SCIENCE AND TECHNOLOGY - I

Time : 2 Hrs) **QUESTION PAPER : OCTOBER 2011** **(Max. Marks : 40**

Note : Please Refer to All Notes Q. P. March 2008.

Q. 1. (A) Rewrite the following statements by choosing the correct option :

(i) Basicity of acid dependds on .....

(a) numbers of H^+ ions it produces (b) number of OH ions it produces

(c) both H^+ and OH ions it produces (d) its solubility in water.

(ii) The spots are sources of ..... energy.

(a) Wind (b) Geothermal (c) Nuclear (d) Hydroelectric

(iii) 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

(iv) Sound energy is transmitted in the form of ..... waves.

(a) longitudinal (b) electromagnetic

(c) transverse (d) photoelectric

(B) Consider the relation between columns I and II and fill in the column IV to match the column III :

Column I	Column II	Column III	Column IV
(i) Wind	Kinetic energy	Water in dam	.....
(ii) Frequency of Sound	Hertz	Intensity of Sound	.....
(iii) Kerosene	0.52 kcal/kg°C.	Water	.....
(iv) Becquerel rays	Becquerel	X-rays	.....

(C) State whether the following statements are true or false :

(i) Convex lens is a diverging lens. (ii) The efficiency of chulha is less than 15%

(iii) Energy is vector quantity. (iv) Specific heat capacity is different for different substances.

(D) Identify the odd one out : **(2)**

(i) Boron, Silicon, Potassium, Polonium, (ii) Apsara, Tarapur, Cirus, Zerlina.

(iii) NaOH, HNO_3, H_2SO_4, CH_3COOH. (iv) Wood, Coal, Petrol, Coke.

Q. 2. (A) Give scientific reasons (any two) :

(i) Fuse is made up of material having low melting point.

(ii) We use a pulley to draw water from the well.

(iii) Curved boards are placed behind a speaker in an auditorium.

(iv) The commercial unit of power is different from the SI unit.

(B) Write short notes on (any two) :

(i) Halogen group elements.

(ii) Law of Conservation of energy (state, explain and give one example)

(iii) Chain Reaction (Diagram not essential) (iv) Arrhenius theory of Acid and Base.

Q. 3. (A) Solve the following numericals (any two) : **(4)**

(i) If mass of solute in the solution is 5 gm and volume of the solution is 250 ml, find the normality of NaOH solution. (Equivalent weight of NaOH = 40)

(ii) An energy of 2J is used to lift a block of 0.5 kg. How high will it rise ? (Take g = 20 m/s^2).

(iii) What is the power used by a microwave oven if 0.15 kWhr of energy is used in 20 minutes ?

(iv) Half life of polonium is 3 minutes. What is the fraction of radioactive substance after 12 minutes ?

(B) Answer any one of the following. : **(4)**

(i) What is superconductor ? What is critical temperature ? Give four uses of superconductor.

(ii) State any four general precautions for safety with respect to electricity.

Q. 4. (A) Draw neat and labelled diagrams of any two of the following :

(i) Verification of Ohm's law. (ii) Solar water heater.

(iii) Propagation of sound waves need a medium. (iv) Dispersion of light by a prism.

(B) Answer any one of the following : **(4)**

(i) Mention the four blocks of periodic table based on the electronic configuration of elements.

Give one characteristic of each.

(II) Name the four defects of vision and state how they can be corrected. (Diagram not essential)

Q. 5. (A) Answer any four of the following : **(4)**

(I) Define "Electrodes". (ii) Give two examplesof strong bases.

(III) What is Chromatic aberration ? (iv) Which are the two ways to obtain nuclear energy ?

(v) State modern periodic law (vi) Which laser is used in the treatment of secondary cataract ?

(B) Answer any one of the following : **(4)**

(I) Explain anomalous behaviour of water. Give two examples.

(ii) What is electroplating ? Describe the process of ele troplating with the help of diagram.