

## SSLC EXAMINATION, MARCH - 2023

### PHYSICS

(English)

Time : 1½ Hours

Total Score : 40

**Instructions :**

- The first 15 minutes is cool-off time.
- You may use the 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.**

- |    |   |   |
|----|---|---|
| 1. | The prominent effect produced when a current passes through a solenoid is _____.  | 1 |
|    | [chemical effect, mechanical effect, magnetic effect, light effect]   |   |
| 2. | When there is a change in magnetic flux linked with a conductor, an emf is induced in it. Name the phenomenon.            | 1 |
| 3. | In mirrors which point is considered as origin while measuring distances according to the New Cartesian Sign Convention ? | 1 |
| 4. | Which phenomenon of light is made use in optical fibres that are used for communication ?                                 | 1 |
| 5. | What is the distance to the near point from an eye with healthy vision ?  | 1 |

#### SECTION - B

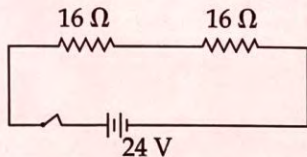
**Answer any four questions. Each question carries 2 scores.**

- |    |  |   |
|----|--|---|
| 6. | (a) What is the main disadvantage of an incandescent lamp ?                                  | 1 |
|    | (b) Write any two properties of tungsten that make it suitable for being used as a filament. | 1 |

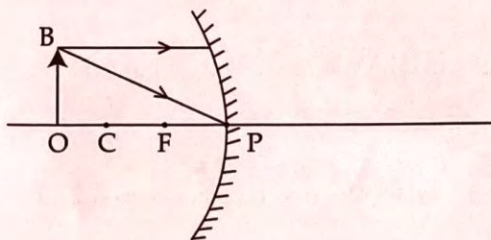
P.T.O.

Score

7. Observe the diagram. Two  $16\ \Omega$  resistors are connected in series and a potential difference of  $24\ \text{V}$  is applied.



- (a) Calculate the effective resistance in the circuit. 1
- (b) If the resistors were connected in parallel without changing the voltage source what will be the current in the circuit? 1
8. A conductor kept in a magnetic field experiences a force when current passes through it.
- (a) Name the rule that helps us to find the direction of the force. 1
- (b) Name any two devices that work based on this principle. 1
9. Observe the diagram. 2



Redraw the ray diagram and complete it to show the image.

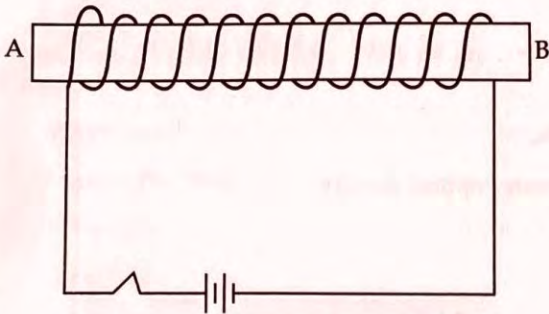
10. Match the following appropriately. 2

A	B
(a) Fuel cell	(i) Carbon
(b) L.P.G.	(ii) Methane
(c) Coal	(iii) Hydrogen
(d) CNG	(iv) Butane

## SECTION - C

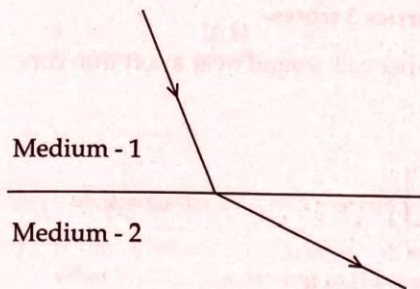
Answer any four questions. Each question carries 3 scores.

11. A DC current passes through an insulated copper coil wound over a soft iron core as shown in the figure.



- (a) By just observing the experimental setup how will you identify the south pole of the electromagnet? 1
- (b) Compare the properties of an electromagnet and a permanent bar magnet. 2
12. The current in the secondary coil of a transformer with no powerloss is 5 A and that in the primary is 0.5 A.
- (a) What type of a transformer is this? 1
- (b) If the input voltage of this transformer is 240 V calculate the output voltage. 2
13. A doctor's prescription for a person with defective vision have the figures  $-1D$ ,  $-1.25D$ .
- (a) What do these figures indicate? 1
- (b) Identify the defect of the eye. 1
- (c) Write the reason for this defect. 1
14. An object of height 6 cm is placed 10 cm away in front of a concave mirror. A real inverted image of height 3 cm is formed.
- (a) Find the magnification of the image. 1
- (b) Calculate the distance of the image from the mirror. 2

15. Observe the figure. A ray of light enters from medium-1 to medium-2.



- (a) Find out which medium has greater optical density. 1
- (b) Explain the terms : 2
- (i) relative refractive index
- (ii) absolute refractive index

#### SECTION - D

Answer any four questions. Each question carries 4 scores.

16. A heating coil with  $60 \Omega$  resistance is connected to a 240 V supply.
- (a) Calculate the power of the appliance. 1
- (b) Calculate the amount of heat generated by this heating coil in 5 minutes. 1
- (c) If this appliance continuously work for 10 hours, calculate the energy consumed in commercial units. 2
17. AC generators are used in power stations in our Country.
- (a) What is the voltage produced by the generators in our power stations ? 1
- (b) What do you mean by transmission loss ? 1
- (c) Explain how it is minimised. 2
18. An object is placed at a distance of 15 cm from a lens of focal length +10 cm.
- (a) Which type of lens is used here ? 1
- (b) Calculate the image distance. 2
- (c) What is the nature of the image formed ? 1

- |  | Score |
|--|-------|
| 19. The red colour during sunset and the beautiful rainbow make nature colourful.        |       |
| (a) Name the phenomenon that creates a rainbow.  | 1     |
| (b) What is the colour seen at the upper edge of the primary rainbow ?                   | 1     |
| (c) During sunset sun seems to be in red colour. Explain why ?                           | 2     |
| 20. Kalpakkam, Moolamattam and Neyveli are some places where power stations are located. |       |
| (a) Which among the above is a nuclear power station ?                                   | 1     |
| (b) Explain the energy changes taking place in a nuclear power station.                  | 2     |
| (c) What type of pollution is caused by such power stations ?                            | 1     |