

## SAMAGRA SHIKSHA, KERALA

## FIRST TERMINAL EVALUATION 2023-24

## PHYSICS

Standard: X

Time : 1½ hour  
Total Score : 40

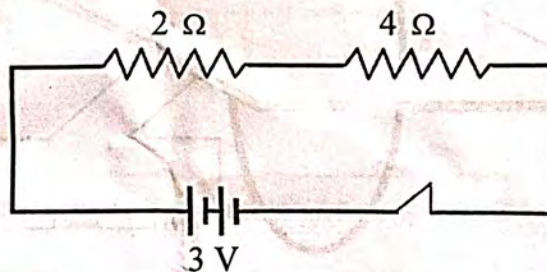
## Instructions

- First 15 minutes is given as cool off time. This time is to be spent for reading and understanding the questions.
- Answer the questions based on instructions.
- Answer the questions according to score and time.

Answer any four questions from 1 to 5. (1 score each)

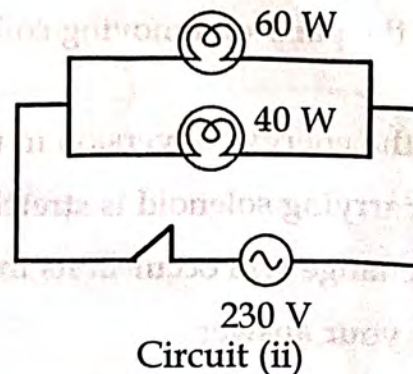
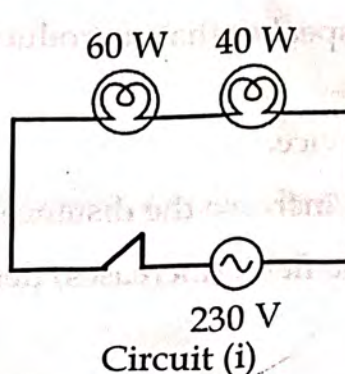
(4 × 1 = 4)

- Find out the relation from the first pair and complete the second pair (1)  
C/s : ampere  
J/C : .....
- Which one of the following is not a part of LED bulb. (1)  
[Heat sink, Diffuser cup, filament, Power supply board]
- Observe the circuit diagram. (1)



Find the current flowing through 2 Ω resistor.

- Name the rule to determine the direction of magnetic field around a straight conductor carrying current. (1)
- In which of the given circuits do the bulbs glow with high intensity. (1)



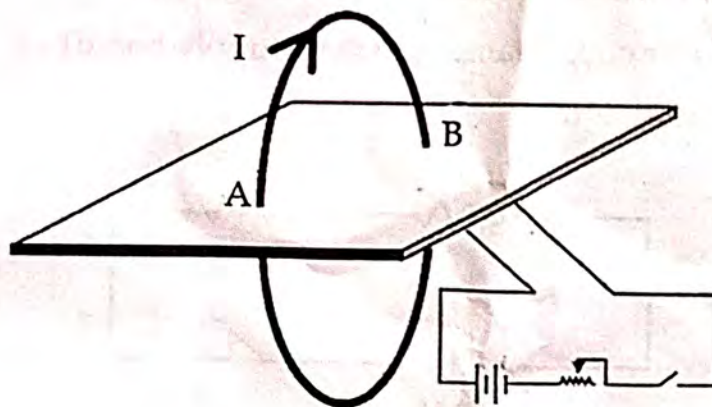
Answer any 4 questions from 6 to 10. (2 score each)

(4 x 2 = 8)

6. Explain the working of discharge lamp. (2)
7. A heating appliance has a resistance of  $100 \Omega$ . If 3 A current flows through it, what is the power of the appliance? (2)
8. Write down any two advantages of LED bulbs over incandescent lamps. (2)
9. Classify the following statements and write them down in the table suitably. (2)
  - (a) The magnetism is permanent.
  - (b) The polarity can be changed.
  - (c) The magnetism is temporary.
  - (d) The polarity cannot be changed.

Bar magnet	Solenoid carrying current

10. A current carrying circular coil is inserted through a cardboard and kept in a vertical position as shown in figure. Draw the pattern of magnetic field lines around A and B and mark their direction. (2)



Answer any 4 questions from 1 to 15. (3 score each)

(4 x 3 = 12)

11. Answer the following questions based on the working of a moving coil loudspeaker.
  - (a) What is the working principle of this device? (1)
  - (b) Name the parts of a moving coil loudspeaker that reproduces sound with clarity. (1)
  - (c) Write the energy conversion in this device. (1)
12. A current carrying solenoid is stretched to increase the distance between the coils.
  - (a) What change will occur in its magnetic field. (increases/decreases) (1)
  - (b) Justify your answer. (2)

13. In an incandescent lamp, the filament becomes white hot and gives out light.  
 (a) Name the material used for making the filament in incandescent lamps. (1)  
 (b) Write down any two properties of the material used. (2)
14. Fill in the blanks of the table suitably. (3)

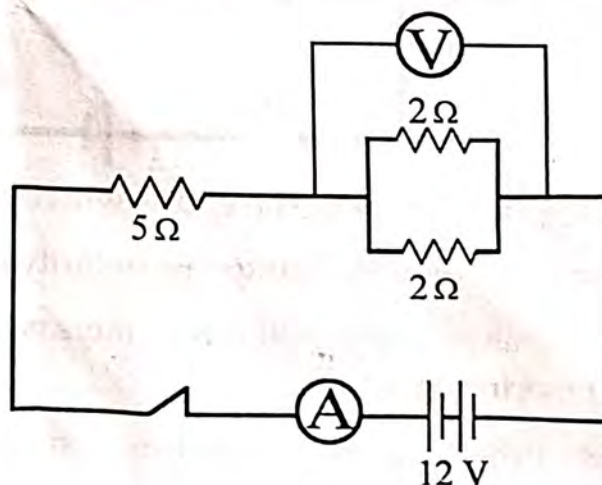
Device	Energy change	Effect of electricity
Electric bulb	(a) .....	Lighting effect
(b) .....	Electrical energy Converted in to heat energy	(c) .....
Mixie	(d) .....	Mechanical effect
Storage battery (While charging)	(e) .....	(f) .....

15. Complete the given table by classifying the following statements. (3)
- (a) Effective resistance increases  
 (b) When the number of resistors increases current also increases.  
 (c) Among the resistors, resistor with low resistance gets heated more.  
 (d) Applied voltage will be split among the resistors.  
 (e) Current will be split up among the resistors.  
 (f) Resistors cannot be controlled by separate switches.

Series combination of resistors	Parallel combination of resistors

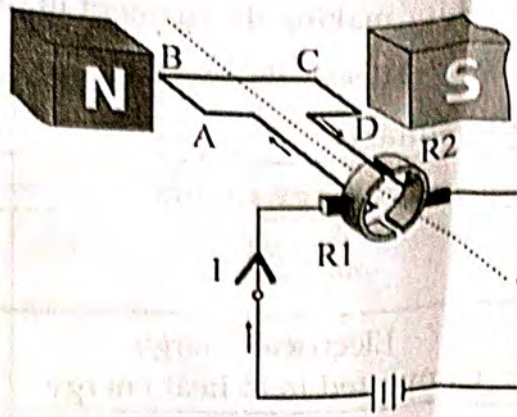
Answer any 4 questions from 16 to 20. ( 4 score each ) (4 x 4 = 16)

16. Observe the circuit diagram.

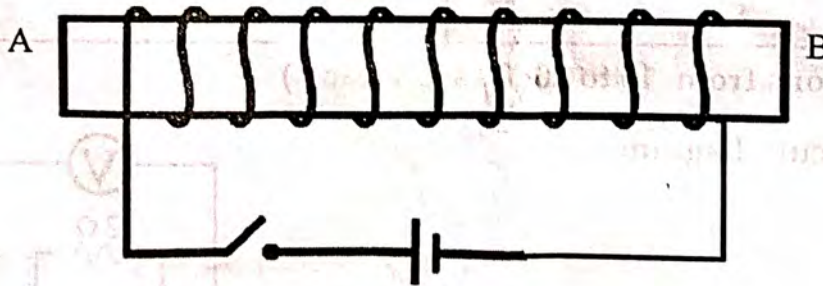


- (a) Calculate the effective resistance in the circuit. (2)  
 (b) What will be  
 (i) the ammeter reading. (1)  
 (ii) the voltmeter reading. (1)

17. Schematic diagram of an electric motor is given. Observe the diagram and answer the following.



- (a) If current flows as shown in figure, what will be the direction of rotation of the armature.  
(clockwise/anticlockwise). (1)
- (b) Justify your answer. (1)
- (c) Name the parts marked as R1 and R2. What is its function? (2)
18. Safety fuse is a device which protects an electric circuit from the dangers of excess current.
- (a) Name the material used for making fuse wire. (1)
- (b) Write down the main characteristic of the material. (1)
- (c) Write down any two precautions to be taken while connecting a fuse wire in an electric circuit. (2)
19. Figure shows the circuit diagram of a solenoid connected to a battery. Observe the diagram and answer the following.



- (a) Identify the polarity of the end A when the circuit is switched on. (1)
- (b) Suggest a method to change the polarity of the end A. (1)
- (c) Write down any two methods to increase the strength of the magnetic field of a current carrying solenoid. (2)
20. The process by which heat is developed in a circuit on passing current is known as the Joule Heating
- (a) State Joule's law (1)
- (b) How many calorie of heat will be developed in a  $200 \Omega$  resistor when a current of  $0.3 \text{ A}$  is passed for 5 minute. (3)