AFGJI

PHYSICS ASSIGNMENT 4

XII

Q1. When a parallel beam of light rays fall on a rough surface, it scatters in all directions. Does it mean that the beam does not obey laws of reflection? Explain briefly.

Q2. You can see clearly in a room during day time even when no sunbeam is reaching the room. Explainbriefly.

Q3.Why can you not see your own image in a sheet of paper?

Q4. How will you differentiate between

(a) a convex mirror and a concave mirror

and (b) a convex lens and a concave lens without touching them?

Q5. Why does a watch glass not behave like a convex or a concave lens?

Q6. How can you make a convex lens behave like a concave lens? (Or vice versa)

Q7. A convex lens of f=20cm is placed in contact with another lens. Find f of the second lens if the combination behaves like a (i) diverging lens of f=20cm, (ii) convex lens of power 4D.

Q8. Draw a ray diagram to show

(i) rotation of a ray of light by 90^0 by

(ii) inverted image without change of direction of rays

(iii) inverted image with reversal of direction of rays

by using a rt. angle prism

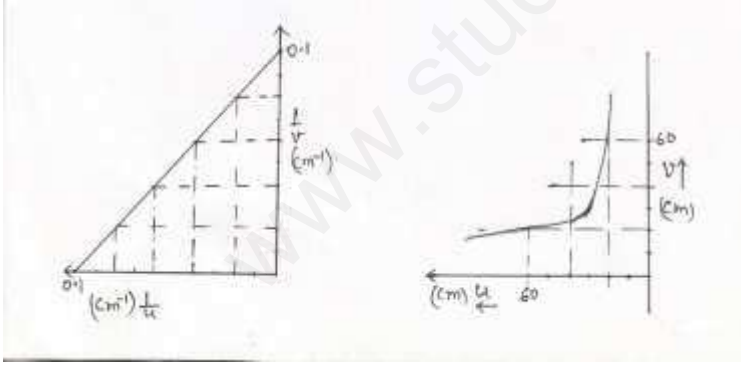
Q9. Draw a ray diagram to show (i) how a dentist uses a concave mr.

(ii) how a concave mr. is used as a reflector.

Q10. Draw (i) angle i vs. angle D graph for a prism,

(ii) u vs. v graph for a convex lens, (iii) 1/u vs. 1/v graph for a convex lens.

Q11. Study the given graphs and calculate f of the lens.



Q12. A convex lens of focal length f forms a real and inverted image on a screen. The distance between object and image is D. (i) Draw a ray diagram to show that keeping D fixed there can be two positions of the lens between O and I. (ii) Show mathematically that minimum distance between O and I is 4f. (iii) Show mathematically that $|u-v| = \sqrt{(D^2-4fD)}$

Q13.Give scientific reason

(i) Why does sky appear blue during day time?

(ii) What is the colour of sky from space or from surface of moon and why?

(iii) Why is the colour of sky red and orange at the time of sunset?

(iv) Why do clouds appear white?

Q14. Draw a ray diagram of (i) a compound microscope in normal adjustment
(ii) a refracting telescope in normal adjustment, (iii) a Cassegrain telescope.
Q15. Give two advantages of large aperture of the objective of a telescope.
Q16. Q9.20 and 9.34 of the book
Q17. A biconvex lens is placed over a plane mirror. A horizontal needle with its tip on the principal axis of the lens is moved down to coincide with its own image (self conjugate). Then a liquid is filled between lens and mirror and the needle was found to be self conjugate at a distance of 45cm from the lens. Find μ of the liquid if without liquid the parallax was removed at a distance of 30cm from the lens.