

PHYSICS

Standard: X

Time: 1½hour

Score : 40


Instructions

- First 15 minutes is given as cool off time. This time is to be spent for reading and understanding the questions.
- Answer the questions based on instructions.
- Answer the questions according to score and time.

Answer any FOUR questions from 1 to 5. Each question carries one score. (4 x 1 = 4)

1. Identify the relation from the first pair and complete the second pair suitably. (1)
To see our face : plane mirror
For rear view in vehicles : _____
2. Which is the commercial unit of electrical energy? (1)
3. Ratio of the height of image to height of the object indicates _____ (1)
4. The measure that shows how a medium influences the speed of light passing through it is _____ (1)
5. Power of the primary of a step up transformer without energy loss is 100 W. What is the power of the secondary? (1)
(less than 100 W, 100 W, more than 100 W)

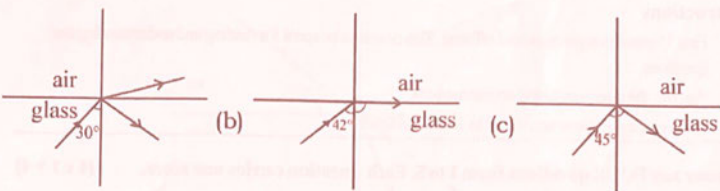
Answer any FOUR questions from 6 to 10. Each question carries 2 scores. (4 x 2 = 8)

6. Symbol of a component used in electric circuits is given below; (1)
a) Identify the symbol  (1)
b) What is the function of this component? (1)
- 7) Angle between reflecting surfaces of two plane mirrors is 60°. How many images are formed in between them? (2)
- 8) Find out the correct statements related to plane mirrors from the following. (2)
a) virtual image is formed
b) real image is formed
c) image formed is magnified
d) the distance between mirror and object and the distance between image and mirror.

- 9) How three pin plug ensure better safety in house hold electric circuits? (2)
- 10) The magnification of an image formed by a concave mirror is -1 (negative 1).
 a) What is the position of the object? (1)
 b) What is the position of the image? (1)

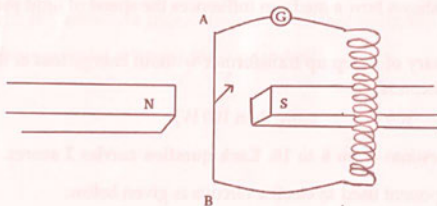
Answer any FOUR questions from 11 to 15. Each question carries 3 scores. ($4 \times 3 = 12$)

- 11) Observe the figures



- a) How much is the critical angle of glass? (1)
 b) What is meant by critical angle? (1)
 c) Identify the figure showing total internal reflection. (1)

- 12) Observe the figure

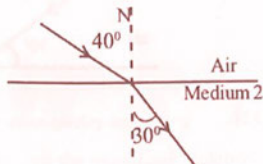
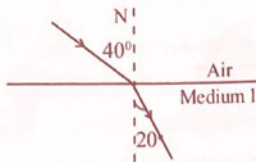


- a) The conductor AB is moved upwards suddenly, perpendicular to the plane of the paper. Which is the direction of the induced current? (1)
 from A to B / from B to A
 b) Which is the law that helps us to reach this conclusion? State the law. (2)

- 13) An object of height 6 cm is placed at a distance of 8 cm in front of a concave mirror. A real image is formed at a distance of 16 cm from the mirror.

- a) Calculate magnification of the image (1/2)
 b) Calculate the height of the image (1/2)

- 14) A transformer without power loss have 1500 turns in the primary and 7500 turns in the secondary. Voltage across secondary is 250 V and power of the transformer is 100 W.
- What is the working principle of a transformer? (1)
 - Calculate the primary voltage. (1)
 - Calculate the primary current. (1)
- 15) Observe the figures. Light ray incident on two different media is depicted.



- Which medium has higher optical density? Explain why. (2)
- Which medium has higher refractive index? (1)

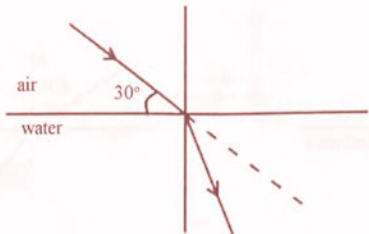
Answer any FOUR questions from 16 to 20. Each question carries 4 score. ($4 \times 4 = 16$)

- 16) Transformers have important role in power transmission without energy loss.
- Which are the stages at which transformers are used in power transmission? (1)
 - What is the reason for power loss in power transmission? (1)
 - How do transformers help in minimising energy loss in power transmission? (2)
- 17) In a house, 5 CF lamps each of 20 W works for 4 hours, 4 fans each of 60 W works for 5 hours in a day. What will be the daily consumption of energy shown by the watt hour meter? (4)
- 18) Electric shock may lead to death. Hence electricity is to be handled with utmost concern for safety.
- What are the precautions to avoid electric shock? (any four) (2)
 - Write down some first aids to be given in the case of electric shock? (any four) (2)

19) Light is reflected from the surface of mirrors as well as rough surfaces like walls.

- Compare the types of reflection from a rough wall and a mirror. (2)
- Write down one use of reflection from walls. (1)
- Clear images are not formed due to reflection from a rough surface(wall). Describe the reason. (1)

20) Observe the figure



- What is the angle of incidence shown in the figure? (1)
- Which law helps us to find the refractive index of water? (1)
- How is the refractive index of water calculated using this law? (1)
- What is meant by relative refractive index? (1)