

## SWAMI VIVEKANADA MATRIC HR SEC SCHOOL ARUMBAVUR.

STD : XII.

MARKS: 70

SUB: PHYSICS

UNIT - 6

TIME: 3.00HRS

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PART - ACHOOSE THE BEST ANSWER

10 X 1 = 10

- For light 1.incident from air on a slab of refractive index 2, the maximum possible angle of refraction  
a)  $30^\circ$     b)  $45^\circ$     c)  $60^\circ$     d)  $90^\circ$
- A rod of length 10 cm lies along the principal axis of a concave mirror of focal length 10 cm in such a way that its end closer to the pole is 20 cm away from the mirror. The length of the image is,  
(a) 2.5 cm    (b) 5cm    (c) 10 cm    (d) 15cm
- An object is placed in front of a convex mirror of focal length of  $f$  and the maximum and minimum distance of an object from the mirror such that the image formed is real and magnified.  
(a)  $2f$  and  $c$     (b)  $c$  and  $\infty$     (c)  $f$  and  $O$     (d) None of these
- Stars twinkle due to,  
(a) reflection    (b) total internal reflection    (c) refraction    (d) polarisation
- When a biconvex lens of glass having refractive index 1.47 is dipped in a liquid, it acts as a plane sheet of glass. This implies that the liquid must have refractive index,  
(a) less than one    (b) less than that of glass    (c) greater than that of glass    (d) equal to that of glass
- The angle of deviation depends upon ----?  
a) angle of incidence    (b) angle of the prism    (c) the wavelength of the light    (d) all of them
- An air bubble in glass slab of refractive index 1.5 (near normal incidence) is 5 cm deep when viewed from one surface and 3 cm deep when viewed from the opposite face. The thickness of the slab is,  
(a) 8 cm    (b) 10 cm    (c) 12 cm    (d) 16 cm
- Two plane mirror are inclined at an angle of  $72^\circ$ . The number of images of a point object placed between them will be -----? a) 2    b) 3    c) 4    d) 5
- Rainbow is formed by ----- of light by droplets of water.  
a) dispersion    b) partial polarization    c) plane polarization    d) interference
- An object is at a distance of 0.5 in front of plane mirror. Distance between object and image is -----?  
a) 0.5 m    b) 1 m    c) 7 m    d) 8 m

PART - BANSWER ANY 5 QUESTIONS.Q.NO 15 IS COMPULSORY

5 X 2 = 10

- What is principle of reversibility?
- Why do stars twinkle?
- Define Dispersive power?
- Define Laws of reflection?
- One type of transparent glass has refractive index 1.5. What is the speed of light through this glass?
- Write the two conditions for total internal reflection?

PART - CANSWER ANY 5 QUESTIONS.Q.NO 22 IS COMPULSORY .

5 X 3 = 15

- Derive the relation between  $f$  and  $R$  for a spherical mirror?
- What is optical path ? Obtain the equation for optical path of a medium of thickness  $d$  and refractive index  $n$ .
- What is critical angle? Obtain the equation?
- Give the characteristics of image formed by a plane mirror?
- Obtain the equation of apparent depth?
- The angle of minimum deviation for a prism is  $30^\circ$ . If the angle of prism is  $60^\circ$ , find the refractive index of the material of the prism?
- Obtain the equation for lateral magnification of thin lens?

PART -D

ANSWER ALL THE QUESTIONS

3 X 5 = 15

- 24. Describe the Fizeau's method to determine speed of light? ( OR ) Derive the equation for refraction at single spherical surface?
- 25. Obtain the equation for lens maker's formula and mention the significance? (OR) Obtain the equation for Snell window?
- 26. Derive the equation for acceptance angle and numerical aperture of optical fiber? (OR) Derive the mirror equation and the equation for lateral magnification.

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