

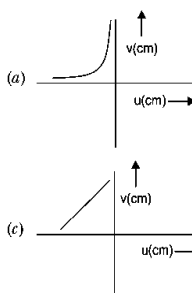
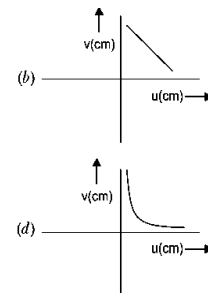
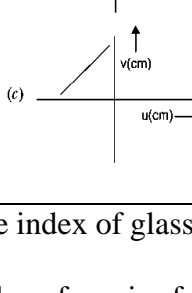
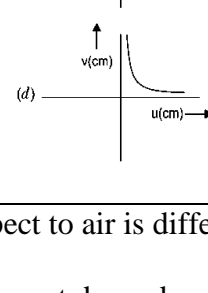
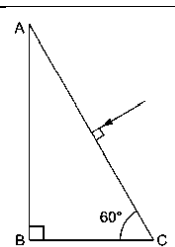
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ZIET CHANDIGARH

SUB:-PHYSICS CLASS XII 2022-23

REVISION PAPER UNIT- IX-RAY OPTICS & OPTICAL INSTRUMENTS

Note: Q. No. 1-4 is of 01 mark each, Q. No. 5-6 is of 02 marks each, Q.No.7 is of 03 marks, Q. No. 8 is a case study based and is of 04 marks, Q. No. 11 is of 5 marks.

S N	Question	M ar ks
1	<p>A student measures the focal length of a convex lens by putting an object pin at a distance 'u' from the lens and measuring the distance 'v' of the image pin. The graph between 'u' and 'v' plotted by the student should look like</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>(a)</p> </div> <div style="text-align: center;">  <p>(b)</p> </div> <div style="text-align: center;">  <p>(c)</p> </div> <div style="text-align: center;">  <p>(d)</p> </div> </div>	1
2	<p>Assertion (A): Refractive index of glass with respect to air is different for red light and violet light.</p> <p>Reason (R): Refractive index of a pair of media does not depends on the wavelength of light used.</p> <p>a- Both assertion and reason are correct and the reason is the correct explanation of assertion. b- Both assertion and reason are correct and the reason is not a correct explanation of assertion. c- Assertion is correct but the reason is incorrect d- Assertion is incorrect but the reason is correct.</p>	1
3	<p>A biconcave lens of power P vertically splits into two identical plano-concave parts. The power of each part will be</p> <p>(a) 2P (b) P/2 (c) P (d) $P/\sqrt{2}$</p>	1
4	<p>A prism has refractive angle 60°. When a light ray is incident at 50°, then minimum deviation is obtained. What is the value of minimum deviation?</p> <p>(a) 40° (b) 45° (c) 50° (d) 60°</p>	1
5	<p>An object is kept in front of a concave mirror of focal length 15 cm. The image formed is real and three times the size of the object. Calculate the distance of the object from the mirror.</p>	2
6	<p>A ray of light passing from air through an equilateral glass prism undergoes minimum deviation when the angle of incidence is $3/4$ of the angle of prism. Calculate the speed of light in the prism.</p>	2
7	<p>Trace the path of a ray of light passing through a glass prism (ABC) as shown in the figure. If the refractive index of glass is $\sqrt{3}$, find out of the value of the angle of emergence from the prism.</p> <div style="text-align: right;">  </div>	3

	<p>Case study-based questions (questions no 8-11) Refraction Through a Prism</p> <p>A prism is a portion of a transparent medium bounded by two plane faces inclined to each other at a suitable angle. A ray of light suffers two refractions on passing through a prism and hence deviates through a certain angle from its original path. The angle of deviation of a prism is, $\delta = (\mu - 1) A$, through which a ray deviates on passing through a thin prism of small refracting angle A.</p> <p>If μ is refractive index of the material of the prism, then prism formula is, $\mu = \frac{\sin\left(\frac{\delta_m + A}{2}\right)}{\sin\frac{A}{2}}$</p> <p>8. For which colour, angle of deviation is minimum? 1</p> <p>9. When deviation through a prism is maximum then find the angle of incidence? 1</p> <p>10. What is the deviation produced by a prism of angle 6°? (Refractive index of the material of the prism is 1.644) 2</p> <p style="text-align: center;">OR</p> <p>10. A ray of light falling at an angle of 50° is refracted through a prism and suffers minimum deviation. If the angle of prism is 60°, then find the angle of minimum deviation? 2</p>	4
11	<p>(i) Draw a labelled ray diagram to obtain the real image formed by an astronomical telescope in normal adjustment position. Define its magnifying power.</p> <p>(ii) You are given three lenses of power 0.5 D, 4 D and 10 D to design a telescope.</p> <p>(a) Which lenses should be used as objective and eyepiece? Justify your answer.</p> <p>(b) Why is the aperture of the objective preferred to be large?</p>	5