

Chapter :- **RAY OPTICS AND OPTICAL INSTRUMENTS**

Assignment 2

Class 12

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| **Class : XIIth Subject : PHYSICS**  **Date : DPP No. : 2** |

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| **Topic :-** **RAY OPTICS AND OPTICAL INSTRUMENTS** |

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| 1. | A point objects is placed at the centre of a glass sphere of radius 6 cm and refractive index 1.5. The distance of the virtual image from the surface of the sphere is | | | | | | | |
|  | a) | 2 cm | b) | 4 cm | c) | 6 cm | d) | 12 cm |
| 2. | The angel of prism is and its refractive indices for red and violet colours are 1.5 and 1.6 respectively. The angular dispersion produced by the prism is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | 0.17 |
| 3. | Light takes second to travel a distance in vaccum and the same light takes second to travel 10 cm in a medium. Critical angle for corresponding medium will be | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 4. | The focal length of a convex mirror is its radius of curvature will be | | | | | | | |
|  | a) | 10 | b) | 20 | c) | 30 | d) | 40 |
| 5. | Which of the following is not correct regarding the ratio telescope | | | | | | | |
|  | a) | It can not work at night | | | | | | |
|  | b) | It can detect a very faint radio signal | | | | | | |
|  | c) | It can be operated even in cloudy weather | | | | | | |
|  | d) | It is much cheaper than optical telescope | | | | | | |
| 6. | When a glass slab is placed on a cross made on a sheet, the cross appears raised by 1 cm. The thickness of the glass is 3 cm. The critical angle for glass is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 7. | An object is placed at infront of a concave mirror whose focal length is . The image formed will be | | | | | | | |
|  | a) | Magnified and inverted | | | b) | Magnified and erect | | |
|  | c) | Reduced in size and inverted | | | d) | Reduced in size and erect | | |
| 8. | A hollow double concave lens is made of very thin transparent material. It can be filled with air or either of two liquids and having refractive indices and respectively . The lens will diverge a parallel beam of light if it is filled with | | | | | | | |
|  | a) | Air and placed in air | | | b) | Air and immersed in | | |
|  | c) | and immersed in | | | d) | and immersed in | | |
|  |  |  | | |  |  | | |
| 9. | Which of the following is not the case with the image formed by a concave lens? | | | | | | | |
|  | a) | It may be erect or inverted | | | | | | |
|  | b) | It may be magnified and diminished | | | | | | |
|  | c) | It may be real or virtual | | | | | | |
|  | d) | Real image may be between the pole and focus or beyond focus | | | | | | |
| 10. | A short sighted person can see distinctly only those objects which lie between and from him. The power of the spectacle lens required to see a distant object is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 11. | A lens of refractive index is put in a liquid of refractive index If focal length of lens in air is its focal length in liquid will be | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 12. | A concave lens of glass, refractive index 1.5, has both surfaces of same radius of curvature . On immersion in a medium of refractive index 1.75, it will behave as a | | | | | | | |
|  | a) | Convergent lens of focal length 3.5 | | | b) | Convergent lens of focal length 3.0 | | |
|  | c) | Divergent lens of focal length 3.5 | | | d) | Divergent lens of focal length 3.0 | | |
| 13. | The light gathering power of a camera lens depends on | | | | | | | |
|  | a) | Its diameter only | | | b) | Ratio of diameter and focal length | | |
|  | c) | Product of focal length and diameter | | | d) | Wavelength of light used | | |
| 14. | The plane faces of two identical plano convex lenses, each with focal length are pressed against each other using an optical glue to form a usual convex lens. The distance from the optical centre at which an object must be placed to obtain the image same as the size of object is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 15. | Check the correct statements on scattering of light  S1 : Rayleigh scattering is responsible for the bluish appearance of sky  S2 : Rayleigh scattering is proportional to when the size of the scatter is much less than  S3 : Clouds having droplets of water (large scattering objects) scatter all wavelengths are almost equal and so are generally white  S4 : The sun looks reddish at sunset and sunrise due to Rayleigh scattering | | | | | | | |
|  | a) | S1 only | b) | S1 and S2 | c) | S2 and S3 | d) | S1, S2, S3 and S4 |
| 16. | A ray of light travelling inside a rectangular glass block of refractive index is incident on the glass-air surface at an angle of incidence of . The refractive index of air is 1. Under these conditions the ray | | | | | | | |
|  | a) | Will emerge into the air without any deviation | | | | | | |
|  | b) | Will be reflected back into the glass | | | | | | |
|  | c) | Will be absorbed | | | | | | |
|  | d) | Will emerge into the air with angle of refraction equal to | | | | | | |
| 17. | The spectrum obtained from a sodium vapour lamp is an example of | | | | | | | |
|  | a) | Absorption spectrum | b) | Emission spectrum | c) | Continuous spectrum | d) | Band spectrum |
|  |  |  |  |  |  |  |  |  |
| 18. | A short linear object of a length lies along the axis of a concave mirror of focal lengthat a distance from the pole of the mirror. The size of the image is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 19. | Rising and setting sun appears to be reddish because | | | | | | | |
|  | a) | Diffraction sends red rays to earth at these times | | | | | | |
|  | b) | Scattering due to dust particles and air molecules are responsible | | | | | | |
|  | c) | Refraction is responsible | | | | | | |
|  | d) | Polarization is responsible | | | | | | |
| 20. | An astronomical telescope has a magnifying power 10, the focal length of the eye-piece is 20 cm. The focal length of the objective is | | | | | | | |
|  | a) |  | b) |  | c) | 200 cm | d) | 2 cm |