

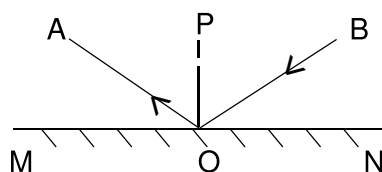
## Quarterly Examination 2017-2018

Std. : VIII  
Subject : Physics

Full Marks : 80  
Time : 2hrs.

### (Section - A) [40 Marks] (Attempt all questions)

- Q1.** (a) Name the physical quantities for the following units — [2]  
(i)  $\mu\text{m}$  (ii) light year (iii) Solar mass (iv) a.m.u.
- (b) The size of bacteria is  $2 \mu\text{m}$ . Find the number of bacteria in 1m length. [2]
- (c) Write any two differences between regular and irregular reflection. [2]
- (d) A ray is incident on a plane mirror. Its reflected ray is perpendicular to the incident ray. Find the angle of incidence. (Show it with the help of diagram) [2]
- (e) Arrange the following units the ascending order — [2]  
(i)  $\mu\text{m}$ ,  $\text{\AA}$ , Parsec, Light year, m  
(ii) decade, lunar month, year, leap year, SI unit of time.
- Q2.** (a) State the laws of reflection. [2]
- (b) Name the kind of mirror used to obtain — [2]  
(i) a real and enlarged image  
(ii) a virtual and enlarged image  
(iii) a real and diminished image  
(iv) a real and same size of image as that of object.
- (c) Arrange the following speed in increasing order :  
10m/s, 32 km/hr, 1 km/min.
- (d) What is meant by lateral inversion of an image in a plane mirror ? Write laterally inverted image of first name of your class teacher when seen in a plane mirror. [2]
- (e) Draw - a displacement - time graphs for a stationary body. [2]
- (f) Name the following terms with the help of given figure. [2]



- (i) AO (ii) MN (iii)  $\angle\text{AOP}$  (iv) PO

- Q3.** (a) A bicycle initially moving with a velocity 5.0 m/s accelerates for 5 sec at a rate of  $2\text{m/s}^2$ . What will be its final velocity. [2]
- (b) The wavelength of light is 589 nm. What is its wavelength in  $\text{\AA}$  ? [2]
- (c) Write any two differences between speed and velocity other than its definition. [2]
- (d) State the direction of incident ray which after reflection from a spherical mirror retraces its path. Give reason to your answer. [2]
- (e) With the help of velocity-time graph how will you obtain (i) distances covered by a body (ii) acceleration of the body. [2]
- Q4.** (a) Define the term focus of a concave mirror. Draw a diagram to illustrate your answer. [2]
- (b) Write the arrangements of mirrors used in - [2]
- (i) Periscope (ii) Kaleidoscope
- (c) What can you say about the nature of motion of a body if its displacement. time graph is — [2]
- (i) a curve (ii) a straight line inclined to the time axis with an obtuse angle.
- (d) Write any two requirements for selecting a unit of a physical quantity. [2]
- (e) Write equation of motion based on  $v^2 = u^2 + 2as$  when [2]
- (i) a body starts from rest
- (ii) a body is moving with uniform retardation
- (iii) when a body is dropped from a height 'h'.

**(Section - B) [40 Marks]**  
**(Attempt any four questions)**

- Q5.** (a) Write any two units of lengths which are bigger than its SI unit and state the relationship with its SI Unit. [3]
- (b) Write the relationship of the given units with its SI unit. [3]
- (i) a.m.u. (ii) 1 year (iii) 1 nm
- (c) (i) The average mass of an atom of uranium is  $3.9 \times 10^{-25}\text{kg}$ . Find the number of atoms in 1g of uranium. [2]
- (ii) Convert 1 light year into metre. [2]
- Q6.** (a) A light ray is incident normally on a plane mirror [3]
- (i) what is its angle of incidence ?
- (ii) what is the direction of reflected ray ?
- (iii) show it on a diagram.

(b) An object is at distance 25 cm in front of a plane mirror. The mirror is shifted 5 cm away from the object find (i) the new distance between the object and its image (ii) the distance between the two positions of the image. [3]

(c) (i) What are the characteristics of the image formed by a plane mirror ? [2+2]  
 (ii) Write any two differences between real image & virtual image.

**Q7.** (a) Draw a ray diagram to show the formation of image by a concave mirror for an object kept between centre of curvature and focus. State the three characteristics of the image. [3]

(b) An object is placed at a distance in front of a concave mirror of radius of curvature 24cm. Find the position of image. Is the image magnified. [3]

(c) (i) Write the differences between concave and convex mirror in the form of  
 (i) its shape (ii) light rays incident on it. [2+2]  
 (ii) Name the type of mirror used as — (i) a shaving mirror (ii) a rear view mirror  
 (iii) street lamps (iv) dentist's head mirror.

**Q8.** (a) State the two convenient rays that are chosen to construct the image by a spherical mirror for a given object ? Explain it with diagram. [3]

(b) A convex mirror forms the image of an object placed at a distance 40 cm in front of mirror at a distance 10 cm. Find the focal length of mirror. [3]

(c) (i) In case of a convex mirror, if object is moved always from the mirror, how do the position, size and nature of image change ? [2+2]  
 (ii) What type of mirror can be used to obtain a real image of an object ? Does the mirror mentioned in the above answer form real image for all locations of the object ?

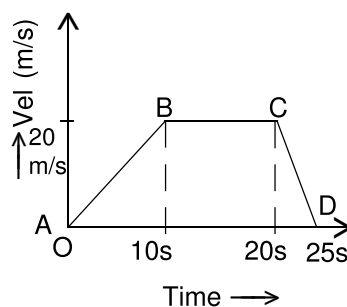
**Q9.** (a) Find the angle of incident and angle of reflection for the given diagrams. [3]



(b) An object is placed (i) asymmetrically (ii) symmetrically between two plane mirrors inclined at an angle of  $50^\circ$ . Find the number of images formed. [3]

(c) Two plane mirrors are arranged parallel and facing each other at some separation. How many images are formed for a point object kept in between them ? Show the formation of images with the help of a ray diagram. [4]

**Q10.** (a)



- (i) Which part of graph shows motion with uniform — [1½]  
(i) velocity (ii) acceleration (iii) retardation
- (ii) Compare the magnitude of acceleration and retardation. [1½]
- (b) A car acquires a velocity of 72 km/hr in 10 sec. starting from rest. Calculate —
- (i) the acceleration (ii) the average velocity (iii) the distance travelled in this time. [3]
- (c) (i) If a stone and a pencil are dropped simultaneously in vacuum from the top of a tower, which of the two will reach the ground first ? Give reason [2+2]
- (ii) Define acceleration due to gravity. Write its average value on the earth with its SI Unit.

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