BCM SCHOOL, BASANT AVENUE, DUGRI

ASSIGNMENT

CLASS – XII

SUBJECT – PHYSICS

CHAPTER – RAY OPTICS

TOPIC: OPTICAL INSTRUMENTS

Short Answer Questions

2 marks each

1. (*a*) Draw a labelled ray diagram of compound microscope, when final image forms at the least distance of distinct vision.

   (*b*) Why is its objective of short focal length and of short aperture, compared to its eyepiece ? Explain. [CBSE OD 19]

2. Define the magnifying power of a compound microscope when the final image is formed at infinity. Why must both the objective and the eyepiece of a compound microscope have short focal lengths ? Explain. [CBSE D 17]

3. Explain the basic differences between the construction and working of a telescope and a microscope. [CBSE OD 15]

4. How will the magnifying power of a refracting type astronomical telescope be affected on increasing for its eyepiece (*i*) the focal length and (*ii*) the aperture ? Justify your answer. [CBSE OD 97]

5. An optical instrument uses eye-lens of power 12.5 D and object lens of power 50 D and has a tube length of 20 cm. Name the optical instrument and calculate its magnifying power, if it forms the final image at infinity. [CBSE D 17]

6. In a telescope, the objective has a large aperture while the eyepiece has a small aperture. Why ?

7. Which two main considerations are kept in mind while designing the 'objective' of an astronomical telescope ? [CBSE SP 08]

8. Explain : (*i*) Why must both the objective and the eyepiece of a compound microscope have short focal lengths ? (*ii*) While viewing through a compound microscope, why should our eyes be positioned not on the eyepiece but a short distance away from it for best viewing. [CBSE F 08 ; D 09 ; OD 10]

9. An object is to be seen through a simple microscope of power 10 D. Where should the object be placed so as to produce maximum angular magnification ? The least distance for distinct vision is 25 cm.

10. A compound microscope with an objective of 1.0 cm focal length and an eyepiece of 2.0 cm focal length has a tube length of 20 cm. Calculate the magnifying power of the microscope, if the final image is formed