Grade - X

ASSESSMENT - I

PHYSICS

Maximum Marks: 80

Time allowed: Two hours

Answers to this Paper must be written on the paper provided separately.

You will not be allowed to write during the first 15 minutes.

This time is to be spent in reading the question paper.

The time given at the head of this Paper is the time allowed for writing the answers.

*Attempt **all** questions from **Section A** and **any four** questions from **Section B**.*

The intended marks for questions or parts of questions are given in brackets [ ].

SECTION A (40 Marks)

*(Attempt **all** questions from this Section)*

Q1) Choose the correct answers to the questions from the given options: [20]

(i) The SI unit of moment of force is :-
a) Dyne m b) N m c) N cm d) dyne cm

(ii) A Force of 2.5 N, with the length of its moment-arm being 4 m, rotates a body in the clockwise direction. Find the torque.
a) 10 Nm b) 20 Nm c) 100 Nm d) 60 Nm

(iii) Torque is depending on
a) The magnitude of force applied(F)
b) The perpendicular distance of line of action of the force from the axis of rotation
c) Pressure on the substance
d) Both (a) and (b)

(iv) Centrifugal force is:
a) a real force b) the force of reaction of centripetal force
b) a fictitious force d) directed towards the centre of circular path

(v) What should be the angle between the force and displacement so that the work done is zero:
a) 90° b) 0° c) 45° d) 30°

(vi) Relation between kinetic energy and momentum:
a) $p = \sqrt{2K}$ b) $p = \sqrt{2mK}$ c) $p = \sqrt{2vK}$ d) $p = \sqrt{K}$

(vii) Kinetic energy are of how many types:
a) three b) two c) four d) five

(viii) A ray of light is incident normally on a plane glass slab. What will be the angle of refraction.
a) 90° b) bend towards normal c) bend away from the normal d) 0°

(ix) The image obtained by the use of a total reflecting prism, is much _____ than that obtained by using a plane mirror.
a) Lighter b) brighter c) larger d) smaller

(x) Image that can be obtained on a screen:
a) Real b) virtual c) both d) none of these

(xi) A light ray passes from water to air. State how does the speed of light changes.
a) increase b) decrease c) Remains same d) none of these

(xii) In glass slab, what is the relationship between the angle of emergence (e) and angle of incidence (i)?
a) i > e b) i < e c) i = e d) i = - e

(xiii) Name the color of white light that is deviated the least, on passing through a prism.
a) Violet b) red c) blue d) green

(xiv) In refraction of light through a prism, the light ray:
a) Suffers refraction only on one face of the prism
b) Emerges out of the prism in a direction parallel to the incident ray
c) Bends at both the surfaces of the prism towards its base
d) Bends at both the surfaces of prism opposite to its base

(xv) Critical angle is maximum for which color?
a) Violet b) red c) blue d) green

(xvi) What happens when light rays pass through a convex lens?
a) converge the light rays b) comes back
b) diverge the light rays d) no effect

(xvii) For a real image linear magnification m is
a) Negative b) positive c) can't say d) none of these

(xviii) Energy possessed by the bob of a simple pendulum when it is at the extreme position
a) Kinetic energy b) potential energy c) both kinetic and potential d) none of these

(xix) Gravitational potential energy at a height:
a) U = mh b) U = gh c) U = gm d) U = mgh

(xx) The rate of doing work is called:
a) Energy b) joule c) power d) erg

Q2) (i) What is the moment of force? [2]

(ii) A boy of mass 30 kg is sitting at a distance of 2 m from the middle of a see-saw. Where should a boy of mass 40 kg sit so as to balance the see-saw ? [3]

Q3) (i) Where does the position of centre of gravity lie for (i) a circular lamina (ii) a triangular lamina ? [2]

(ii) Differentiate between uniform linear motion and uniform circular motion. [3]

Q4) (i) What is meant by the term critical angle ? [2]

(ii) Name the radiations : (a) that are used for photography at night (b) used for detection of fraction in bone

(c) whose wavelength range is from *100 Å to 4000 Å.* [3]

Q5) (i) Draw a ray diagram to show the refraction of a monochromatic ray through a prism when it suffers minimum deviation. [2.5]

(ii) An object is kept at a distance of 20 cm from a convex lens of focal length 15 cm. Find the distance of image formed from the lens. [2.5]

SECTION B (40 Marks)

*(Attempt **any four** questions from this Section)*

Q1) (a) State the condition when a body is in (i) static, (ii) dynamic equilibrium. Give one example of each. [3]

(b) Write difference between Energy and power. [3]

(c) What is lateral displacement and on factors does it depends ? Draw a ray diagram showing the lateral displacement. [4]

Q2) (a) Define the term centre of gravity of a body, factor on which it depends by giving any one example ? [3]

(b) Define the term power of lens. In what unit is it expressed? how power of lens related to focal length ? [3]

(c) A lens forms the image of an object placed at a distance of 15 cm from it, at a distance of 60 cm in front of it. Find : (i) the focal length, (ii) the magnification and (iii) the nature of image. [4]

Q3) (a) Name the three factors on which the deviation produced by a prism depends ? [3]

(b) Explain the cause of dispersion of white light through a prism. [3]

(c) What are infrared radiation? Mention three properties of it? [4]

Q4) (a) What are ultraviolet radiation? State two properties of it? [3]

(b) An object is placed at a distance of 20 cm in front of a concave lens of focal length 20 cm. Find : (i) position of image (ii) magnification of the image [3]

(c)Explain the term total internal reflection by diagram ? State two necessary condition of it? [4]

Q5) (a) What is degraded energy? Explain it by giving one example. [3]

(b) State the law of refraction of light? [3]

(c) Draw a ray diagram to show the appearance of a stick partially immersed in water. [4]

Q6) (a) A body of mass 5 kg falls from a height of 10 m to 4 m. Calculate : (i) the loss in potential energy of the body,and (ii) the total energy possessed by the body at any instant ? (Take g = 10 m s^{-2}). [3]

(b) Write the difference between a real and a virtual image. [3]

(c) What are the three principal rays that are drawn to construct a ray diagram for the image formed by a lens ? Draw diagrams to support your answer. [4]