

**FIRST SEMESTER EXAMINATION**

Time : 2 Hrs.]

Class : 9<sup>th</sup>

[Total Marks : 40

**Subject : Science & Technology Part - I**

Note : (i) All questions are compulsory. (ii) Use of calculator is not allowed. (iii) The numbers to the right of the questions indicate full marks. (iv) In case of MCQs. Q.1.(A) only the first attempt will be evaluated and will be given credit. (v) For every MCQs, the correct alternative a, b, c, d with sub-question number is to be written as an answer. e.g. (1) a, (2) b, (3) c (vi) Scientifically correct, labelled diagrams should drawn wherever necessary.

**Q.1. (A) Choose correct multiple choice questions. (5)**

(1) According to Newton's first equation of motion formula is b.....

(a)  $S = ut + \frac{1}{2}at^2$

(b)  $V = u + at$

(c)  $V^2 = u^2 + 2as$

(d)  $a = \frac{v-u}{t}$

(2) Joule is the unit of .....

(a) force

(b) work

(c) power

(d) energy

(3) The direction fo current flow is always from .....

(a) -ve to +ve end

(b) +ve end to -ve end

(4) Molecular mass of  $KNO_3$  is .....

(Atomic masses :  $K_{(39)}$ ;  $N_{(14)}$ ;  $O_{(16)}$ ).

(a) 69

(b) 96

(c) 76

(d) 101

(5)  $p^H$  of lime water is 11.0, so it is .....

(a) strong acid

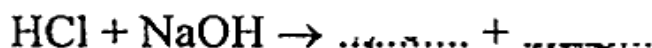
(b) strong base

(c) weak acid

(d) weak base

**(B) Answer the following questions.**

(1) Complete the reaction. (1)



(2) Give two examples of bivalent acidic radicals. (1)

(3) Match the following. (2)

'A'

'B'

(i) Free electrons

(a)  $V/R$

(ii) Current

(b) Increase the resistance  
in the circuit

(iii) Resistivity

(c) Weakly attached

(iv) Resistance in series

(d)  $VA / LI$

(4) Write the law of conservation of energy. (1)

**Q.2.(A) Give scientific reason. (Any TWO) (4)**

(1) The velocity of an object at rest is considered to be uniform.

(2) Why do the balls cover the same distance on rolling down?

(3) Why the devices using at home are connected in parallel?

**(B) Answer the following questions. (Any THREE): (6)**

(1) What is meant by Unified Atomic mass.

(2) When two drops of the indicator phenolphthalein were added to 10 ml solution of sodium hydroxide what changes will you see? reason?

(3) The resistance of a conductor of length  $x$  is  $r$ . If its area of cross section is  $a$  what is its resistivity? What is its unit?

(4) Write difference between potential energy and kinetic energy.

(5) An athlete is running on a circular track the runs a distance of 400 m in 25 sec. before returning to his original position. What is his average speed and velocity?

**Q.3. Answer the following questions. (Any FIVE) (15)**

(1) A person swims 100 m in the first 40 s, 80 m in the next 40 s and 45 m in the last 20 s. What is the average speed?

- (2) Derive the formula for the kinetic energy of an object of mass  $m$ , moving with velocity  $v$ .
- (3) Determine the resistance of a copper wire having a length of 1 km and diameter of 0.5 mm.
- (4) The following table shows current in amperes and potential difference in volts.

V	I
4	9
5	11.25
6	13.5

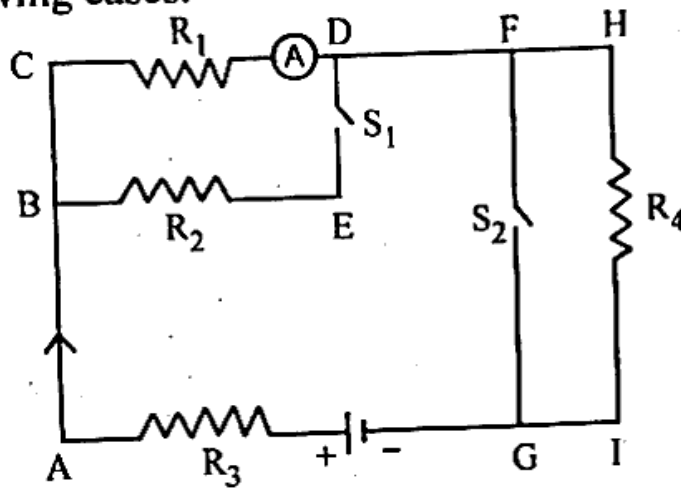
- (i) Find the average resistance.
- (ii) What will be the nature of graph between the current and potential difference?
- (iii) Which law will the graph prove.
- (5) (i) Write relationship between joule and erg.  
(ii) Write the unit of force in CGS system.
- (6) Draw distance-time graph for non-uniform motion.

Time (second)	Distance (metre)
0	0
5	7
10	12
15	20
20	30
25	41
30	50

- (7) Write difference between acids and bases. Write chemical reaction of neutralization.
- (8) Draw diagram of resistors in parallel.

**Q.4. Answer the following question. (Any ONE) (5)**

**(A)** Resistances  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$  are connected as shown in figure,  $S_1$  and  $S_2$  are two keys. Discuss the current flowing in the circuit in the following cases.



- Both  $S_1$  and  $S_2$  are closed.
- Both  $S_1$  and  $S_2$  are open.
- $S_1$  is closed but  $S_2$  is open.

**(B) Activity :**

- Take two aluminium channels of different lengths.
- Place the lower ends of the channels on the floor and hold their upper ends at the same height.
- Now take two balls of the same size and weight and release them from the top ends of the channels. They will roll down and cover the same distance.

**Questions :**

- At the moment of releasing the balls, which energy do the balls have?
- As the balls roll down which energy is converted into which other form of energy?
- Why do the balls cover the same distance on rolling down?
- What is the form of the eventual total energy of the ball?
- Which law related to energy does the above activity demonstrate?