(Pages : 7)

S 1615

Sl. No.

SSLC EXAMINATION, MARCH - 2021

PHYSICS

(English)

Time : 1½ Hours

Total Score : 40

Instructions :

- **20** minutes is given as cool-off time.
- Use cool-off time to read the questions and plan your answers.
- Attempt the questions according to the instructions.
- Keep in mind, the score and time while answering the questions.
- The maximum score for questions from **1** to **34** will be **40**.

Score

Each question from 1 to 8 carries 1 score.

1. Choose the least scattered colour in sunlight from the following. 1
[Violet, Green, Blue, Red]

2. The non-rotating part in a dc motor is : 1
[Armature, Split ring, Graphite Brush]

3. Select the odd one from the group. 1
[Reflection, Dispersion, Refraction, Persistance of vision]

4. If the object distance and image distance in a concave mirror is 40 cm, what is its focal length ? 1

5. Observe the relations between terms in the first pair and complete the second pair. 1
CNG : Compressed Natural Gas
LNG : _____

6. Pick out the one which is not a source of Green Energy. 1
[Solar cell, Wind mill, Biogas, LPG]

7. Which phenomenon of light is utilised in optical fibre technology ? 1
[Refraction, Total internal reflection, Dispersion, Scattering]

8. The image formed by a convex lens is inverted and diminished. Then the object must be placed : 1
[At 2F, Beyond 2F, Between F and 2F, At F]

P.T.O.

Score

Each question from 9 to 20 carries 2 scores.

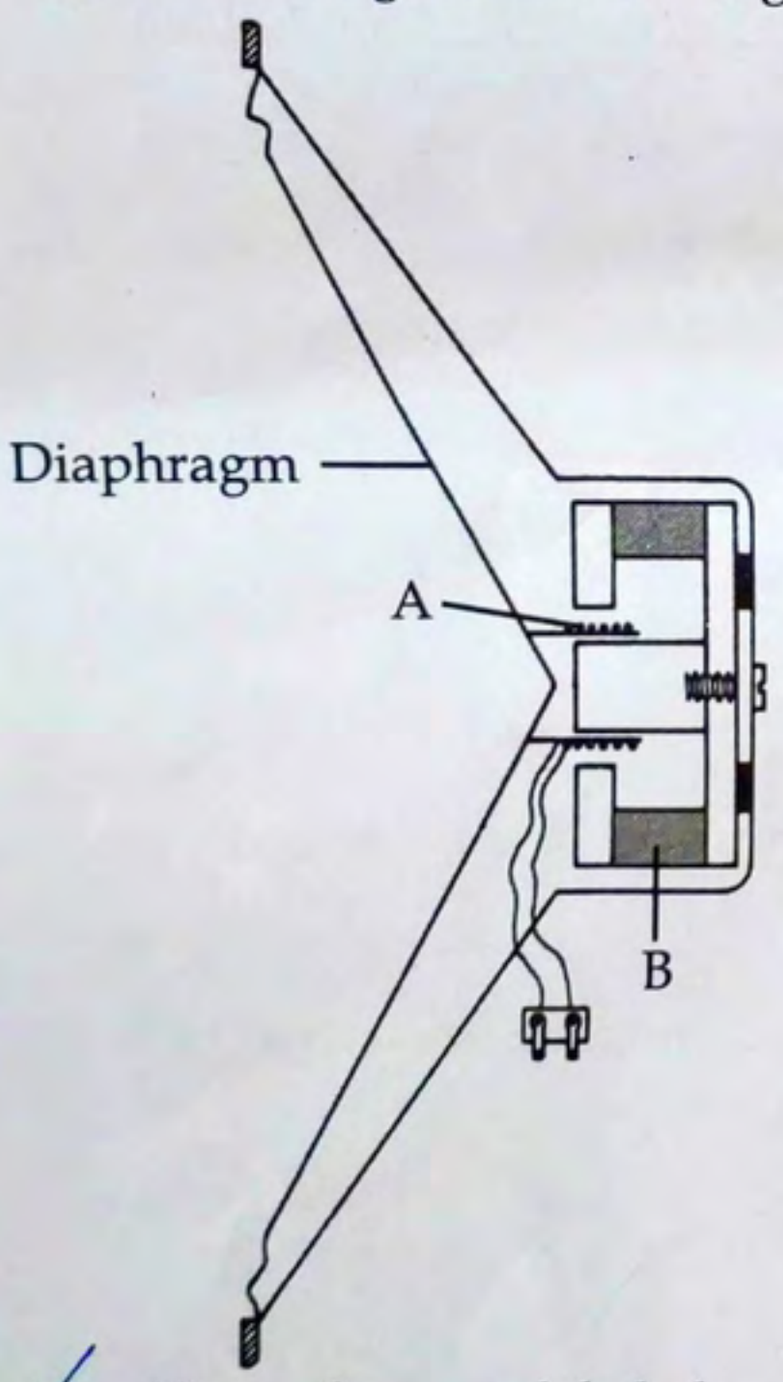
9. Write the energy change taking place in the given devices.
   (a) Incandescent Lamp 1
   (b) Electric Mixie 1

10. (a) Name the part of a heating equipment in which the electric energy is converted into heat energy. 1
    (b) Name the substance used to make this part. 1

11. Explain the difference between short circuit and overloading. 2

12. Write any two methods to increase the magnetic strength of a current carrying solenoid. 2

13. Observe the figure of a moving coil loudspeaker.



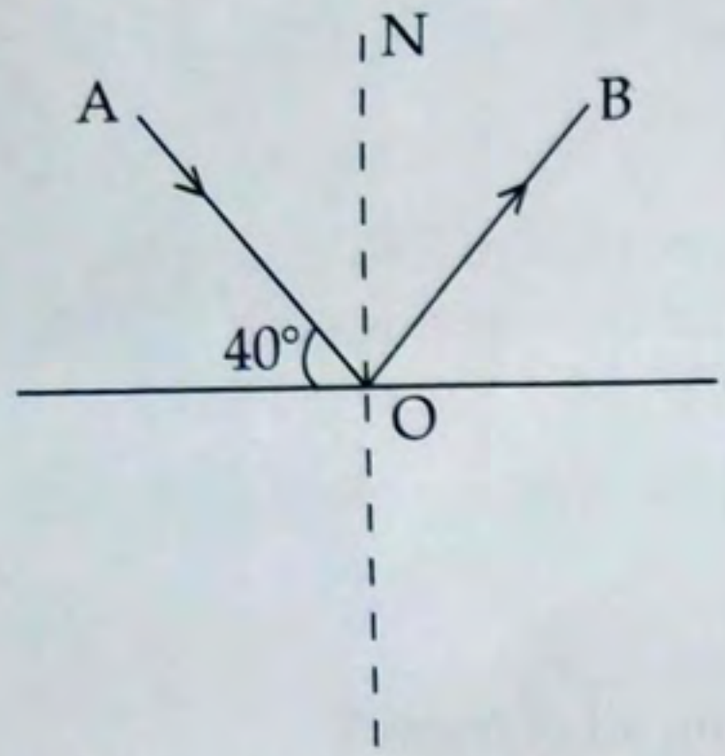
   (a) Name the parts labeled as A and B. 1
   (b) Write the function of diaphragm in this device. 1

14. Write any two relevant first aids to be given in the case of electric shock. 2

15. Explain the following.
   (a) Electromagnetic Induction 1
   (b) Induced emf 1

Score

16. Observe the figure.



(a) Write the angle of incidence. 1

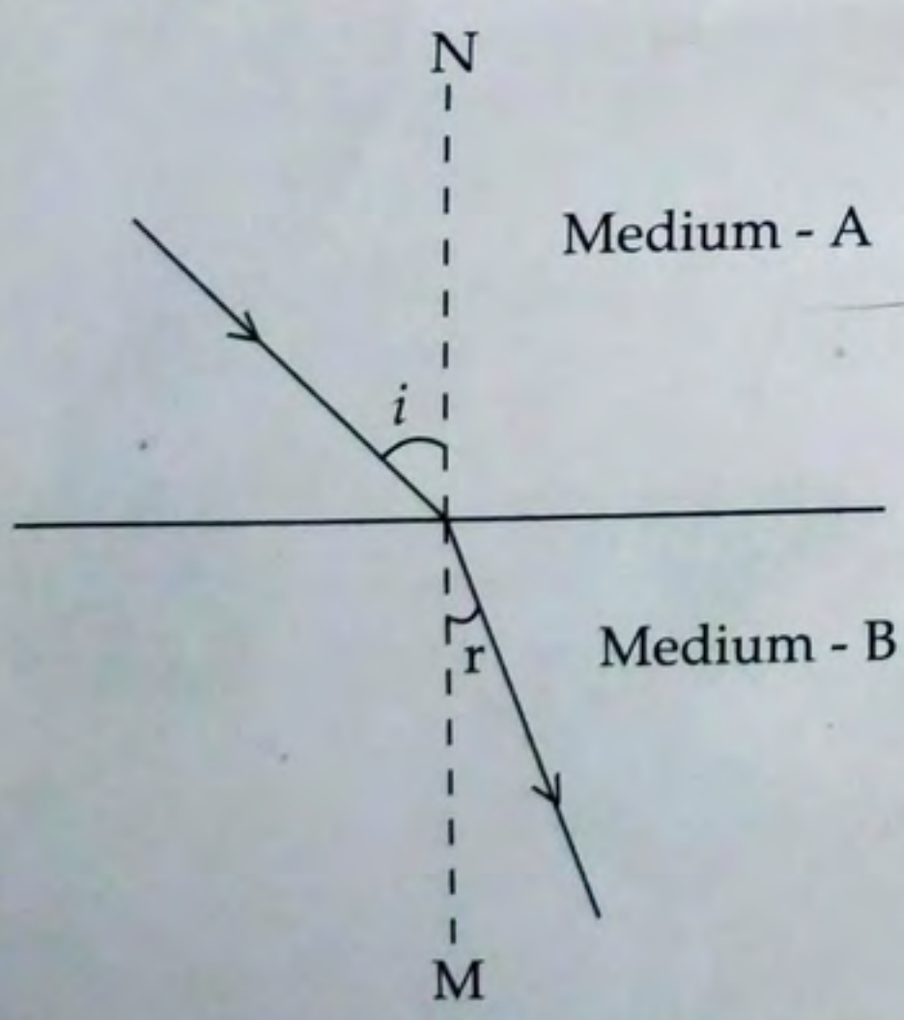
(b) Write the relation between angle of incidence and angle of reflection. 1

17. When an object is placed at a distance of 30 cm infront of the mirror, an image is obtained at 15 cm on the same side.

(a) Write the values of u and v according to the new cartesian sign convention. 1

(b) Calculate the focal length of the given mirror. 1

18. Light falls obliquely from one medium to another is shown in the figure. 2
[MN is the normal at the point of incidence]



Which of the given medium is the fastest medium for light ? Justify your answer.

19. DC current is flowing through a solenoid AB. The direction of current at the end A is anticlockwise.

(a) Write the polarity at the end A. 1

(b) The solenoid is replaced by a current carrying conductor. Give the name of the law that helps to determine the direction of magnetic field produced. 1

Score

20. 'Green energy is the energy of the future.' 2
Explain the above statement based on the energy crisis.

Each question from 21 to 28 carries 3 scores.

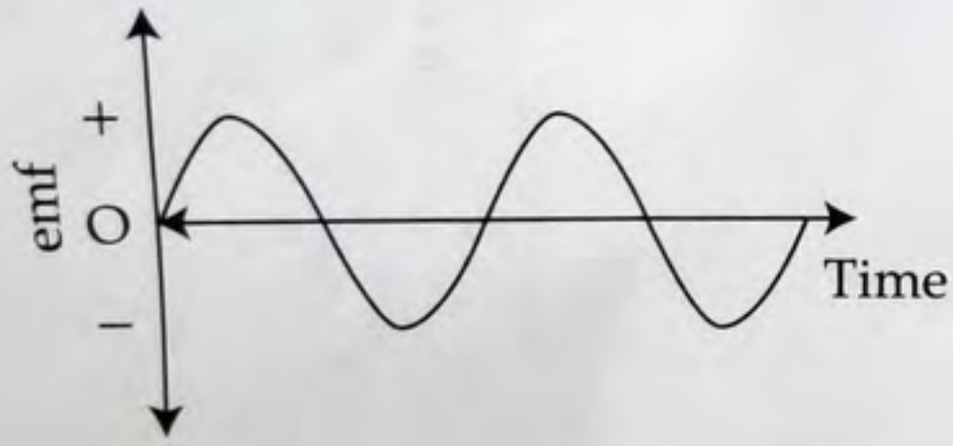
21. 2 A current flows through an electric heating device connected to 230 V supply.
(a) The quantity of charge that flows through the circuit in 5 minutes is : 1
(i) 10 C (ii) 60 C (iii) 600 C (iv) 6 C
(b) What is the resistance of the device ? 1
(c) Calculate the power of the heating device. 1

22. Three resistances of 4 Ω, 6 Ω and 12 Ω are given to you.
(a) What is the highest resistance that you can get using all of them ? 1
(b) What is the lowest resistance that can be obtained by using the 6 Ω and 12 Ω resistances ? 2

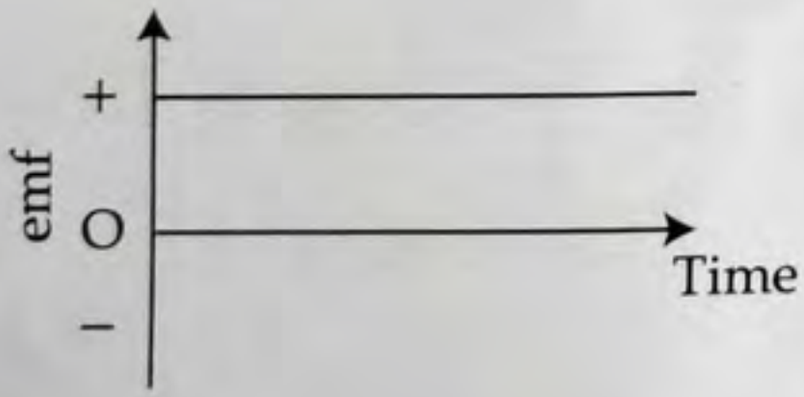
23. The voltage of electric power generated is increased from 11 kV to 220 kV in power transmission. But the household supply is provided at 230 V.
(a) Write the type of transformer used at the first phase of power transmission. 1
(b) Write the type of transformer used at the distribution line. 1
(c) Write any two structural differences between step-up and step-down transformer. 1

24. The graphical representation of emf obtained from three electrical sources are given below.

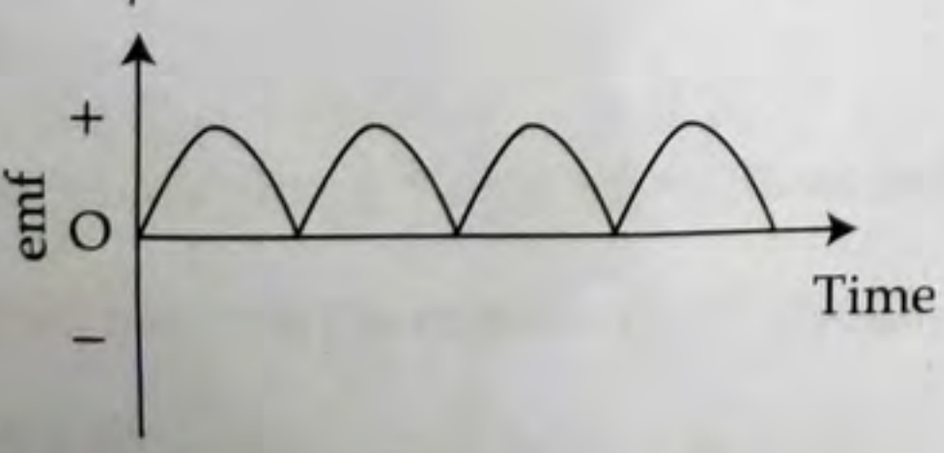
(A)



(B)



(C)



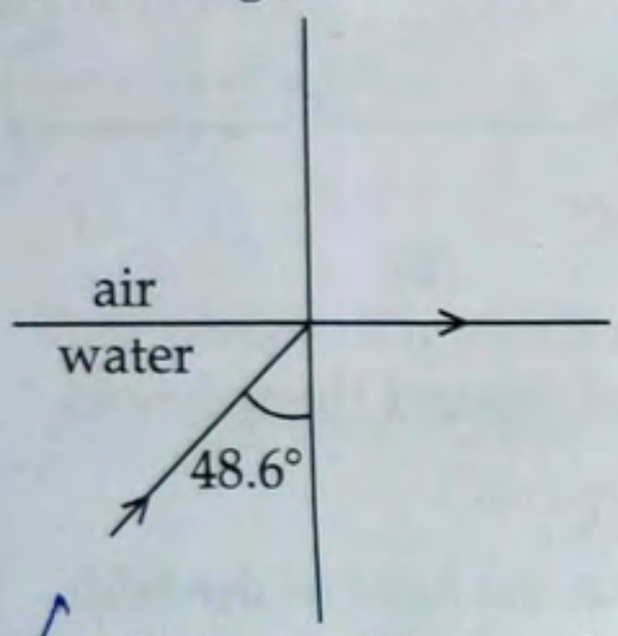
(a) Identify any two sources. 1
(b) Write any two peculiarities of each of the emf shown in the graph (A) and (B). 2

Score

25. (a) How fossil fuels are formed ? 1
(b) What are the products obtained by fractional distillation of coal ? 2

26. Rainbow is formed due to dispersion of sunlight.
(a) What is dispersion ? 1
(b) Write down the changes in the sunlight in the water droplet as the rainbow forms. Explain. 2

27. Critical angle of water with air is shown in the figure.

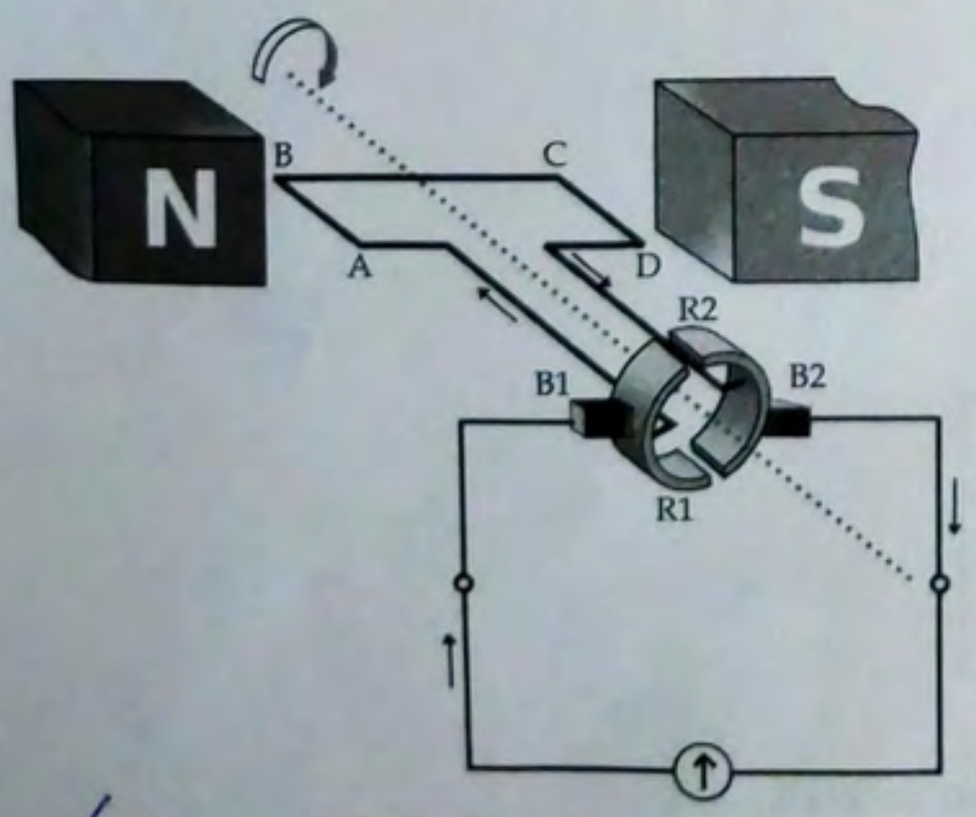


(a) Define critical angle. 1
(b) What change in the path of light will be observed if the angle of incidence is increased from critical angle ? 2

28. The magnification of an image formed in a mirror is -1.
(a) What is the negative sign indicates with the value of magnification ? 1
(b) What is magnification ? 1
(c) Identify the mirror used. 1

Each question from 29 to 34 carries 4 scores.

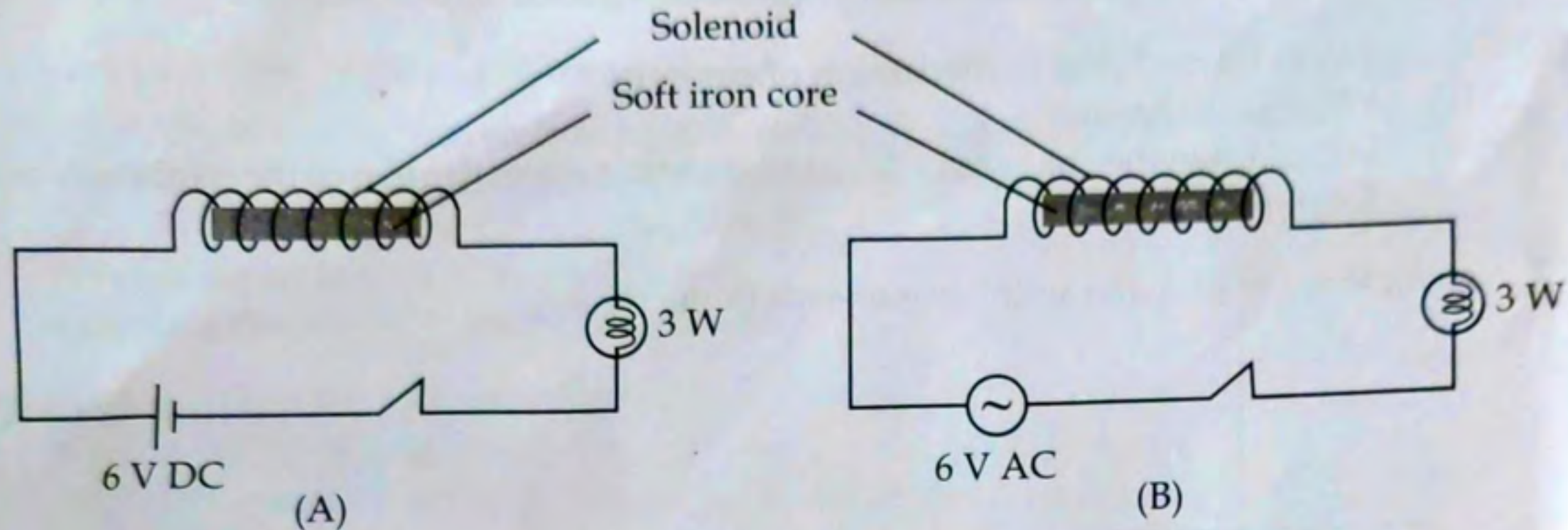
29. Observe the figure.



(a) Identify the Generator. 1
(b) Write the working principle of this generator. 1
(c) Which type of emf is induced in the armature ? 1
(d) Write the function of split ring commutator used in this generator. 1

Score

30. Analyse the figure to answer the questions.



(a) In which circuit is a varying magnetic field developed around the solenoid ? 1

(b) Which bulb in the circuit glows when the switch is kept on ? 1

(c) Explain whether there is a difference in the intensity of the light of the bulb. 2

31. (a) If the image obtained from a convex lens is erect and enlarged :

(i) Image is formed at : 1

[Same side of the object/Opposite side of the object]

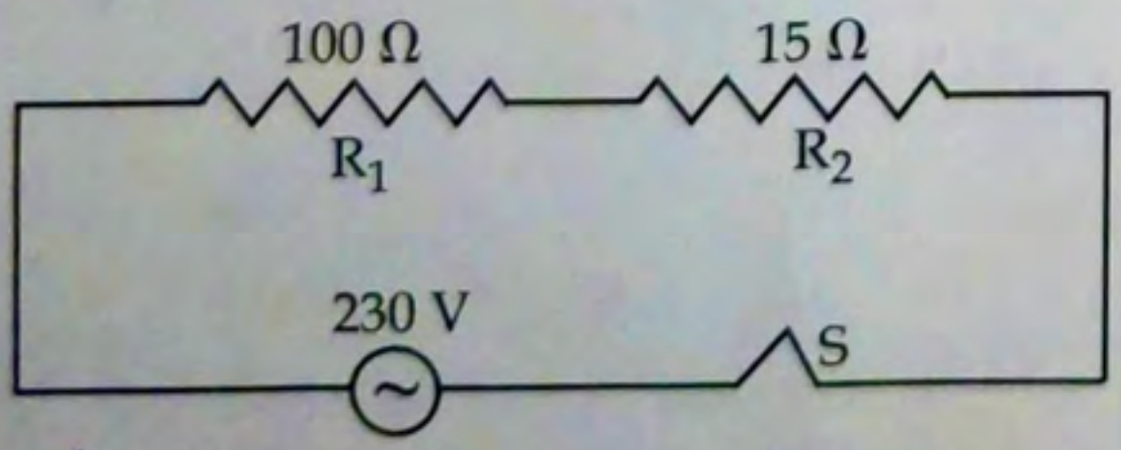
(ii) Write any one application of this type of image formation. 1

(b) Write any two characteristics of the image formed by a convex lens when the object is placed at the following positions.

(i) At infinity 1

(ii) Between F and 2F 1

32. Observe the circuit diagram and answer the questions.



(a) Find the effective resistance of the given circuit. 1

(b) Calculate the current flowing through this circuit. 1

(c) What is the heat produced in the 100 Ω resistance if the current flows for 10 minutes ? 2

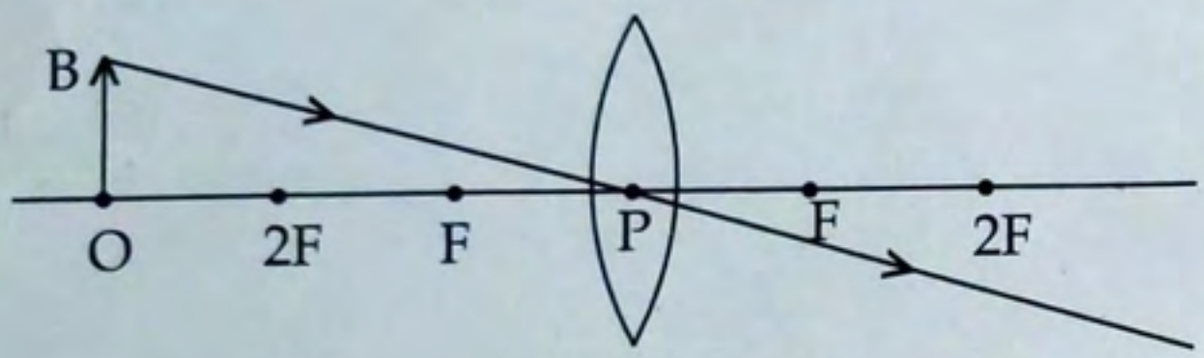
Score

33. (a) Write the function of a safety fuse in an electric circuit. 1

(b) Write any two characteristics of fuse wire. 1

(c) Write any two precautions to be taken while including fuse wire in a circuit. 2

34. Observe the ray diagram given below.



(a) Redraw the diagram and complete it to get the image. 2

(b) Write any two characteristics of the image obtained. 2

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