

Sl. No.

SSLC MODEL EXAMINATION, FEBRUARY - 2024**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.

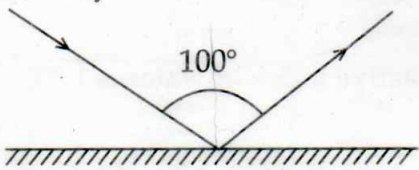
Score

SECTION - A

Answer any four questions. Each question carries 1 score.

- Find the relation in the first pair and complete the second. 1
 - Electric iron : Heating effect
 - Electric motor : _____
- Which of the following is not a part of moving coil loudspeaker ? 1
(voice coil, diaphragm, permanent magnet, slip rings) ✓
- Find the angle of incidence in the following figure. 1

Incident ray

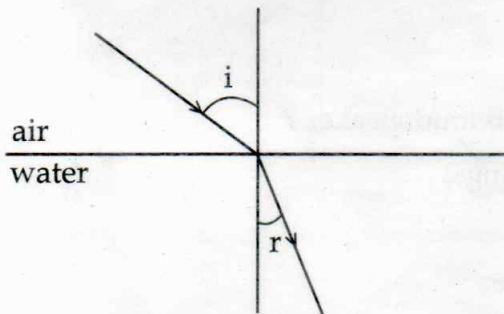


Plane mirror
- What is the energy conversion taking place in a windmill ? 1
- How long does an electrical device of power 500 W work to consume 1 unit of electrical energy ? 1

SECTION - B

Answer any four questions. Each question carries 2 scores.

6. Write any four methods to minimise energy crisis. 2
7. A soldering iron of resistance 1250Ω works with a supply 200 V.
- (a) Find the power of the soldering iron. $\frac{V^2}{R}$ 1
- (b) Calculate the amount of heat energy produced in 10 s. $\frac{V^2}{R} t$ 1
8. Classify the energy produced from the following sources as green energy and brown energy. 2
 (Solar power plant, Atomic reactor, Diesel engine, Hydroelectric power station)
9. Analyse the following figure and answer the questions.

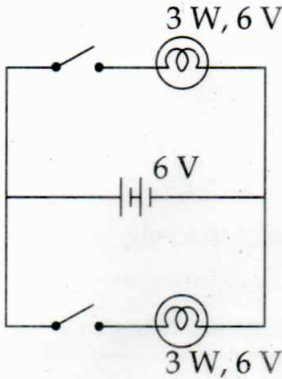


- (a) Which medium has more optical density? 1
- (b) Calculate the speed of light in water if the refractive index of water is 1.33. 1
 (Speed of light in air = 3×10^8 m/s)
10. Analyse the following statements and correct the mistakes if any : 2
- (a) According to the new Cartesian sign convention the distance of the object from a mirror is always positive.
- (b) Fleming's left hand rule helps to identify the direction of magnetic field around a current carrying conductor.

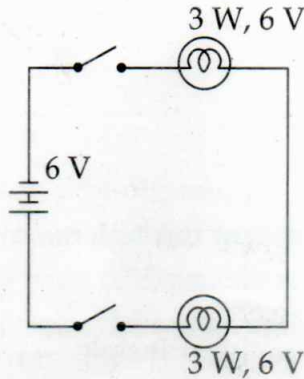
SECTION - C

Answer any four questions. Each question carries 3 scores.

11. Analyse the following circuits :



(Circuit A)



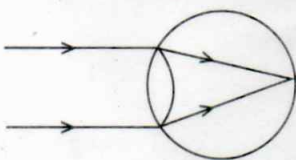
(Circuit B)

- (a) In which circuit the bulbs are connected in parallel ? 1
- (b) The bulbs in which circuit glow brighter when all the switches are put on ? 1
- (c) Justify your answer. 1

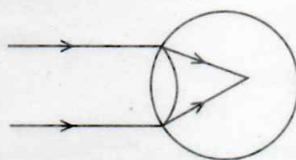
12. Match the following :

A	B	C
Plane mirror	rear view mirror	Magnification is more
Convex mirror	shaving mirror	The size of the image is the same as that of the object
Concave mirror	periscope	Larger field of view

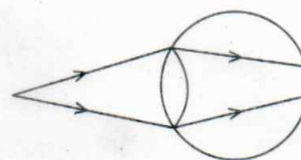
13. Ray diagram of the image formation in the human eye is depicted. Analyse the figure and answer the questions.



(A)



(B)



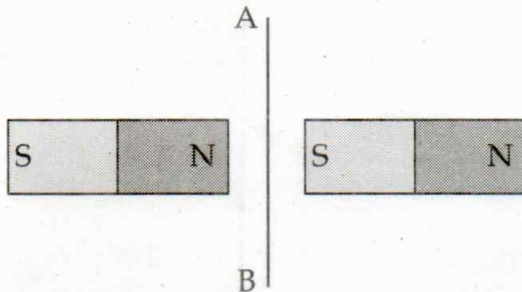
(C)

- (a) Which figure indicates eye with short sightedness ? 1
- (b) What are the reasons of this defect ? 1
- (c) How is it rectified ? 1

Handwritten calculations:

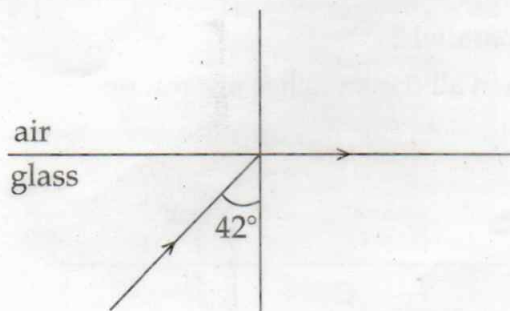
$$\begin{array}{r} 173 \\ 32 \\ \hline 205 \\ 375 \\ \hline 4000 \end{array}$$

14. Two magnets and a current carrying conductor AB are placed on the top of a table as shown in the figure.



- (a) In which direction should the current flow through the conductor to move it in a direction upwards from the table? *A → B* 1
- (b) Which rule helps you to find the answer? 1
- (c) Write any two devices which work on this principle. *Fan, microphone* 1

15. Analyse the following figure and answer the questions.

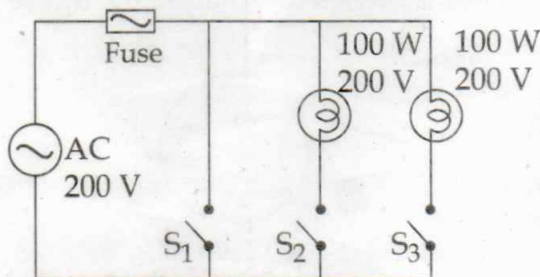


- (a) Find the angle of refraction. 1
- (b) Write any one angle of incidence that produces total internal reflection. 1
- (c) Write any two practical applications of total internal reflection. *optical fibre, endoscope* 1

SECTION - D

Answer any four questions. Each question carries 4 scores.

16. An electric circuit consists of two incandescent lamps are depicted below. Analyse the circuit and answer the questions.



- (a) Which material is used as filament in incandescent lamps? 1
- (b) Calculate the current through the circuit when S_1 and S_2 are put on. 2
- (c) What happens to the circuit when all the switches are put on? 1

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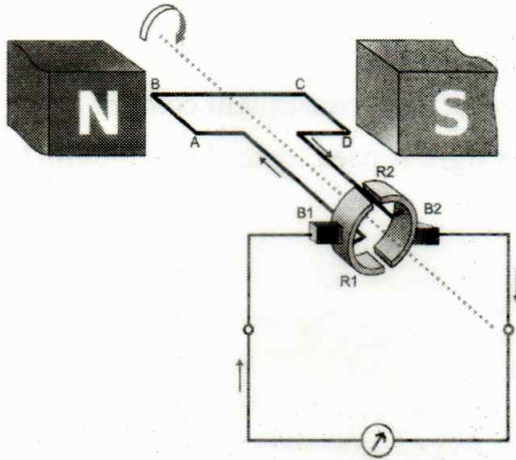
Score

17. A transformer without power loss works at an input of 250 V. A current of 1 A flows through the secondary coil when an electrical device of power 50 W is connected to the secondary.

$V_p = 250$
 $I_s = 1A$
P. 50

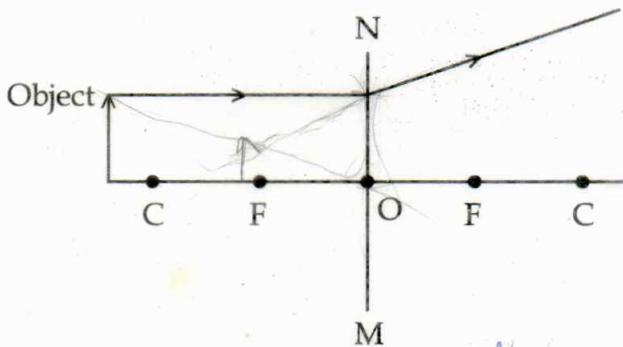
- (a) Which type of transformer is used here? 1
- (b) What is the working principle of transformer? 1
- (c) Calculate the current through the primary. 2

18. Analyse the following schematic diagram and answer the questions.



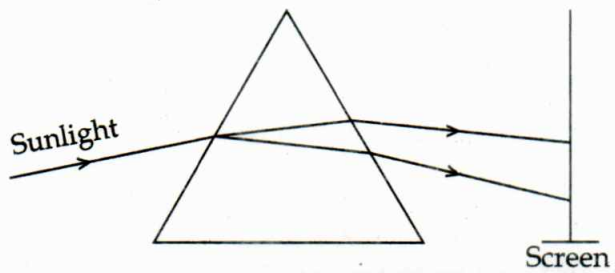
- (a) Name the device. *DC generator* 1
- (b) Which are the main parts of this device? *Poles, Armature, split commutator, brushes* 2
- (c) Illustrate the graphic representation of the output when the field magnet is rotated by keeping the armature stationary. 1

19. The following diagram represents the passage of light from an object through a lens MN.



- (a) Which type of lens is MN? *Concave* 1
- (b) Copy and redraw the diagram to get the image of the object. 2
- (c) Write any two characteristics of this image. *Virtual, erect* 1

20. Analyse the following figure and answer the questions.



- (a) Which are the colours obtained on the screen? *Red, Violet, Red* **1**
- (b) Which among these has longest wavelength? *Red* **1**
- (c) Name the process in which light splits up into its constituent colours. *Dispersion* **1**
- (d) What difference is observed when red laser light is used instead of sunlight? **1**

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