S 1935

Sl. No.

SSLC EXAMINATION, MARCH - 2024

PHYSICS

(English)

Time : 1½ Hours | Total Score : 40

Instructions :

- The first **15** minutes is cool-off time.
- You may use this time to read the questions and plan your answers.
- Answer only on the basis of instructions and questions given.
- Consider score and time while answering.

Score

SECTION - A

Answer any four questions. Each question carries 1 score. **4x1=4**

1. Identify the relation in the first word pair and complete the second. 1

   (i) Brown Energy : Coal

   (ii) Green Energy : _____

2. If the near point of a person is 25 cm, and the far point is not infinity then his eye has _____. 1

   (No defect, Myopia, Hypermetropia, Presbyopia)

3. Name the process in which the nuclei of greater mass are split into lighter nuclei ? 1

4. The power of a lens is +2D. Find its focal length. 1

5. The work done to move a charge of 3 coulomb between the points X and Y is 12J. Then the potential difference between these points is _____. 1

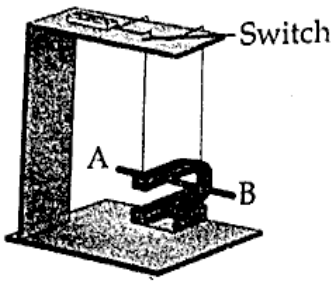
Score

SECTION - B

4x2=8

Answer any four questions. Each question carries 2 scores.

6. A conductor AB suspended freely between the poles of a U magnet is depicted. DC source is connected to the circuit.



(a) State the rule to find the direction of motion of the conductor AB when a current is switched on. 1

(b) Write two methods to reverse the direction of motion of the conductor. 1

7. A magnetic field is formed around a current carrying conductor.

(a) Write the law to find the direction of this magnetic field. 1

(b) Write two methods to increase the strength of magnetic field by current carrying conductors. 1

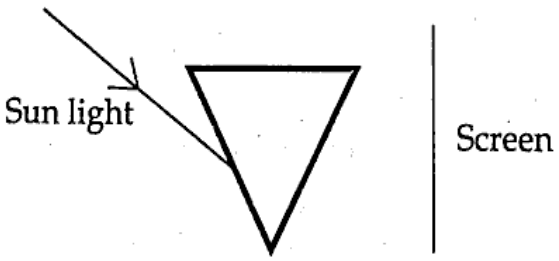
8. Various stages in the working of a moving coil microphone are given.

Electric signals	The Diaphragm vibrates	Sound energy	The coil vibrates in the magnetic field

(a) Write them in the correct order. 1

(b) What is the working principle of this microphone ? 1

9. The figure shows sunlight falling obliquely on a glass prism. 2



Copy the diagram and complete it. Mark the colours seen on the screen.

10. Which material is used to make the filament of an incandescent lamp ? What properties make this material suitable for this purpose ? 2

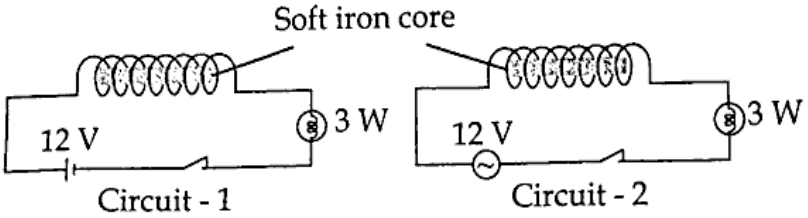
Score

SECTION - C

Answer any four questions. Each question carries 3 scores. 4x3=12

11. A student has a large number of identical 2 Ω resistors. He requires a circuit having an effective resistance of 9 Ω.
    (a) What will be the minimum number of 2 Ω resistors used for this ? 1
    (b) Draw the circuit diagram of this arrangement. 2

12. Analyse the circuits and answer the following questions.

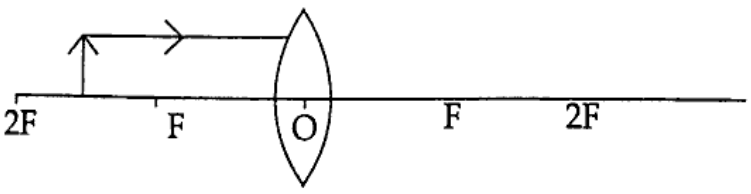


    (a) "A magnetic field is developed around the solenoid only in the second circuit." Do you agree with this statement ? Explain. 1
    (b) In which circuit, a continuous emf is induced ? Name and explain this phenomenon. 2

13. Match the following statements associated with mirrors in column A, B and C in correct order. 3

A Mirror	B Characteristics of the virtual image	C Use
Concave mirror	Always forms a diminished image	To see the face
Convex mirror	The size of the image and the size of the object will be equal	Used by dentists
Plane mirror	Always forms enlarged images	Used as a rear view mirror in vehicles

14. Observe the diagram of an object placed on the principal axis of a convex lens.



    (a) Copy down the ray diagram and complete it to show the position of the image. 2
    (b) Write the characteristics of the image obtained. 1

15. The calorific value should be considered when choosing a good fuel.
    (a) What is calorific value of a fuel ? 1
    (b) What are the essential factors for the complete combustion of a fuel ? 1
    (c) What are the characteristics of a good fuel ? 1

Score

SECTION - D

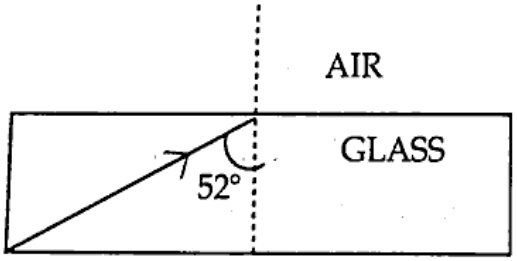
Answer any four questions. Each question carries 4 scores. 4x4=16

16. The resistance of an electrical device designed to work at 230 V is 460 Ω.
    (a) Calculate the current drawn by this device when operated at 230 V. 1
    (b) Find the rated power of the device. 1
    (c) Calculate the heat produced if this device works for 10 minutes. 2

17. A transformer has 100 turns in the primary and 1000 turns in the secondary.
    (a) Which coil of this transformer is made using thick wire ? Give reason. 2
    (b) Explain how electrical energy is transferred from the primary to the secondary of the transformer. 2

18. An object is located on the principal axis of a spherical mirror at a distance of 40 cm from the pole. The magnification of the image is −4.
    (a) What does the negative sign indicate ? 1
    (b) How far from the pole of the mirror is the image formed ? 1
    (c) Calculate the focal length of the mirror by considering the New Cartesian sign convention. 2

19. The critical angle of glass with respect to air is 42°. Observe the figure and answer the questions.



    (a) What do you mean by critical angle ? 1
    (b) What happens to the given incident ray as it continues its path ? 1
    (c) Explain phenomenon of light that occurs here. 2

20. Give reason for each of the following.
    (a) A rapidly rotating Newton's colour disc appears white. 1
    (b) Sun appears red during sunrise and sunset. 1
    (c) A clear sky appears blue. 1
    (d) On frosty mornings the path of sunlight passing through the woods is clearly visible. 1

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