

**ASSESSMENT -I PHYSICS PAPER
(SCIENCE PAPER 1)
GRADE - X**

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 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.*

Section A is compulsory. Attempt **any four** questions from **Section B**.
The intended marks for questions or parts of questions are given in brackets [].

SECTION A

(Attempt all questions from this Section.)

Question 1

Choose the correct answers to the questions from the given options.

[15]

(Do not copy the question, write the correct answers only.)

- (i) The moon revolving around the earth is in _____ equilibrium:
- (a) static
 - (b) dynamic
 - (c) neutral
 - (d) none of the above
- (ii) The moment of force about a given axis depends on the :
- (a) distance of force from the given axis
 - (b) magnitude of force
 - (c) Force and the perpendicular distance from the axis
 - (d) none of the above
- (iii) When a body is projected in a gravitational field :
- (a) its kinetic energy increases.
 - (b) its potential energy increases.
 - (c) its total energy increases.
 - (d) its total energy remains the same.
- (iv) 1 H.P. = _____ W
- (a) 714
 - (b) 462
 - (c) 644
 - (d) 746
- (v) The kinetic energy of a given body depends on the.
- (a) position
 - (b) centre of gravity of the body.
 - (c) momentum
 - (d) displacement

- (vi) The highest refractive index is of :
- Glass
 - Water
 - Diamond
 - Ruby
- (vii) The critical angle for glass air interface is :
- 42°
 - 48°
 - 24°
 - 45°
- (viii) Two electromagnetic waves X and Y have the same amplitude and the same wave pattern but their frequencies are 60 Hz and 120 Hz respectively, then:
- X will be shrilled and Y will be grave
 - X will be grave and Y will be shrilled
 - X will differ in quality than Y
 - X is louder than Y
- (ix) The power of a lens is - 2.0 D. Then its focal length will be
- 5
 - 50
 - 0.5
 - none of these
- (x) What is the position of the centre of gravity of a cylinder:
- at the point of intersection of its diagonals.
 - at the mid point on the axis of cylinder.
 - at the point of intersection of its medians.
 - at the centre of ring.
- (xi) Which colour of the white light is deviated by a glass prism the least:
- red
 - yellow
 - blue
 - violet
- (xii) The point through which a ray of light passes without suffering deviation is called:
- pole
 - focus
 - center of curvature
 - optical centre
- (xiii) Which of the following is/are characteristic(s) of a musical sound :
- pitch
 - loudness
 - quality
 - all of these
- (xiv) The wave in which compression's and rare fractions are formed are :
- longitudinal waves
 - transverse waves
 - both a and b
 - none of the above
- (xv) Inside the prism, during the dispersion of white light, compared to blue, red light:
- slow down less and refracts more
 - slow down more and refracts less
 - slow down more and refracts more
 - slow down less and refracts less

Question 2

- Complete the following by choosing the correct answers from the brackets: [6]
- (a) A force applied on a pivoted body alone does not produce rotation: rotation is produced by a _____. (single force / couple / Motion).
 - (b) The work done by friction is usually _____. (negative/ zero / positive)
 - (c) A boy uses a GPS device to locate his missing friend in a crowded area: the system primarily uses _____. (UV waves/ micro waves) to track the location.
 - (d) Two copper wires can have different resistivity if they have different _____. (length / temperatures).
 - (e) A magnifying glass is a _____ (convex / concave / plane) lens.
 - (f) The part of spectrum beyond the red and violet ends is called _____ (invisible/ visible / natural) spectrum.

- (g)
- (ii) Name ~~two~~ the wave used for echo depth sounding [1]
- (iii) State two differences between the centripetal and centrifugal forces ? [2]
- (iv) Name the constituent colour of white light for which the speed is maximum (i) in glass and (ii) in air . [2]
- (v) Define the term critical angle. [2]
- (vi) What are the differences between real and virtual image ? [2]
- (vii) What is SONAR ? Name the wave used in sonar. [2]

Question 3

- (i) (a) A glass lens always forms a virtual, erect and diminished image of an object kept in front of it. Identify the lens. [2]
- (b) The focal length of a lens is positive , state the kind of lens.
- (ii) Amit weighing 60 kgf climbs up a ladder of height 10 m in 15 minutes. Calculate the power spend by him. Take 1 kgf = 10 N [2]
- (iii) An object of height 2 cm is placed in front of convex lens of focal length 20 cm at a distance of 15 cm from it. Find the position and magnification of the image. [2]
- (iv) What is meant by scattering of light. [2]
- (v) What are the differences between forced and natural vibration ? [2]

SECTION B

(Attempt **any four** questions.)

Question 1

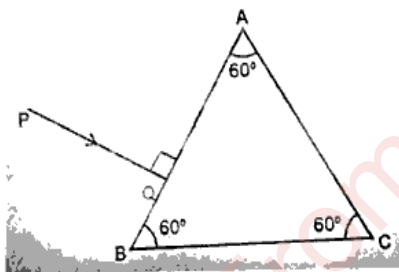
- (i) What do you understand by gravitational potential energy ? write the expression for it? [3]
- (ii) Why does the Sun appear red at sunrise and sunset ? [3]
- (iii) Explain the term total internal reflection by diagram ? State two necessary condition of it? [4]

Question 2

- (i) A body 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]
- (ii) An object is placed at a distance 24 cm in front of a convex lens of focal length 8 cm. [3]
- (a) What is the nature of the image so formed?
- (b) Calculate the distance of the image from the lens.
- (iii) What are infrared radiations? How are they detected? state one use of these radiation. [4]

Question 3

- (i) Copy the diagram given below and complete the path of light ray till it emerges out of the prism. The critical angle of glass is 42° . In your diagram mark the angles wherever necessary. [3]

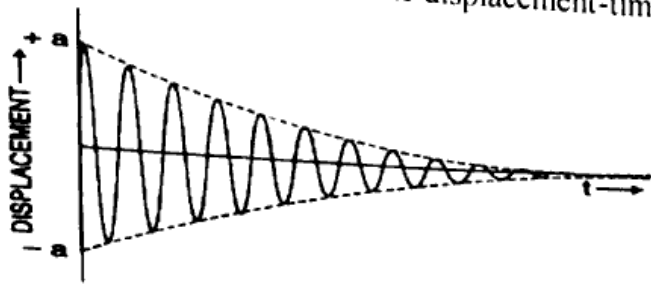


- (ii) A person standing in front of a cliff fires a gun and hears its echo after 3s. Speed of sound in air is 336 m/s: (a) calculate distance of the person from the cliff. [3]
- (b) After moving a certain distance from the cliff, he fires the gun again and this time the echo is heard 1.5s later than the first. Calculate the distance the person moved.
- (iii) 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]

Question 4

- (i) How does the angle of deviation formed by prism change with the increase in the angle of incidence? Draw a graph showing the variation. [3]
- (ii) How is the refractive index of a material related to (i) real and apparent depth [3]
- (ii) velocity of light in air and the velocity of light in a given medium?

- (iii) The diagram below shows the displacement-time graph for a vibrating body.

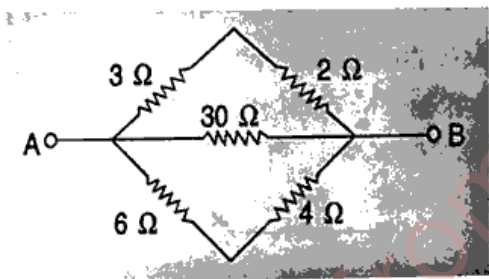


[4]

- (i) Name the type of vibrations produced by the vibrating body.
- (ii) Give one example of a body producing such vibrations.
- (iii) Why is the amplitude of the wave gradually decreasing ?
- (iv) What will happen to the vibrations of the body after some time ?

Question 5

- (i) Give one use each of the electromagnetic radiations given below: [3]
 - (a) microwaves
 - (b) ultraviolet radiations
 - (c) infrared radiations.
- (ii) ✕ Calculate the equivalent resistance between A and B. [3]



Write the phenomena why sky appears blue.

- (iii) What is lateral Displacement? Explain with the help of diagram. [4]

Question 6

- (i) Explain the cause of dispersion of white light through a prism. [3]
- (ii) For each of the following scenario, State whether the work done by gravity is positive, negative, or zero. [3]
 - (a) A person walks on a levelled road.
 - (b) A person climbs a ladder.
 - (c) A car in a neutral gear is coming down the slope.
- (iii) Name and explain different types of kinetic energy and give one example of each. [4]