

## SSLC EXAMINATION, MARCH - 2020

## PHYSICS

(English)

Time : 1½ Hours

Total Score : 40

## GENERAL INSTRUCTIONS :

- The first 15 minutes is the cool off time. You may use the time to read and plan your answers.
- Answer the questions only after reading the instructions and questions thoroughly.
- Answer each question by considering the score.

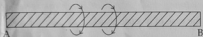
Score

## SECTION - A

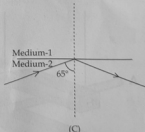
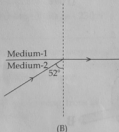
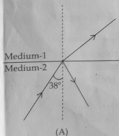
(Answer any four questions. Each question carries 1 score.)

1. The radius of curvature of a convex mirror is 24 cm. What is its focal length ? 1  
(24 cm, 6 cm, 12 cm, 3 cm)

2. The magnetic field around a current carrying conductor AB is given in the figure. Based on Maxwell's right hand screw rule, find the direction of the current through the conductor. 1



3. Which of the following figure represent the critical angle ? 1



4. The order of various colours observed in the spectrum of sunlight is given below. Choose the correct order. 1

- Blue, Violet, Green, Red
- Violet, Blue, Yellow, Red
- Violet, Yellow, Blue, Green
- Green, Yellow, Orange, Blue

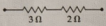
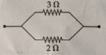
5. Write any two products obtained while coal is distilled in the absence of air. 1

P.T.O.

## SECTION - B

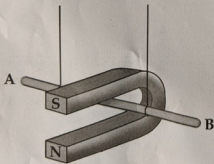
(Answer any 4 questions. Each question carries 2 score.)

6. The following table is prepared for comparing the properties of resistances in different combinations. Rearrange the contents in each column to match them properly.

Connection diagram of resistance	Effective resistance of the circuit	Voltage across each resistor	Current through each resistor
	decreases -----	same -----	same -----
	Increases -----	different -----	different -----

7. Write any two methods to provide first aid in the case of electric shock.

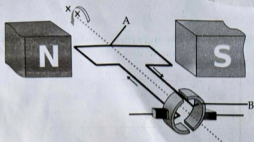
8. A conductor AB is placed in a magnetic field as shown in the figure.



- (a) If you are moving the conductor outwards, then what will be the direction of current in the conductor?  $B \rightarrow A$
- (b) If an electric current passes from A to B, then in which direction the conductor will move?

[Inwards the magnet/Outwards the magnet]

9. Observe the figure of a DC motor.



- (a) Write the name of the parts labelled as A and B. 1  
 (b) What are the changes to be made so as to convert this device into an AC generator? 1

10. Write the reason for the twinkling of stars in the sky. 2

### SECTION - C

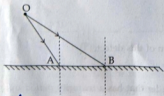
(Answer any four questions. Each question carries 3 score.)

11. Specification of two electrical heaters are given below :

Heater - A	Heater - B
Resistance - $690 \Omega$	Resistance - $460 \Omega$
Working Voltage - 230 V	Working Voltage - 230 V

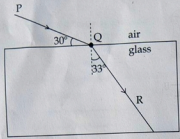
- (a) Which heater require a fuse of higher amperage? 1  
 (b) Which of the heaters generate more heat when they work for 5 minutes under the same voltage rating? Explain the reason. 2

12. Two rays of light OA and OB are coming from an object 'O', is falling obliquely on the surface of a plane mirror as shown.



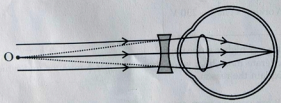
- (a) Draw a ray diagram indicating the image formation. 2  
 (b) Write any two properties of the image formed in this case. 1

13. A ray of light falling obliquely from air to a glass slab is shown in the figure.



- (a) Find out the angle of incidence. 1
- (b) Why the angle of refraction is less than that of the angle of incidence in this case? 1
- (c) How can you calculate the refractive index of the material of this slab? (calculation not required) 1

14. The picture represents a method of rectification of the defect of an eye using a lens of suitable focal length.



- (a) Name the disorder of this eye. 1
- (b) Give two reasons for this defect. 1
- (c) Explain the role of concave lens in the rectification of this defect. 1

15. (a) What will be the marking on a cooking gas cylinder that has a maturity period upto March - 2020? 1

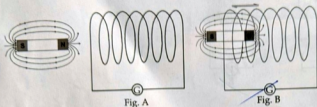
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(b) Write any two precautions to be taken to avoid accidents due to 'LPG' leakage. 2

## SECTION - D

(Answer any four questions. Each question carries 4 score.)

16. Two stages of experiment conducted with a solenoid and a magnet is given below :  
(Magnets shown in Fig-A and Fig-B are stationary magnet and a moving magnet respectively)

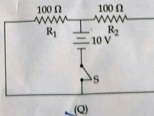
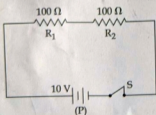


- (a) In which stage, the galvanometer deflects ? 1  
 (b) Explain the reason for this deflection in galvanometer with the help of scientific principle that you have learned. 2  
 (c) Write any two devices that works on this principle. 1

17. Explain the scientific reason behind the phenomena given below.

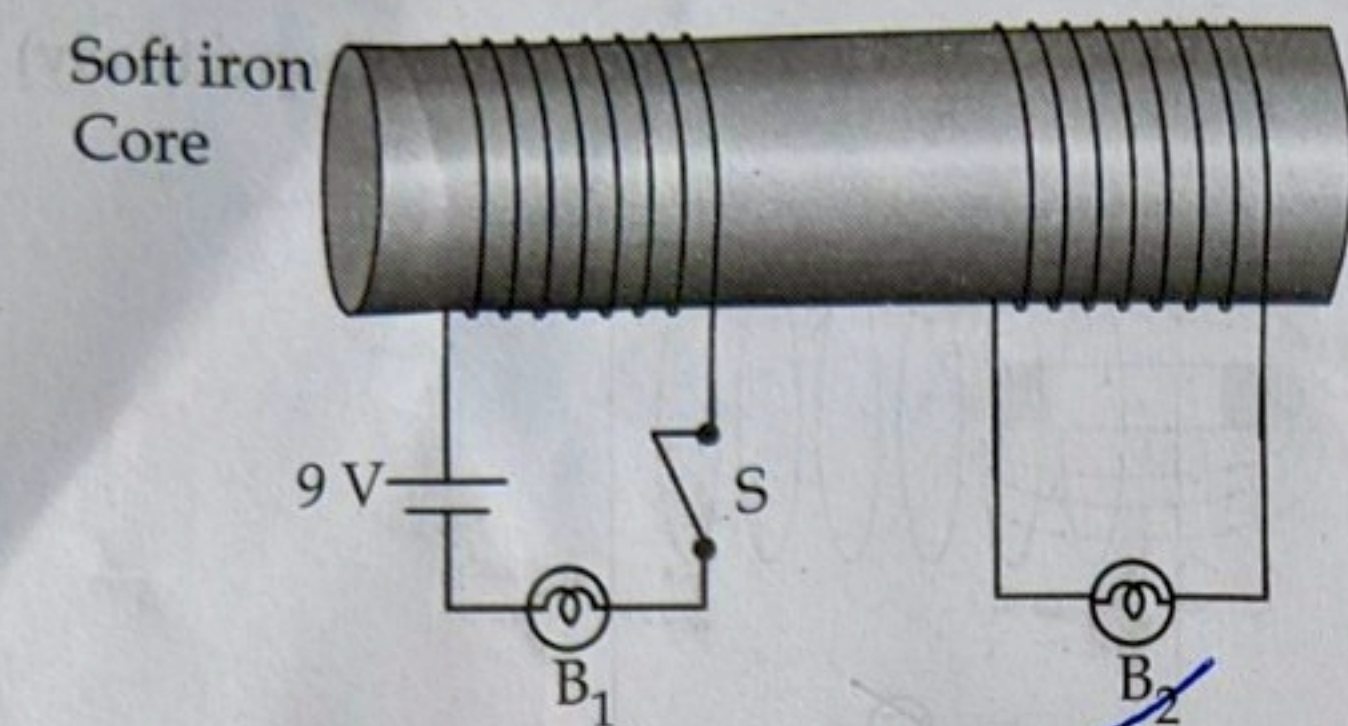
- (a) The path of sunlight is visible in a misty morning. 1  
 (b) Newton's colour disc appears white when rotated fast. 1  
 (c) The rising and setting sun appears red. 1  
 (d) A person can see the far object and near object clearly. 1

18. Analyse the circuits P and Q.



- (a) In which circuit, the resistors get the same voltage ? 1  
 (b) Calculate the voltage across the resistor  $R_2$  in the circuit (P). 1  
 (c) If current due to the applied emf is flowing through these two circuits for a time of 5 minutes, which circuit will produce more heat energy ? Explain. 2

19. Observe the figure and answer the following questions.  $B_1$  and  $B_2$  are identical bulbs.



- (a) Which bulb will glow in the circuits? 1
- (b) If the battery in the circuit is replaced by an ac source of the same voltage, what change can be observed in the working of the bulbs? Explain the reasons for this change. 3

20. Define the following terms of a lens.

- (a) Optic centre 1
- (b) Centre of curvature 1
- (c) Principal focus of convex lens 1
- (d) Focal length of concave lens 1

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