

Set - A

SAMAGRA SHIKSHA - KERALA
FIRST TERMINAL EXAMINATION 2019-20
PHYSICS

E1006 - Phy

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

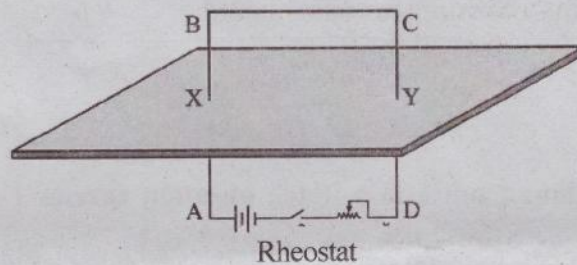
Answer any **FOUR** questions from 1 to 5. Each question carries 1 score. (4 x 1 = 4)

1. Identify the relation in the first word pair and fill the second pair suitably. (1)
electric bulb :: lighting effect
safety fuse :: - - - - -
2. Select the odd one out from the following. (1)
a. armature b. graphite brush
c. voice coil d. split ring
3. The work done to move a charge of 2 coulomb between two points X and Y in a conductor is 2 J. Calculate the potential difference between X and Y? (1)
4. Which among the following is the energy transformation taking place when a storage battery is being charged? (1)
a) chemical energy to electrical energy.
b) electrical energy to heat energy.
c) electrical energy to chemical energy.
d) magnetic energy to electrical energy.
5. A magnetic needle is placed at different positions of a current carrying solenoid. In which position does the magnetic needle has got maximum deflection? (1)
a) Inside the solenoid at the middle.
b) Outside the solenoid near to its end.
c) Lateral side of the solenoid.

Answer any **FOUR** questions from 6 to 10. Each question carries 2 score.

(4 x 2 = 8)

6. Resistance of a 230 V heating device is 460Ω . Calculate the heat energy produced by it in 10 minutes. (2)
7. Write an experiment to identify the polarity of a solenoid using the following materials supplied. Solenoid with 50 turns, Magnetic compass, 3V Battery, Rheostat and Switch. (2)
8. Safety fuse is the device which protects the electric circuit and electrical appliances at our home. How does the safety fuse ensure safety of electrical devices? Explain. (2)
9. ABCD is a current carrying conductor. Analyse the figure and answer the following questions

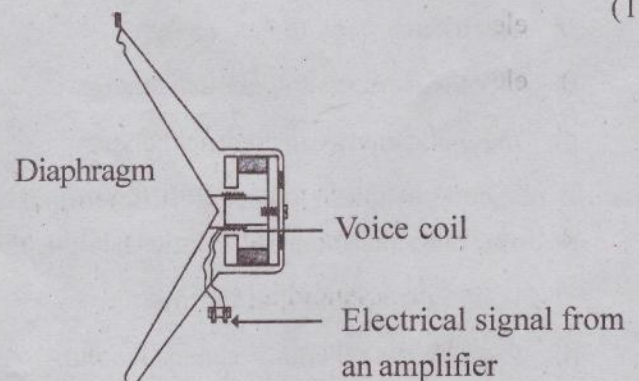


- a) What will be the direction of the magnetic field around X when looking from B. (1)
(clockwise / anticlockwise)
 - b) State the law to find this direction. (1)
10. "The use of a LED bulb should be encouraged as to support energy conservation and environment protection." Express your response to this statement. (2)

Answer any **FOUR** questions from 11 to 15. Each question carries 3 score. (4 x 3 = 12)

11. Power of a 200 V electrical device is 500 W.
- a) Calculate the electric current through this device? (2)
 - b) What will be the amperage of the fuse wire suitable for this device?
(2 A, 2.5 A, 3 A) (1)
 - c) Find the resistance of the device? (1)

12. Examine the figure below.



- a) State the working principle of the device. (1)
- b) How does the electrical signal from the amplifier is converted to sound in this device? (2)

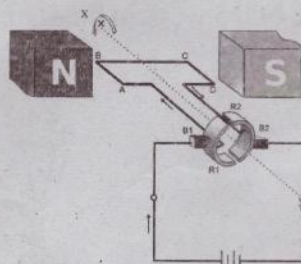
13. Match the terms in the columns A,B and C suitably. (3)

	A	B	C
a)	Electric heater	Field magnet	Lighting effect
b)	LED Bulb	Nichrome	Magnetic effect
c)	Moving coil loud speaker	Heat sink	Heating effect
		Carbon rod	Mechanical effect

14. Filament lamp is a device working on lighting effect of electric current.
- Which material is used to make the filament? (1)
 - Write any four characteristic properties of this material? (2)
15. 2 A current flows through an electrical device of resistance 120 Ω .
- Calculate power of the device? (2)
 - What changes to be done in the device to increase the power of the device without changing potential difference? (1)

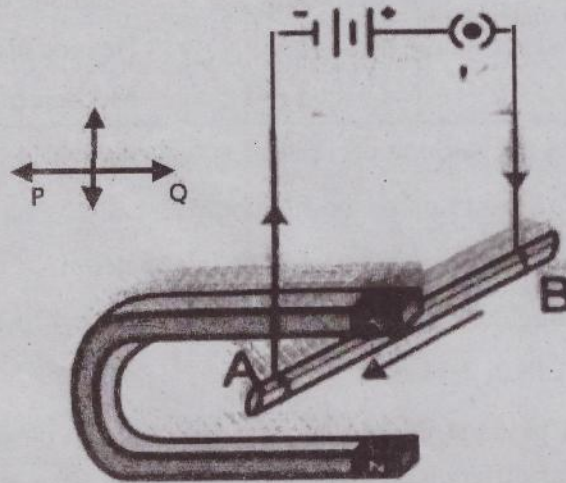
Answer any **FOUR** questions from 16 to 20. Each question carries 4 score. (4 x 4 = 16)

16. A 12 V battery is connected to 10 Ω and 15 Ω resistors which are connected parallel.
- Draw a circuit diagram including an ammeter and switch to the above. (2)
 - What will be the resultant resistance of this circuit? (1)
 - Calculate the total intensity of current in the circuit? (1)
17. Observe the diagram and answer the following questions.

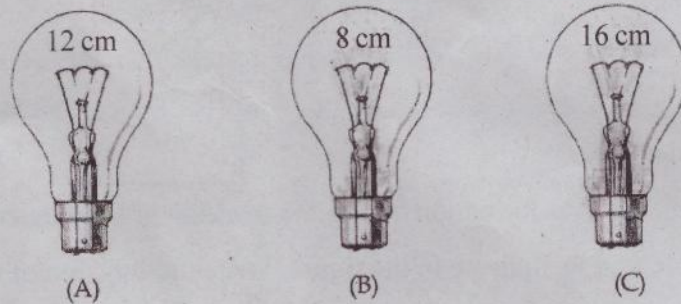


- Name the device? (1)
 - Write the energy transformation during the working of this device. (1)
 - What does R_1 and R_2 indicate in the figure. Write the function of this? (2)
18. Statements associated with the working of a filament lamp and discharge lamp are given below. (2)
- Arrange these statements in the correct order.
 - Molecules reach normal energy level and attain stability
 - Maintain high potential difference.
 - Radiant energy is emitted as light.
 - Gas molecules attain high energy levels.
 - Write any two advantages of discharge lamps over filament lamp. (1)
 - Explain why nitrogen is filled in filament lamps. (1)

19. Observe the diagram of a current carrying conductor AB suspended freely between the poles of a U magnet using a thin conductor.



- a) In which direction will the conductor AB move, when the switch is made ON? (1)
(in the direction given by P / in the direction given by Q)
- b) Name the rule helped to find this direction. (1)
- c) Write two methods to reverse the direction of motion of the conductor. (2)
20. Filaments in the bulbs A, B and C are of the same thickness, different lengths and made up of the same material. These bulbs work in the same potential difference.



- a) Which bulb will be more bright when these are in same potential difference. Justify your answer. (2)
- b) What changes will be observed in the brightness of the bulbs when a current is passed through a series of combination of these bulbs? Give the reason for this observation. (2)