**Aarambh classes**

**Class X(CBSE)**

**Physics worksheet**

**Light and electricity**

1. If the image formed by a spherical mirror for all positions of the object placed in front of it is always erect and diminished ,what type of mirror is it ?Draw a labelled ray diagram to support your answer .
2. What is meant by power of a lens ?Write the SI unit .A student uses a lens of focal length 40 cm and another of -20 cm.Write the nature and power of each lens .
3. Show how would you join three resistors ,each of resistance 9 so that the equivalent resistance of the combination is (i) 13.5 (ii) 6 ?
4. (a)Write joule’s law of heating .

(b) Two lamps one rated 100W ;220 V ,and the other 60W ,220V,are connected in parallel to electric mains supply .Find the current drawn by two bulbs from the line ,if the supply voltage is 220V.

5. (a)List the factors on which the resistance of a conductor in the shape of a wire depends .

(b) why are alloys commonly used in electric heating devices ?

6. (i)State Flemimg’s left hand rule .

(ii) Write the principles of working of an electric motor .

(iii)Explain the function of split rings in an electric motor.

7. The values of current flowing through a given resistor of resistance (R) ,For the corresponding values of potential difference (V) across the resistance are as given below :

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| V (Volts) | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 | 4.0 | 5.0 |
| I (amperes) | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.8 | 1.0 |

Plot a graph between current (I) and potential difference (V) and determine the resistance (R) Of the resistor .

8. A student holding amirror in his hand ,directed the reflecting surface of the mirror towards the sun.He then directed the reflected light on to a sheet of paper held close to the mirror .

(a)What should he do to burn the paper ?

(b)Which type of mirror does he have ?

(c) Will he be able to determine the approximate value of focal length of this mirror from this activity. Give reason and draw ray diagram to justify your answer.

9. A 10 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 12 cm. The distance of the object from the lens is 18 cm.Find the nature ,position and size of the image formed .

10. A 6 cm tall object is placed at 50 cm in front of a convex lens of focal length 30 cm .At what distance from the lens should a screen be placed in order to obtain a sharp image of the object ?Find the nature and size of the image .Also ,draw labelled diagram to show the image formation in this case .

11. A 6 cm tall object is placed perpendicular to the principal axis of a concave mirror of focal length 30 cm.The distance of the object from the mirror is 45 cm.Use mirror formula to determine the position,nature and size of the image formed .Also,draw labelled ray diagram to show the image formation in this case .

12. What is a solenoid ?Draw the pattern of magnetic field lines of (i)a current carrying solenoid

(ii)a bar magnet .List two distinguishing features between the two fields .

13. An electric lamp of resistance 20 and a conductor of resistance 4 are connected to a 6 V battery as shown in the circuit .Calculate :

(i)The total resistance of the circuit .

(ii)the current through the circuit .

(iii) The potential difference across the electric lamp and conductor .

(iv) power of the lamp.