Paper Set : SET-I(HT)	**SUBJECT : Science & Technology I**	Max Marks : 40
	SSC Board - Sample Paper - 1	Duration : 2 Hrs.

Q.1 (A) Choose the correct alternative and rewrite the statement: **[5]**

i. The SI unit of weight is

(a) kilogram   (b) gram   (c) Newton   (d) Pound

ii. What is the valency of oxygen ? **[1]**

(a) 2   (b) 6   (c) 8   (d) 0

iii. .... is used to make a solenoid-type coil in an electric bulb.

(a) Silver   (b) Iron   (c) Tungsten   (d) Copper

iv. A ray of light changes its path when it passes obliquely from one medium to another because

(a) the speed of light changes   (b) the frequency of light changes

(c) the intensity of light changes   (d) the wavelength of light changes

v. The structural formula of aldehyde is .... **[1]**

(a) $\overset{\text{O}}{\underset{\;}{\overset{\|}{-C-}}}$ (b) $\overset{\text{O}}{\overset{\|}{-C-H}}$ (c) $\overset{\text{O}}{\overset{\|}{-C-OH}}$ (d) $\overset{\text{O}}{\overset{\|}{R-C-R}}$

Q.1 (B) Solve the following questions : **[5]**

i. Acceleration due to gravity is the highest at ....

ii. Write electronic configuration of Al .... **[1]**

iii. Select odd one out : **[1]**

    $NaOH, HCl, H_2SO_4, HNO_3, CH_3COOH$

iv. State whether the following is true or false. If false, state the reason.

In India, the frequency of alternating current is 50 Hz.

v. Electric iron : Heating effect of electric current : : Electric generator : ....

Q.2 (A) Solve the following questions (Any 2) **[10]**

i. Explain the following periodic trends : **[2]**

    a. Atomic Radii   b. Metallic property

ii. Velocity of light in a medium is 2×10^8 m/s. What is the refractive index of the medium w.r.t. air ? (Velocity of light in air = 3×10^8 m/s)

iii. Define : a) Radii of curvature of a lens

           b) Principal axis of a lens

Q.2 (B) Solve the following questions (Any 3)

i. What is balance reaction ? Why balancing a reaction is important? **[2]**

ii. Write a short note on navigational satellites.

iii. What is meant by vinegar and gasohol ? What are their uses?

iv. Define lens. Which type of lens is used to correct hypermetropia?

v. Write a note on medium earth orbit satellite.

Q.3 Solve the following questions (Any 5) **[15]**

i. Show that gravitational force $F \propto \dfrac{1}{r^2}$. [3]

ii. If water of mass 40 g and temperature 55^0C is mixed with water of mass 10 g and temperature 20^0C, what will be the maximum temperature of the mixture ? [3]

iii. When an object of height 4 cm is placed in front of a convex lens, the height of the image is found to be 6 cm. State the nature and position of the image. Give reason for your answer.
[3]

iv. What is critical angle ? If the refractive index of air w.r.t. water is 0.5, then find the critical angle? [3]

v. Write the structural formula for following IUPAC names : [3]

   a. Ethanol   b. Butane   c. Propanoic acid

vi. What is redox reaction ? Give example of it. [3]

vii. What is esterification reaction. Explain with help of example. Give 2 uses of ester. [3]

viii. What is the difference between overloading and short circuiting? [3]

Q.4 Solve the following questions (Any 1) **[5]**

i. Give one balanced chemical reaction of the following :

   a. Combination reaction   b. Double displacement reaction

   c. Decomposition reaction   d. Exothermic reaction

   e. Endothermic reaction

ii. A) What is the periodic time in India ?

   B) A potential difference of 220 V is applied across a resistance of 1200 Ω in an electric iron. Find the

   a. Current   b. Heat produced in 10 seconds.