o$
 - (d) $V_o=0.637 V_{rms}$

- (vi) The Polarization of light proves
- (a) Corpuscular theory of light
 - (b) Transverse nature of light
 - (c) Quantum theory of light
 - (d) Longitudinal nature of light

- (vii) In a compound microscope the focal length of eye piece is
- (a) More than that of objective lens
 - (b) Less than that of objective lens
 - (c) Equal to that of objective lens
 - (d) None

Q. 2 Match the column

A		B	
i	Intensity of electric field due to a point charge	a	P-type semiconductor
ii	Nichrome	b	Magnetic effect of current
iii	Moving coil galvanometer	c	Ammeter
iv	Shunted galvanometer	d	$\frac{q}{t}$
v	Electromagnetic waves	e	Resistance wire
vi	De-Broglie	f	Maxwell
vii	$n_h > n_e$	g	Matter waves

Q. 3 Fill in the blanks

- (i) The dimensional formula of charge is
- (ii) The electromagnetic waves are waves
- (iii) A is associated with each moving particle
- (iv) The resistance of semiconductor on adding impurity in it
- (v) The majority charge carries in a N- type semiconductor are
- (vi) S.I. unit of inductive reactance X_L is
- (vii) Value of absolute refractive index of water is

Q. 4 Answer the following in one word/ sentences

- (a) The force acting on charge particle moving inside magnetic field is known as ?
- (b) Write the relation between energy and frequency of radiation
- (c) Write the magnetude of charge present on Beta particle

- (d) What is the value of energy gap for metals ?
- (e) What is ~~transducer~~? *Semi conductor*
- (f) Write the wave length range of visible light ?
- (g) Electromagnetic are made of what materials?

Q. 5 What are X-ray ? Write two use of X-rays

OR

Arrange the different waves present in the electromagnetic spectrum in the order of their increasing wavelengths.

Q. 6 What is thermionic emission ?

OR

Monochromatic light of frequency 6.0×10^{14} hertz is produced by a laser what is the energy of a photon in the light beam ?
($h = 6.63 \times 10^{-34} \text{ J s}$)

Q. 7 Write name of elements of communication system,

OR

What is sky wave propagation ?

Q. 8 Write Lenz's law of electromagnetic induction

OR

In order to reduce the current in a.c. circuit an inductor is more suitable than a resistor why ?

Q. 9 What do you mean by threshold frequency ?

OR

What properties should be possessed by a metal used for thermionic emission ?

Q. 10 What is meant by capacity of a conductor ? Give its unit

OR

What do you mean by quantization of electric charge ?

Q. 11 What is drift velocity ? Define current density ?

OR

What should be the resistance of an ideal voltmeter and why ?

Q. 12 Define power of lens

OR

What do you mean by magnification of lens

Q. 13 State Biot-savart's law and obtain its expression

(3)

OR

The storage battery of car has an e.m.f of 12 v. If the internal resistance of the battery is 0.4Ω what is the maximum current that can be drawn from the battery.

- Q. 14 Establish the relation between critical angle and refractive index of medium (3)

OR

Prove that $a^u g^x \times w^y \times g^z a = 1$ Where symbols have their usual meaning

- Q. 15 Write differences between electromotive force and potential difference (3)

OR

Write differences between specific resistance and resistance

- Q. 16 Derive an expression of electric field intensity on a point in axial position (end on position) of an electric dipole (3)

OR

Derive the expression for the intensity of electric field on the equatorial position of the dipole

- Q. 17 What is rectification ? Explain half wave rectification by diode on the basis of following points : (4)

- (i) Labelled diagram of circuits
- (ii) Working

OR

Describe the use of P-N junction diode as a full wave rectifies under the following points.

- (i) Labelled circuit diagram
- (ii) Working

- Q. 18 Describe the transformer on the basis of following point (5)

- (i) Principal
- (ii) Types of transformer
- (iii) Any three energy losses

OR

Explain the series L-C-R circuit under the following heads

- (i) Resultant voltage
- (ii) Impedance of circuit
- (iii) Frequency of resonance

- Q. 19 Derive an expression $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$ Showing relation between u, v and f for a convex lens (5)

OR

What is lens maker formula ? Derive it for a convex lens.