SCIENCE AND TECHNOLOGY (PART I)

Time : 2 Hours) QUESTION PAPER : MARCH-2010 (Max. Marks : 40

Q. 1. (A) Rewrite the following statements by selecting the correct options. (2)
(i) Halogens belong to .... group in the modern periodic table.
(a) 15   (b) 16   (c) 17   (d) 18
(ii) Unit of intensity of sound is ....
(a) m/s   (b) Watt   (c) Decibel   (d) Hertz
(iii) From the following substances .... substance is used as insulation.
(a) Iron   (b) Copper   (c) Gold   (d) Plastic
(iv) The temperature at which air becomes saturated with water vapour is called ....
(a) a dew point   (b) a freezing point   (c) a melting point   (d) a boiling point

(B) Rewrite the second column so as to match the first column. (2)

Column I	Column II
(i) Atom bomb	(a) Wind energy
(ii) Solar energy	(b) Geothermal energy
(iii) Winnowing	(c) Nuclear fusion
(iv) Magma	(d) Nuclear fission
	(e) Tidal energy

(C) State whether the following statements are true of false. (2)
(i) The direct current always flows in one direction.
(ii) Velocity of sound is different in different media.
(iii) Anomalous behaviour of water can be studied by calorimeter.
(iv) Total energy of an isolated system is constant.

(D) Identify the odd one out. (2)
(i) Boron, Silicon, Potassium, Polonium.
(ii) Telephone earpiece, Electric bell, Electromagnet, Battery.
(iii) Ammeter, Voltmeter, Galvanometer, Thermometer.
(iv) A bullet fired from a gun, Running water, Water stored in a dam, Wind.

Q. 2. (A) Give scientific reasons. (Any two) (4)
(i) In winter, the pipeliness carrying water burst in cold countries.
(ii) Filament of incandescent lamp is made of tungsten.
(iii) Electric fan blades rotate when we put the switch on.
(iv) We have to search for new renewable energy sources.

(B) Answer the following questions. (Any two) (4)
(i) Write difference between Transition and Inner transition elements. (Any two points)
(ii) Write any two precautions while using electrical appliances.
(iii) State the law of conservation of energy.   (iv) Define the power and state its SI unit.

Q. 3. (A) Solve the following numerical problems. (Any two) (4)
(i) Calculate the volume of 0.2 N NaOH used for complete neutralisation of 8 ml of 0.1 N H_2SO_4.
(ii) A 30 HP car is moving with a uniform velocity of 54 km/hr. Find the forward force exerted by its engine.
(iii) An atom of Uranium $^{235}_{92}U$ is converted into Lead $^{207}_{82}Pb$ by successive radioactive transformations. If in this transformation 7α (alpha) are emitted, how many β (beta) particles will be emitted along with a particles ?
(iv) Two thin lenses of focal length +4 and -2 m are placed in contact. Find the power of the combined lens.

(B) Answer any one question. (4)
(i) Describe the four blocks of the periodic table based on the electronic configuration of elements.
(ii) What is noise pollution ? Describe any three measures to control noise pollution.

Q. 4. (A) Draw and label the diagram. (Any two) (4)
(i) Production of α, β and γ radiations.   (ii) Simple microscope (Ray diagram).
(iii) Electrolysis of copper chloride using carbon electrodes.
(iv) Hope's apparatus.

(B) Answer any one question. (4)
(i) Explain with the help of a diagram the working of electric bell.
(ii) What is hypermetropia ? How can it be corrected ? Explain with figure.

Q. 5. (A) Answer the following questions in short. (Any four) (4)
(i) What are ohmic conductors ?
(ii) Give two names of sub-atomic particles with charge +ve.
(iii) What is chromatic aberration ?
(iv) Mention any two applications of heating effects of electric current.
(v) Write any two examples of biofuels.
(vi) Which technique is used to make the aluminium surface resistant to corrosion and abrasion ?

(B) (i) Explain electroplating with the help of the following points : (4)
(a) Definition   (b) The process   (c) Use   **OR**
(ii) Obtain an expression for equivalent resistance of three resistances connected in series combination.