SET - A

E 1006 - Ph

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FIRST TERM EVALUATION 2024-25

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 considering to score and time.

Answer any four questions from 1 to 5. (1 score each) **(4 x 1 = 4)**

1. Write down the energy conversion in a cycle dynamo. (1)

2. The quantity of heat developed in a current carrying conductor which works in accordance with Joule's law is ..... (1)

   A. $H = I^2R^2t$

   B. $H = IRt$

   C. $H = I^2Rt$

   D. $H = I^2Rt^2$

3. Two resistors with resistance R_1 and R_2 are connected in parallel. If the effective resistance is R, then

   A) $R = R_1 + R_2$ B) $\frac{1}{R} = R_1 + R_2$ C) $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$ D) $R = \frac{1}{R_1} + \frac{1}{R_2}$ (1)

4. Magnetic needles arranged parallel to the current carrying conductor AB in two circuits are depicted. Observe the figures and select the correct pair regarding the deflection of the magnetic needles.

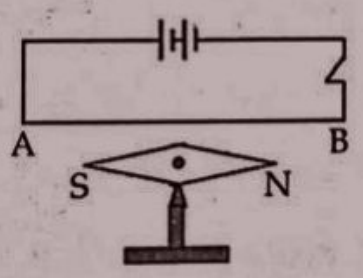


Figure - 1

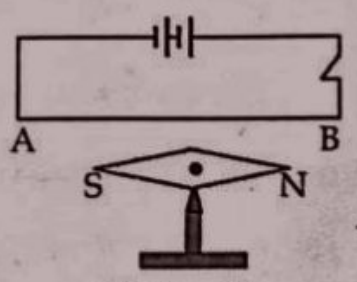


Figure - 2

   a. In figure (1) the needle deflects in the clockwise direction.

   b. In figure (2) the needle deflects in the anticlockwise direction.

   c. In figure (1) the needle deflects in the anticlockwise direction.

   d. In figure (2) the needle deflects in the clockwise direction.

   A) a, b B) a, c C) b, c D) c, d (1)

5. The electric energy consumed by an electric appliance in unit time is known as..... (1)

Answer any four questions from 6 to 10. (2 score each) **(4 x 2 = 8)**

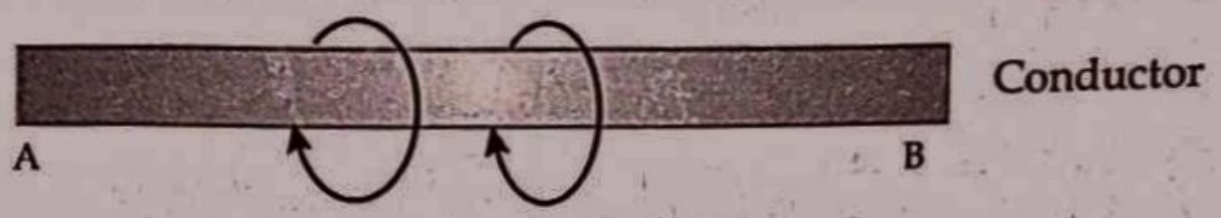
6. LEDs are Light Emitting Diodes.

   A. Name the part in an LED bulb which is close to the base unit and can absorb heat. (1)

   B. Write down two advantages of LED bulbs over incandescent lamps. (1)

7. How many resistors of 264 Ω should be connected parallel to get 5 A current from 220 V supply? (2)

8. The direction of magnetic field around a current carrying conductor AB is marked.



Drection of magnetic field

   A. The direction of current in the conductor is (1)

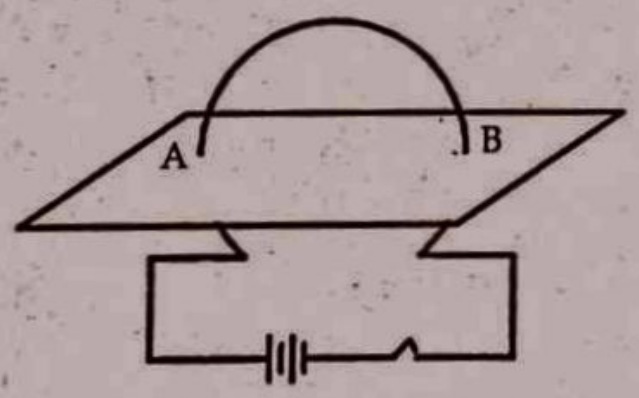
   (from A to B/ from B to A)

   B. Which rule helped you to find the direction of current? (1)

9. Safety fuse is a device to protect us and electric devices from accidents caused by excess current. (2)

   Describe the working of a fuse wire in a circuit.

10. Observe the figure.



   Draw the magnetic field lines around the points A and B along with direction. (2)

Answer any four questions from 11 to 15. (3 score each) **(4 x 3 = 12)**

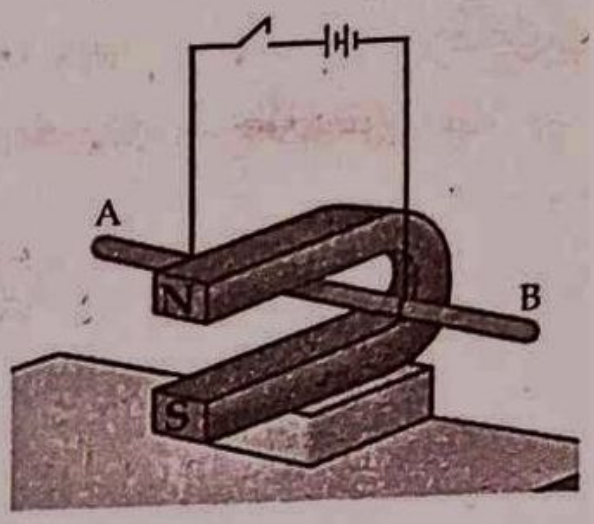
11. A 1000 W electric heater is connected to a 220 V supply.

   A. Which of the following should be the amperage of the fuse wire which is to be used for the safety of the circuit? (1)

   (2 A, 3 A, 4 A, 5 A)

   B. Justify your answer. (2)

12. AB is a straight conductor placed in between the poles of a U magnet in such a way that it is free to move.



A. In which direction will the conductor AB move when the switch is turned on? (1)

(into the magnet/out from the magnet)

B. Which is the rule used to find the direction of motion of the conductor? State the rule. (2)

13. Different types of discharge lamps are available in the market.

A. The working of a discharge lamp is given. Arrange them in the proper order. (2)

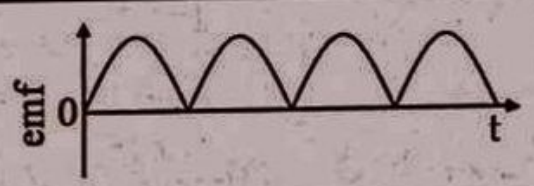
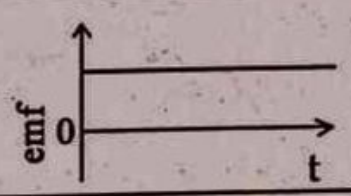
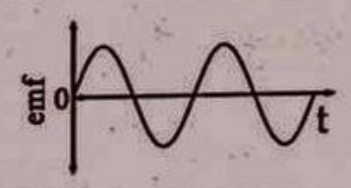
i) The excited molecules come back to their original state for attaining stability and energy is radiated.

ii) A high potential difference is applied across the electrodes.

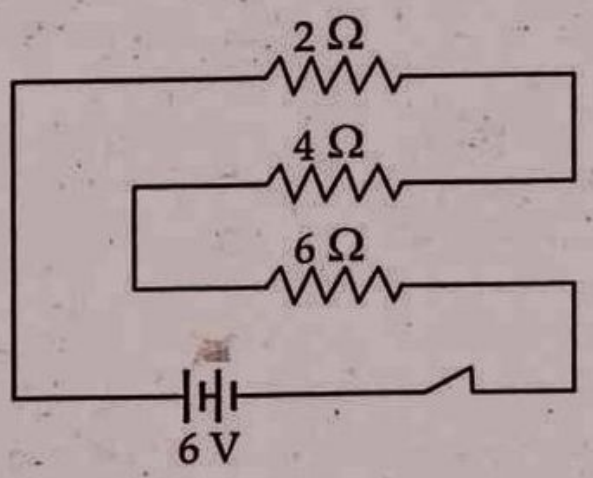
iii) The gas molecules get excited.

B. Write down two examples for discharge lamps. (1)

14. Match the columns A, B and C properly. (3)

A	B	C
AC Generator		Direction changes continuously
DC Generator		Direction does not change though the emf is increasing and decreasing
Battery		emf is Steady

15. Observe the circuit.



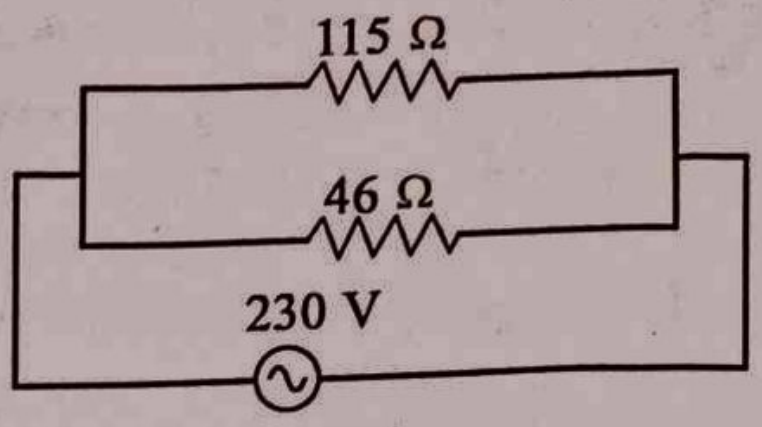
A. What is the effective resistance of the circuit? (1)

B. Find the current in the circuit. (1)

C. What change happens to the currrent in the circuit, when 4 Ω resistor is removed from the circuit and is closed again?. (1)

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

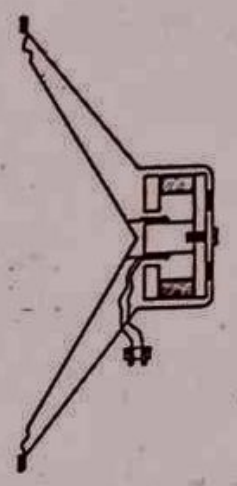
16. The figure shows two heating coils connected in an electric circuit.



A. Find the current through each coil. (2)

B. If current flows through the circuit for 5 minutes, which coil gets heated more? Find the heat developed in that coil. (2)

17. A device which converts electric energy into sound energy is depicted.



A. Name the device. (1)

B. Based on which principle is it working? State the principle. (2)

C. Name another device that works based on the same principle. (1)

18. DC flows through a solenoid.

A. What is the polarity at one end of the solenoid if the direction of current at that end is clockwise? (1)

B. Suggest one method to interchange the polarity at the ends of the solenoid. (1)

C. Write down two methods to increase the magnetic strength of the solenoid carrying current. (2)

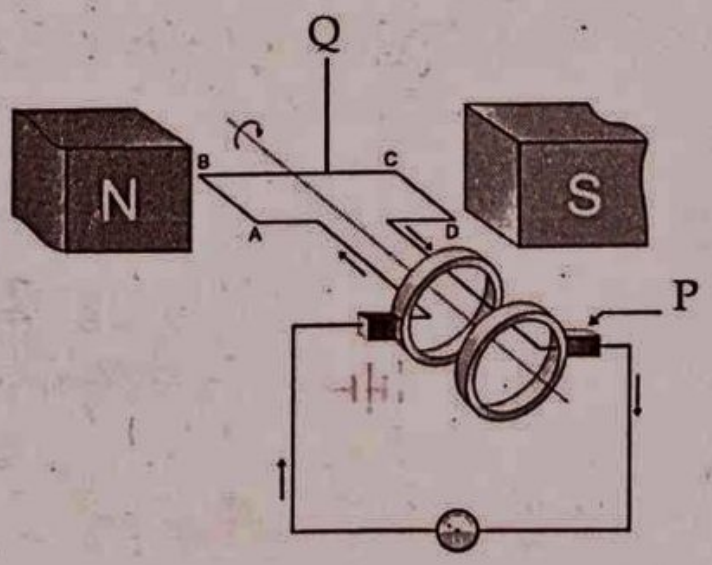
19. 2 A current is drawn by a heating coil when 230 V potential difference is applied.

A. Which material is commonly used to make a heating coil? (1)

B. What is the quantity of charge that flows through this coil in 5 minutes? (2)

C. What is the resistance of the coil? (1)

20. Observe the schematic diagram of an AC generator.



A. Name of the parts P and Q and describe their function. (2)

B. Based on which rule does an AC generator work? Describe. (2)