

Class X
Pre-Annual Exam ~~Pretim~~ - Solution Key.

Q67 (c) Towards the top of the paper. ~~10~~

Q8. (c) Overstated.

Q10 (b) 1 Watt hour = 3600 J.

Q11. (b) = $\frac{2}{3} \Omega$.

Q18. (a) both A and R are true & R is correct explanation of A.

Section B

$u = -15 \text{ cm}, f = -30 \text{ cm},$

$\frac{1}{f} = \frac{1}{v} - \frac{1}{u} \Rightarrow \frac{1}{v} = \frac{1}{f} + \frac{1}{u} = \frac{-1}{30} + \frac{-1}{15}$
 $\frac{1}{v} = \frac{-2}{30} = \frac{-1}{15}$
 $v = -15 \text{ cm}$

Q24.

2M

Four chara. of image formed by given concave lens.

Image is virtual, erect, diminished. $v = -10 \text{ cm}$

It is formed between focus F and optical centre O.
i.e on the same side of the lens as the object.

OR
Concave Mirror $h = 1.2 \text{ m}, f = -20 \text{ cm}, v = -60 \text{ cm}.$

$\frac{1}{f} = \frac{1}{v} + \frac{1}{u} \Rightarrow \frac{1}{u} = \frac{1}{f} - \frac{1}{v} \Rightarrow \frac{1}{u} = \frac{1}{-20} - \frac{1}{-60} \Rightarrow \boxed{u = -30 \text{ cm}}$

$\frac{h'}{h} = \frac{-v}{u} \Rightarrow h' = \frac{-v}{u} \times h = \frac{+60}{-30} \times (+1.2) = \underline{-2.4 \text{ m}}$

$\boxed{h' = -2.4 \text{ m}}$

Section C

Q28. $h_o = 10 \text{ cm}, f = +12 \text{ cm}, u = -18 \text{ cm},$

$\frac{1}{v} - \frac{1}{u} = \frac{1}{f} \Rightarrow \boxed{v = 36 \text{ cm}}$

Convex lens

$m = \frac{v}{u} = \frac{h'}{h} \Rightarrow \frac{+36}{-18} = \frac{h'}{+10} \Rightarrow h' = \frac{-36 \times 10}{18} = -20 \text{ cm}$

$\boxed{h' = -20 \text{ cm}}$

$\rightarrow$ -ve sign means inverted image

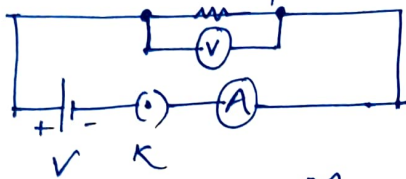
$\therefore$ Image is real and inverted.

Q29. Conclusion:

Current flowing through the wire is directly proportional to the potential difference

$$V \propto I$$

Resistance of Nichrome wire



OR.

(i). Electric power is rate at which electric energy is consumed by electrical device in an electric circuit.
SI unit - Watt (W).

(ii) $P = 2 \text{ kW}$, $t = 2 \text{ h}$.

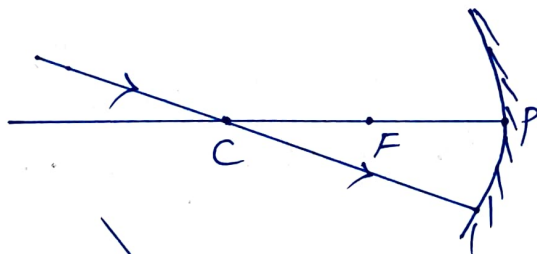
$$E = P \cdot t = 2 \times 2 = 4 \text{ kWh}$$

$$E = 4 \times 3.6 \times 10^6 \text{ J} = 14.4 \times 10^6 \text{ J}$$

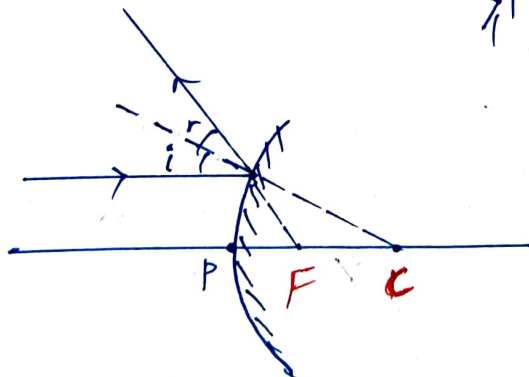
$$E = 14.4 \times 10^6 \text{ J}$$

Q31.

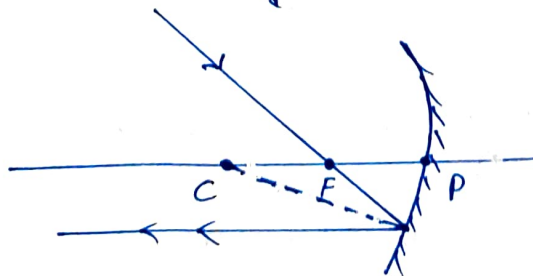
(i)



(ii)



(iii)



5M

The diagram illustrates a domestic electric circuit. It begins with a three-phase supply labeled E, P, and N. The circuit passes through an electricity board with a fuse and an electricity meter. The main supply line then splits into two parallel branches. The first branch contains a bulb and a fan connected in parallel. The second branch contains a refrigerator and a power plug connected in parallel. All components are connected back to the common return line.

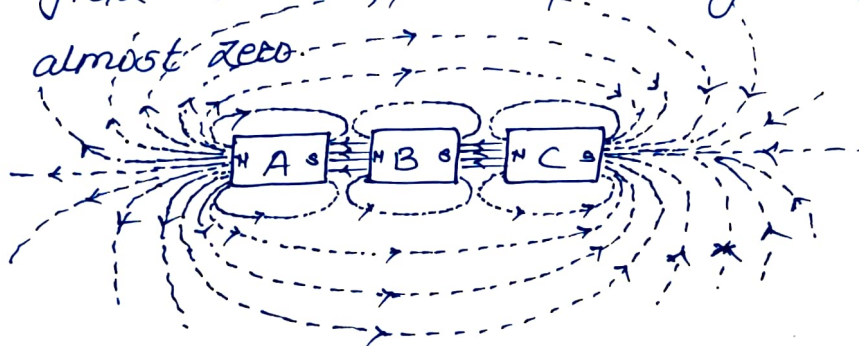
de
(E: Earth wire, L= line wire, N= Neutral wire)

(ii) Max^m magnetic field is in region A & C.

Min " " " " reg'n B.

As A & C have maximum number of magnetic field lines, which determines intensity of magnetic field.

Whereas B is centre of magnet that has no magnetic field lines. So, intensity of magnetic field near B is almost zero.



Section E

(i) Convex lens

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(ii) Height of image / Height of object.

2) (iii) $m=3 \dots$ given, $m = \frac{v}{u} \Rightarrow 3 = \frac{24 \text{ cm}}{u} \Rightarrow u = \frac{24}{3} \text{ cm} = 8 \text{ cm}$

OR, $\therefore u = 8\text{cm} \leftarrow$ object distance.

OR. $\frac{P_1}{P_2} = \frac{f_2}{f_1} = \frac{4}{1} \Rightarrow \frac{f_1}{f_2} = \frac{1}{4}$