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# RK Academy

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## WEEKLY TEST CHAPTER 9 TEST

CLASS: XII

SUBJECT: PHYSICS

FM: 20

TIME: 45 MIN

### (1 MARK)

1. A beam of light travels from air into a medium. Its speed and wavelength are given as  $2 \times 10^8$  m/s and 230 nm respectively. The wavelength of light in air is  
(a) 230 (b) 690 (c) 460 (d) none
2. The magnitude of the objective and the eyepiece of a compound microscope are 3 and 10 respectively. The magnification of the instrument is  
(a) 13 (b)  $10/3$  (c) 30 (d) none
3. The focal length of a concave mirror in air is  $f$ . When the mirror is immersed in a liquid of refractive index  $3/2$  its focal length will become  
(a)  $f/2$  (b)  $3/2 f$  (c)  $2/3 f$  (d)  $f$
4. In refraction of light which quantity remain constant  
(a) angle of bending (b) velocity (c) frequency (d) wavelength
5. In an equilateral prism the angle of refraction at minimum deviation situation is  
(a) 90 (b) 60 (c) 30 (d) 0
6. Derive expression for magnification of telescope when image formed at infinity. (2 MARKS)
7. An object of 5cm is placed at 15cm from a concave mirror of focal length 20cm. find position of image and size of image. (2 MARKS)
8. A ray of light passes through a triangular prism. Show graphically the variation of angle of deviation with incident angle. Derive the expression for refractive index at minimum deviation. (3MARKS)
9. A ray entering a right-angle triangle prism undergoes refraction at the face AC as shown in fig. 1.
  - i. What is the refractive index of the prism in fig. 1

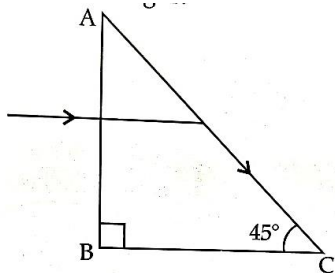


Fig. 1

- ii. Derive expression for final focal length of two convex lens of focal length  $f_1$  and  $f_2$  when placed coaxially in contact to each other. (3 MARKS)
10. (5 MARKS)
- a. Write laws of refraction.
  - b. Draw a labelled ray diagram showing the image formation by a simple microscope. Define its magnifying power.
  - c. The focal lengths of the objective and the eye-piece of a compound microscope are 1.0 cm and 2.5 cm respectively. Find the tube length of the microscope for obtaining a magnification of 300.