

Sl. No. **SSLC EXAMINATION, MARCH - 2021****PHYSICS**

(English)

Time : 1½ Hours

Total Score : 40

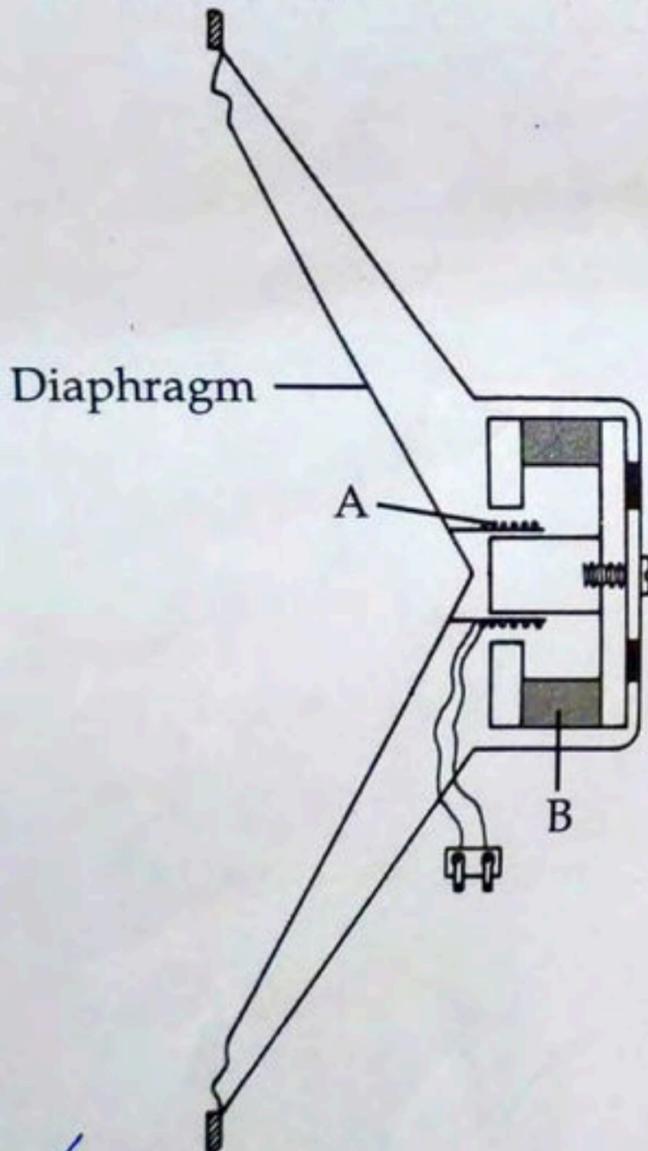
Instructions :

- 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. [Violet, Green, Blue, Red]	1
2/ The non-rotating part in a dc motor is : [Armature, Split ring, Graphite Brush]	1
3/ Select the odd one from the group. [Reflection, Dispersion, Refraction, Persistence of vision]	1
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. CNG : Compressed Natural Gas LNG : _____	1
6/ Pick out the one which is not a source of Green Energy. [Solar cell, Wind mill, Biogas, LPG]	1
7/ Which phenomenon of light is utilised in optical fibre technology ? [Refraction, Total internal reflection, Dispersion, Scattering]	1
8/ The image formed by a convex lens is inverted and diminished. Then the object must be placed : [At 2F, Beyond 2F, Between F and 2F, At F]	1

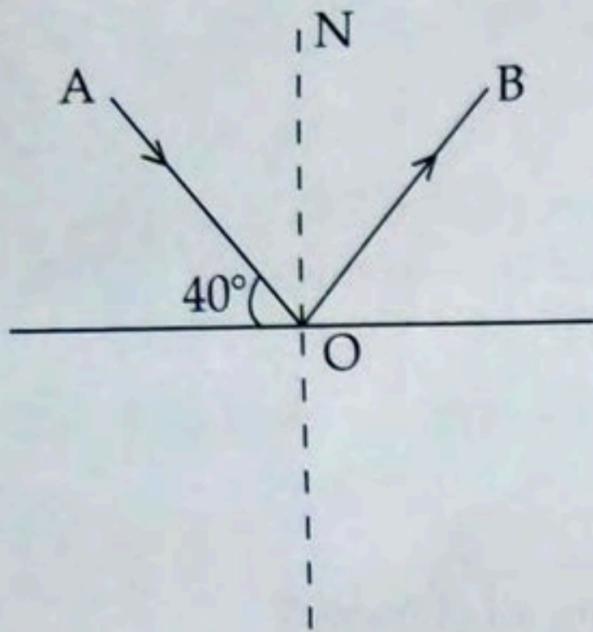
Each question from 9 to 20 carries 2 scores.

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

16. Observe the figure.



(a) Write the angle of incidence. 1

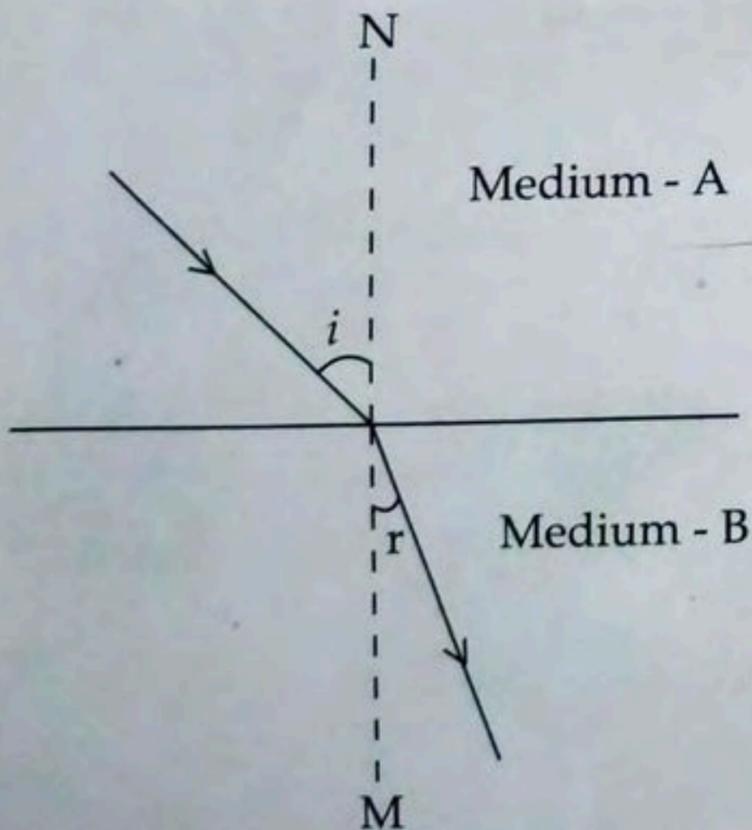
(b) Write the relation between angle of incidence and angle of reflection. 1

17. When an object is placed at a distance of 30 cm in front 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. [MN is the normal at the point of incidence] 2



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

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

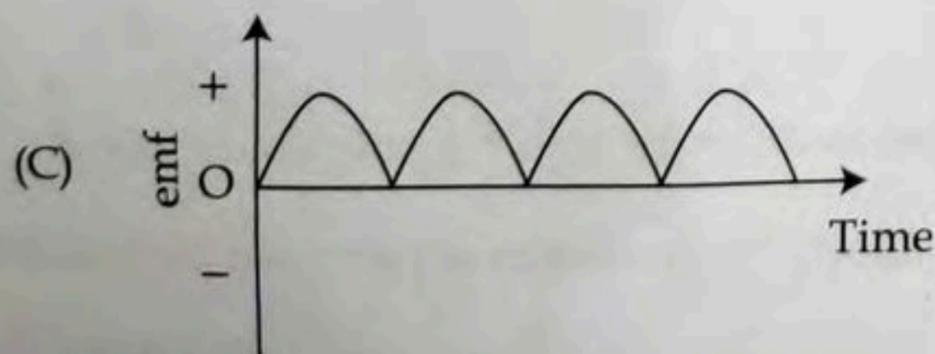
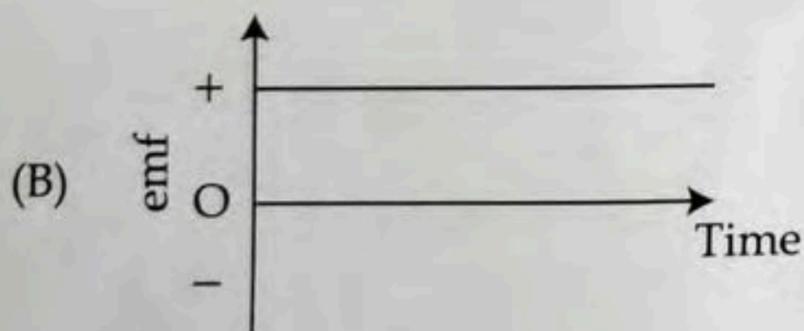
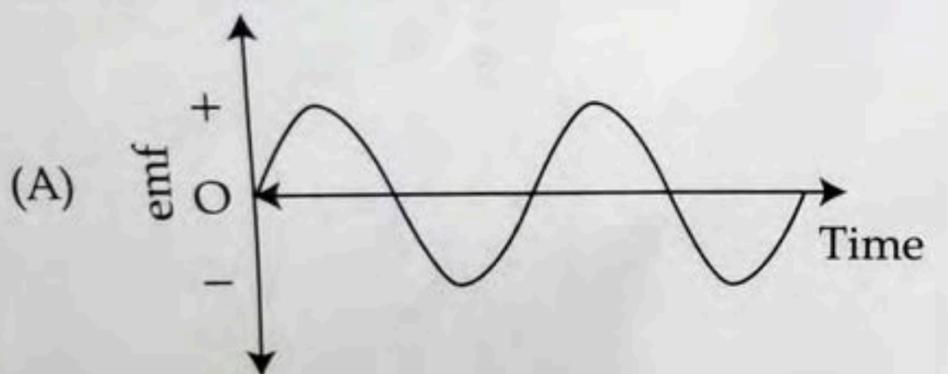
Each question from 21 to 28 carries 3 scores.

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 1
- (b) What is the resistance of the device? 1
- (c) Calculate the power of the heating device.

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

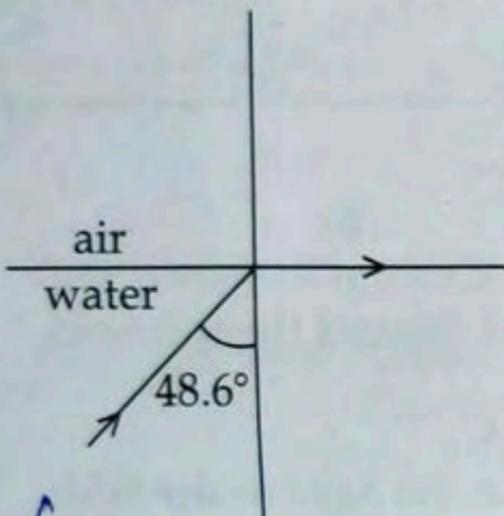
23. The voltage of electric power generated is increased from 11 kV to 220 kV in power transmission. But the household supply is provided at 230 V. 1
- (a) Write the type of transformer used at the first phase of power transmission. 1
- (b) Write the type of transformer used at the distribution line. 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) Identify any two sources. 1
- (b) Write any two peculiarities of each of the emf shown in the graph (A) and (B). 2

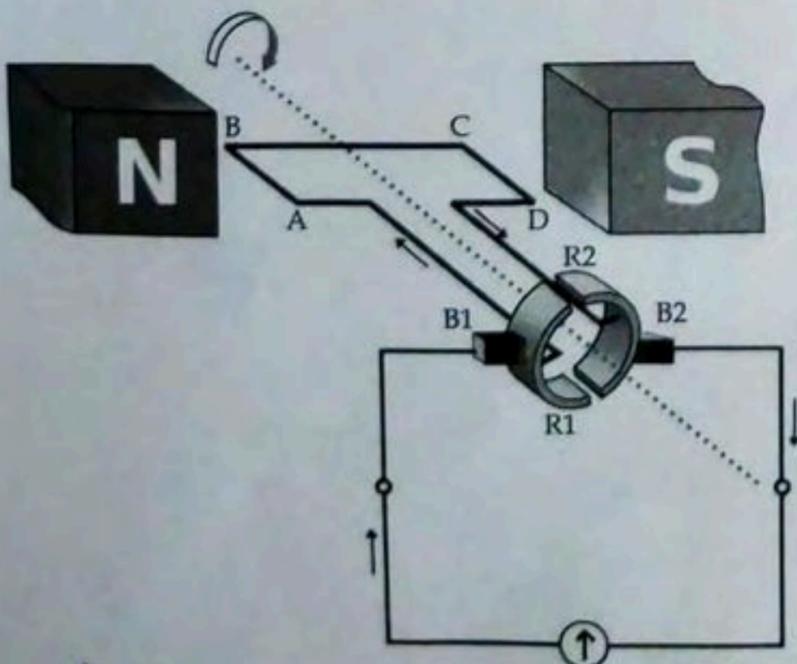
25. (a) How fossil fuels are formed ?
 (b) What are the products obtained by fractional distillation of coal ?
26. Rainbow is formed due to dispersion of sunlight.
 (a) What is dispersion ?
 (b) Write down the changes in the sunlight in the water droplet as the rainbow forms. Explain.
27. Critical angle of water with air is shown in the figure.



- (a) Define critical angle.
 (b) What change in the path of light will be observed if the angle of incidence is increased from critical angle ?
28. The magnification of an image formed in a mirror is -1 .
 (a) What is the negative sign indicates with the value of magnification ?
 (b) What is magnification ?
 (c) Identify the mirror used.

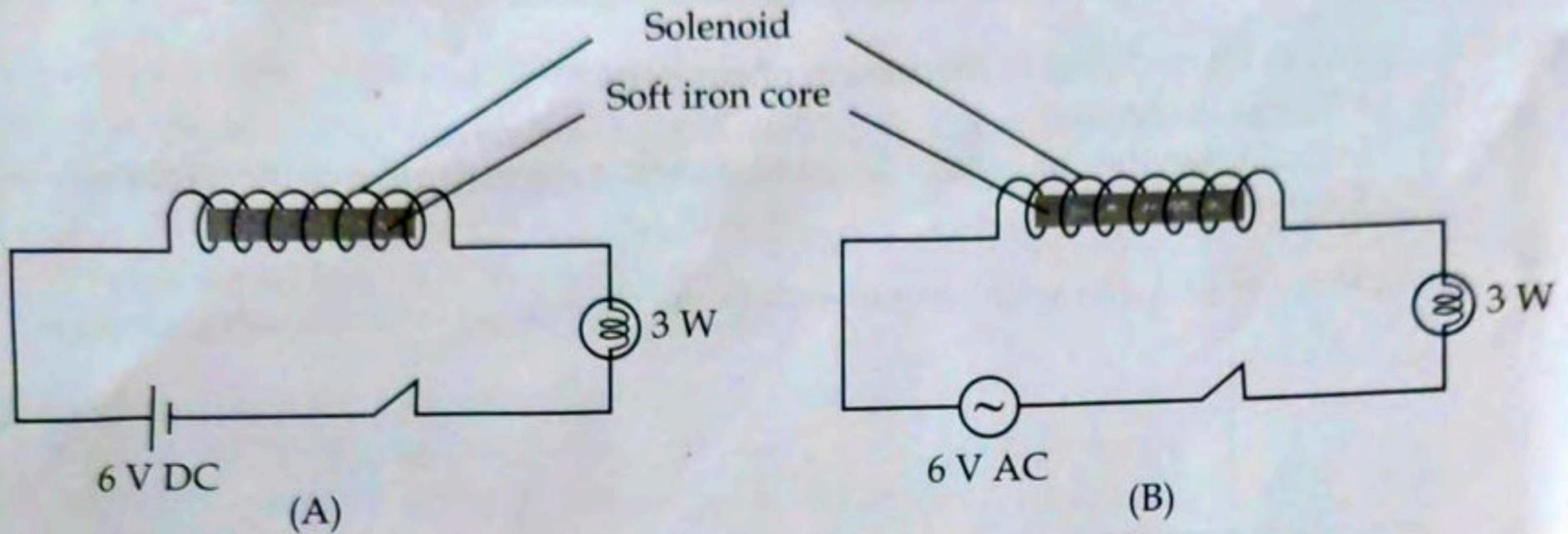
Each question from 29 to 34 carries 4 scores.

29. Observe the figure.



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

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]

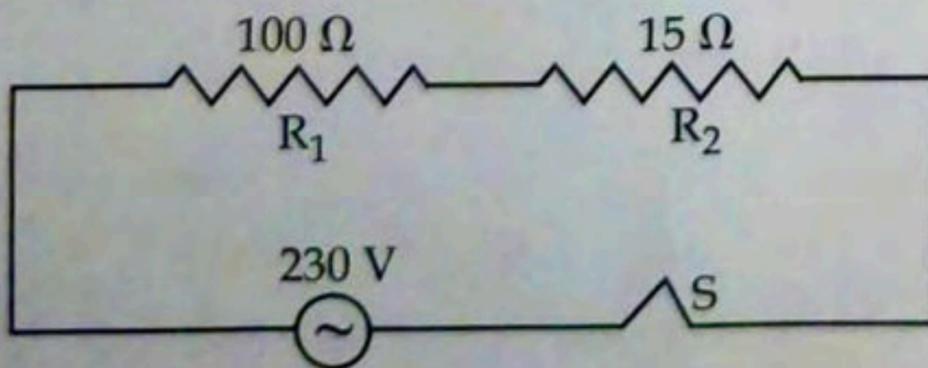
(ii) Write any one application of this type of image formation. 1

(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.



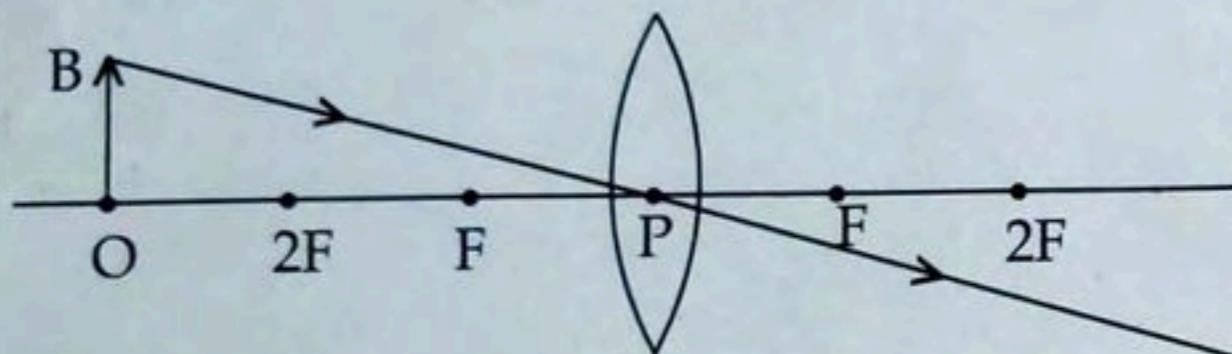
(a) Find the effective resistance of the given circuit. 1

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

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

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