Science and Technology 1

2008 March

School Level 10th SSC

Board Exam

Maharashtra State Board

shaalaa.com

Date- 14/3/2008

SCIENCE AND TECHNOLOGY PAPER- I

Time : 2 Hours) **Question Paper - March 2008** (Max. Marks : 40

Note : (i) All questions are compulsory., (ii) All questions carry equal marks.
(iii) Draw diagrams wherever necessary.

Q. 1. (A) Rewrite the following statements by choosing the correct option : (2)

(i) The ..... period is the longest period in te modern periodic table.
(a) 1st; (b) 5th; (c) 6th; (d) 7th

(ii) The quantity of heat generated in a conductor depends on .....
(a) square of the current (I^2); (b) resistance of the conductor (R);
(c) time for which the current flows (t); (d) I^2Rt.

(iii) The process of splitting of a heavier nucleus into lighter nuclei together with release of energy is called .....
(a) nuclear fusion; (b) combination reaction;
(c) chemical reaction; (d) nuclear fission.

(iv) A convex lens forms a virtual image of an object placed .....
(a) at infinity; (b) between F_1 and the optical centre O;
(c) at $2F_1$ (d) at F_1

(B) Rewrite the Column II so as to match the Column I : (2)

Column 'I'	Column 'II'
(i) Lithium	(a) Treatment of tumor
(ii) Fuse wire	(b) Group I-A
(ii) Radioactive isotope	(c) Spots
(iv) Geothermal energy	(d) Heating effect of electric current
	(e) Group II-A

(C) State whether the following statements are True or False : (2)

(i) Concave lens is called a diverging lens.
(ii) Anomalous behaviour of water can be studied by calorimeter.
(iii) S.I.Unit of energy is erg.
(iv) Ultrasound is commonly used in an orchestra.

(D) Fill the blanks and rewrite the completed statements : (2)

(i) A ball thrown upwards will continue to go up till it has ..... velocity.
(ii) Intensity of sound is measured in ..... units.
(iii) At dew point relative humidity is .....
(iv) Wind mill converts wind energy into ..... energy.

Q. 2. (A) Give scientific reasons (any two) : (4)

(i) Copper is found to get deposited at the cathode when current is passed through aqueous copper chloride.
(ii) When a compass needle is kept near a wire conducting current, it is deflected.
(iii) Mini hydroelectric power stations are preferred.
(iv) During cold nights, sometimes dew is formed.

(B) Distinguish between the following pairs (any two) : (Give two pionts of distinction) (4)

(i) s-block elements and p-block elements; (ii) Normality and Molarity.
(iii)Energy and Power; (iv) Kinetic energy and Potential energy.

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

(i) Find the resistance of a 20 W, 240 V bulb.
(ii) An object of mass 10kg is lying 25m above the ground. Calculate the potential energy possessed by the object. ($g = 9.8\ m/s^2$)
(iii) If a 100 W electric bulb is lighted for 8 hours, how much electrical energy is consumed ?
(iv) An atom of uranium $^{235}_{92}U$ is converted in to lead $^{207}_{82}Pb$ by successive radioactive transfor mations. If in this transformation seven α particles are emitted, how many β particles will be emitted along with α particles ?

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

(i) Mention the four types of elements of the periodic table based on the electronic configura tion of element and give one characteristic of each.

(ii) What is electroplating ? Explain the process. Give two uses of electroplating. (Diagram not necessary)

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

(i) Connection diagram of three resistances in series.

(ii) Experiment of specific heat capacity with three solid spheres.

(iii) Simple microscope, with eye focussed on near point. (Ray diagram)

(iv) Production of cathode rays.

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

(i) What is sound pollution (noise) ? Describe any three measures to control noise pollution.

(ii) What is myopia ? How does it occur ? How can it be corrected? Explain with figure.

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

(i) Why is 'Anodising Technique' used ? (ii) What is a solenoid ?

(iii) Name the physical states of halogens under ordinary conditions.

(iv) What is the position of image when an object is placed at the focus F_1 of a convex lens ?

(v) Why is bio-diesel used as a substitute fuel for diesel in diesel engine ?

(vi) What is the power of a convex lens having focal length 0.5 m ?

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

(i) Derive the normality equation .

(ii) What is non-ohmic conductor ? Explain with the help of two examples.