KCP SIDDHARTHA ADARSH RESIDENTIAL PUBLIC SCHOOL

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UNIT TEST- III 2014 - 2015

Class : XII | Time : 90 Min.
Sub : Physics | Marks : 30

GENERAL INSTRUCTIONS:

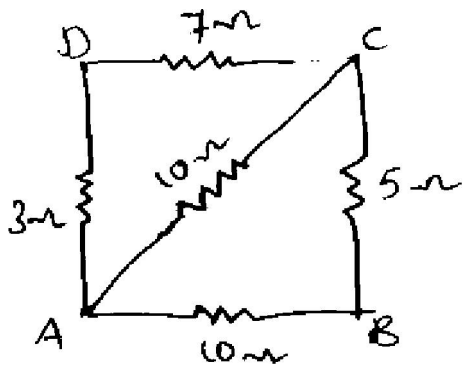
a. Answer all the questions.
b. Questions 1 to 5 are very short answer type carrying 1 mark each.
c. Questions 6 to 8 are short answer type carrying 2 marks each.
d. Questions 9 to 11 are short answer type carrying 3 marks each.
e. Questions 12 to 13 are long answer type carrying 5 marks each.
f. There is no overall choice. However, an internal choice has been provided in 5 marks questions.

1. Which of the two has greater resistance:

   1 kw electric heater or a 100 W tungsten bulb, both marked 230 V.

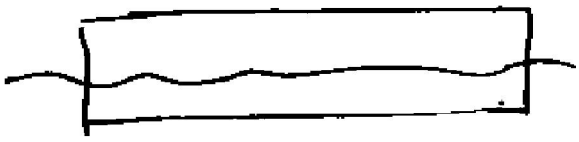
2. Write two factors on which the internal resistance of a cell depends?

3. The resistances connected are shown in fig. What is the equivalent resistance between points A&B.

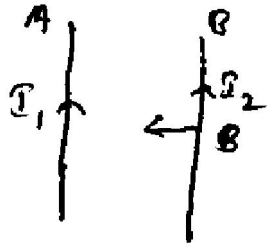


4. Sketch the magnetic field lines for a current carrying circular loop?

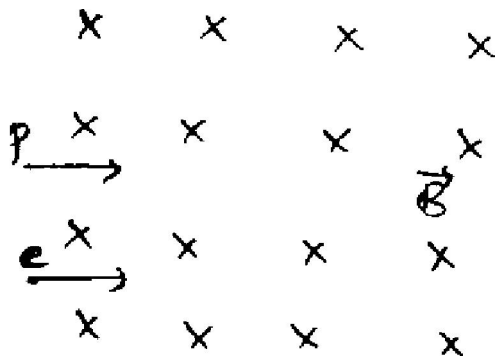
5. A bar magnet of pole strength m and magnetic moment M is cut as shown in fig. below. What are the new values of pole strength and magnetic moment.



6. Explain why two straight parallel conductors carrying current in same direction attract each other.



7. An electron and a proton enter a region of uniform magnetic field B with uniform speed V, in a perpendicular direction (fig.).



   i) Show the trajectories followed by two particles.

   ii) What is the ratio of radius of circular paths of electron to proton

8. A negligibly small current is passed through a wire of length 15 m and uniform cross section $6x10^{-7} m^2$ and its resistance is measured to be 5 Ω. What is the resistivity of the material at the temperature of the experiment?

9. What is parallel connection? Derive the equation of the total resistance of a circuit if three resistors are connected in parallel?

10. Explain the torque acting on a rectangular loop placed in a uniform magnetic field?

11. Derive the time period of rotation of a dipole in a uniform magnetic field?

12. Using the principle of Wheatstone Bridge, describe the method to determine the specific resistance of a wire in the laboratory. Draw the circuit diagram and write the formula used. Write any two important precautions you would observe while performing the experiment?

(or)

Draw the circuit diagram of a potentiometer which can be used to determine the internal resistance (r) of a given cell of emf (E). Explain with the help of this diagram describe a method to find the inernal resistance of a primary cell.

13. a) With the help of a diagram, explain the principle and working of a moving coil galvanometer.

   b) What is the importance of a radial magnetic field and how is it produced.

(or)

Distinguish the magnetic properties of dia, para and ferromagnetic substances in terms of

i) Susceptibility (ii) Magnetic permeability (iii) Magnetic moment

Give an example of each of these materials. Draw the field lines due to an external magnetic field near a (i) diamagnetic (ii) paramagnetic substance