

**Science and Technology 1**

**2009 October**

**School Level 10th SSC**

**Board Exam**

**Maharashtra State Board**

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# SCIENCE - I

Time : 2 Hrs.) **Question Paper : September 2009** (Max. Marks : 40)

Note : See to Question Paper March 2009.

**Q. 1 : (A) Four incomplete statements are given below. Complete them by choosing the proper alternatives from those given below and rewrite the complete statement in your answerbook. (2)**

(i) In the CGS system, the unit of specific heat capacity is ....

- (a) kcal / kg°C      (b) cal / kg°C      (c) cal / g°C      (d) kcal / g°C

(ii) The modern periodic table is based on ....

- (a) the principle of octaves      (b) the atomic number of elements  
(c) the atomic mass of elements      (d) the presence of triads of elements

(iii) The apparent depth of an object placed in a denser medium and seen through a rarer medium is ....

- (a) greater than the real depth      (b) less than the real depth  
(c) equal to the real depth      (d) double its real depth

(iv) The stored ability to do work is called as ....

- (a) energy      (b) force      (c) power      (d) momentum

**(B) Match the items in Column 'A' with their appropriate items in Column 'B' and write correct pairs in your answerbook. (2)**

Column A	Column B
(i) Heating effect of electric current	(a) natural geysers
(ii) Wind energy	(b) electric bell
(iii) Magnetic effect of electric current	(c) electric iron
(iv) Geothermal energy	(d) winnowing

**(C) Read the following sentences carefully and answer in the True or False form : (2)**

- (i) In modern periodic table, halogens are placed in group 17.  
(ii) Carbon dating technique is used to find the percentage of carbon in atmosphere.  
(iii) The velocity of sound is the lowest in liquids.  
(iv) In cold countries the crumbling of the rock is due to an anomalous behavior of the water.

**(D) Identify the odd one of the following group. (2)**

- (i) Stretched bow, Bullet fired from a gun, Flowing water, Flying aeroplane.  
(ii) Sitar, Harmonium, Trumpet, Flute.  
(iii) Short-sightedness, Long-sightedness, Presbyopia, Colour-blindness.  
(iv) Uranium, Thorium, Radium, Sodium.

**Q. 2. (A) Give scientific reasons. (Any Two) (4)**

- (i) Glucose is non-electrolyte. (ii) Ice floats on water. (iii) The filament of an incandescent lamp is made of tungsten. (iv)  $\gamma$ -radiations are not deflected by electric or magnetic field.

**(B) Distinguish between the following pairs. (Any Two) (4)**

**(Write only two points of distinction for a pair.)**

- (i) Potential energy and Kinetic energy.      (ii) Gaseous fuels and Solid fuels.  
(iii) Energy and Power.      (iv) s-block elements and p-block elements

**Q. 3. (A) Solve the following examples. (Any Two) (4)**

- (i) What is the power used by a microwave oven if 0.15 kW.hr of energy is used in 20 minutes?  
(ii) Find the resistance of a 60 W, 240 V bulb.  
(iii) An energy of 2J is used to lift a block of 0.5 kg. How high will it rise? (Take  $g = 10 \text{ m/s}^2$ )  
(iv) 0.4 g of NaOH is dissolved in one litre of solution. 15 ml of this solution requires 10 ml of HCl for complete neutralization. Calculate the normality of the HCl solution.

(Equivalent weight of NaOH = 40)

**S.S.C. Question Paper Sept. 2009 ⇒ Science and Technology - I**

- (B) Answer any one of the following questions : (4)**
- (i) What is noise pollution? State any three adverse effects of sound pollution.
  - (ii) What is refraction of light? State the laws of refraction of light.
- Q. 4. (A) Draw neat and labelled diagrams. (Any Two) (4)**
- (i) Production of X-rays. (ii) Motion of free electrons when a circuit is set up in the metal.
  - (iii) Hope's apparatus.
  - (iv) Ray diagram when an object is placed between  $F_1$  and  $2F_1$  of a convex lens.
- (B) Answer the following : (Any One) (4)**
- (i) Deduce normality equation. (ii) State Ohm's law. Define ohmic conductors and non-ohmic conductors. Also give one example of each.
- Q. 5. (A) Answer the following questions in short. (Any Four) (4)**
- (i) What is the least distance of distinct vision?
  - (ii) Concentration of which should be high for proper functioning of living cells?
  - (iii) State the number of groups and periods in the modern periodic table.
  - (iv) State two general precautions for safety while using an electrical appliance.
  - (v) State two uses of solar cells.
  - (vi) What is meant by blind-spot?
- (B) Answer the following : (Any One) (4)**
- (i) Which column is known as zero group in the modern periodic table? Write names of any four elements in this group. Why do zero group elements not take part in chemical reactions?
  - (ii) Define electrolysis. Write cathode and anode reactions in case of electrolysis of copper chloride. State two industrial applications of electrolysis.