Maharashtra State Board
Class X Science and Technology Part-I
Question Paper Set-2

Time : 2 Hrs **Marks : 40**

Instructions :

1. It is necessary to solve all the questions.
2. Draw neat and labelled diagrams wherever necessary.
3. Start every new main question on separate page.
4. Figures on the right indicate marks.
5. For each Multiple Choice Question (1.B), ONLY first answer will be considered.
6. Write answer of each MCQ with option number.

Eg. i) a. ……. ii) c. …….

Q. 1 A) Solve the following questions. **05**

i) If $g = GM/r^2$ then where will the value of g be high at Goa Beach or on top of Mount Everest?

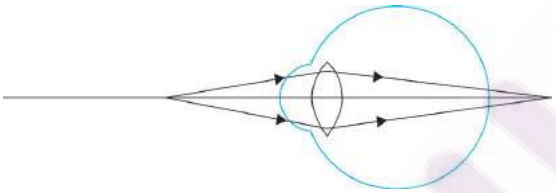
ii) Identify from the following reactions the reactants that undergo oxidation and reduction?

$$Fe + S \longrightarrow FeS$$

iii) Find the odd one out and justify it.

Fuse wire, M.C.B., Rubber Gloves, Generator

iv) Name the defect shown in the diagram.



v) Molecular formula of Propane is C_3H_8, write the structural formula of propane.

B) Choose and write the correct option. **05**

(i) The halogen which is liquid at room temperature is .....

a) fluorine b) astetine c) bromine d) iodine

(ii) Which of the following process to be carried out to avoid the formation of greenish layer on brass vessels due to corrosion?

a) plating b) anodization c) tinning d) alloying

(iii) What type of reaction is shown below?

$$CH_4 + Cl_2 \xrightarrow{\text{Sunlight}} CH_3 - Cl + HCl$$

a) Addition b) Substitution c) Decomposition d) Reduction

(iv) The temperature of ice can be decreased below 0^0C by mixing ..... in it.

a) saw dust b) sand c) salt d) coal

(v) The image obtained while finding the focal length of convex lens is .....

a) a real and erect. b) virtual and erect.

c) real and inverted. d) virtual and inverted.

Q.2 Solve ANY FIVE from the following questions. **10**

i) Observe the following reaction and answer the following questions.

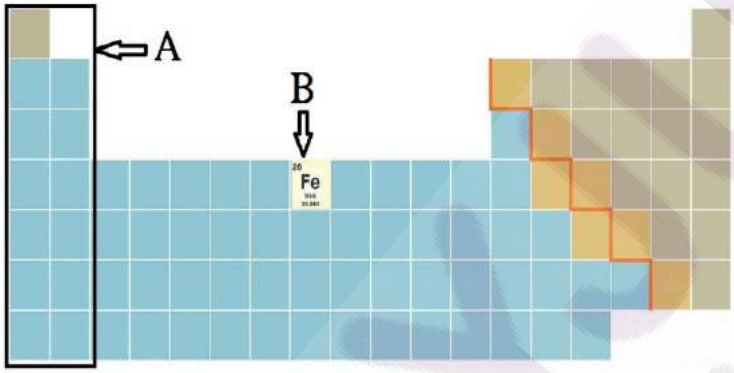
$CuSO_4$ (aq) + Fe (s) $\longrightarrow$ $FeSO_4$(aq) + Cu (s)

a) Identify and write the type of chemical reaction.

b) Write the definition of above reaction.

ii) Light travels with a velocity 1.5 x 10^8 m/s in a medium. On entering second medium its velocity becomes 0.75 x 10^8 m/s. What is the refractive index of the second medium with respect to the first medium?

iii) Observe the figure and answer the following questions.



a) Identify the block shown by box A and write an electronic configuration of any one element of this block.

b) Identify the block of element denoted by letter B and write its period number.

iv) Write the IUPAC names of following hydrocarbons.

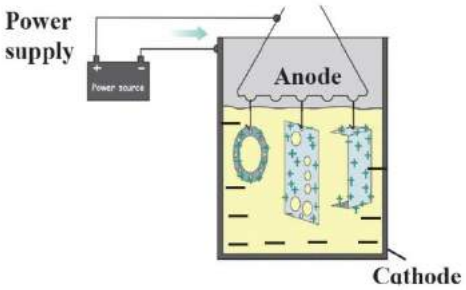
a) CH_3-CHOH-CH_3

b) CH_3-CH_2-COOH

v) Why does tungsten metal used to make solenoid type coil in an electric bulb?

vi) Mahendra and Virat are sitting at a distance of 1 metre from each other. Their masses are 75 kg and 80 kg respectively. What is the gravitational force between them? G = 6.67 x 10^{-11} Nm^2/kg^2

vii) Identify the process shown in the diagram and explain it in short.



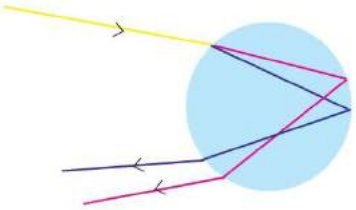
Q.3 Solve ANY FIVE from the following questions. **15**

i) Observe the given figure and answer the following questions.

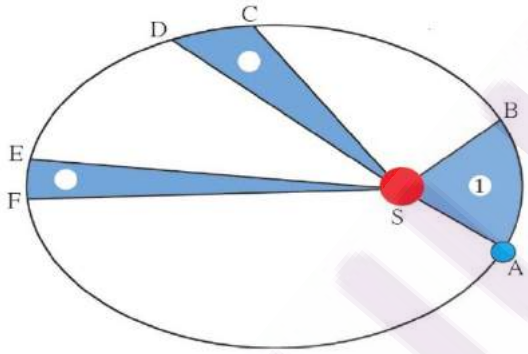
a) Identify and write the natural process shown in the figure.

b) List the phenomena which are observe in this process.

c) Redraw the diagram and show above phenomena in it.



ii) Identify the law shown in the figure and state three respective laws.



iii) An element has its electron configuration as 2,8,8,2. Now answer the following questions.

a) What is the atomic number of this element?

b) What is the group of this element?

c) To which period does this element belong?

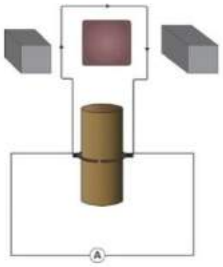
iv) Write the importance of artificial satellites in your words.

v) Observe the figure and answer the following questions.

a) Identify the machine shown in figure.

b) Write a use of this machine.

c) How transformation of energy takes place in this machine.



vi) Balance the following equation stepwise.

$$NaOH + H_2SO_4 \longrightarrow Na_2SO_4 + H_2O$$

vii) Identify the process given in following passage and draw neat labelled diagram showing the process.

Electrolysis of molten mixture of alumina (melting point > 2000^0C) is done in a steel tank. The tank has a graphite lining on the inner side. This lining does the work of a cathode. A set of graphite rods dipped in the molten electrolyte works as anode. Cryolite (Na_3AlF_6) and fluorspar (CaF_2) are added in the mixture to lower its melting point upto 1000^0C.

Q.4 Solve ANY ONE from following questions. 05

i) Read the following paragraph and answer the questions.

If heat is exchanged between a hot and cold object, the temperature of the cold object goes on increasing due to gain of energy and the temperature of the hot object goes on decreasing due to loss of energy.

The change in temperature continues till the temperatures of both the objects attain the same value. In this process, the cold object gains heat energy and the hot object loses heat energy. If the system of both the objects is isolated from the environment by keeping it inside a heat resistant box, then no energy can flow from inside the box or come into the box.

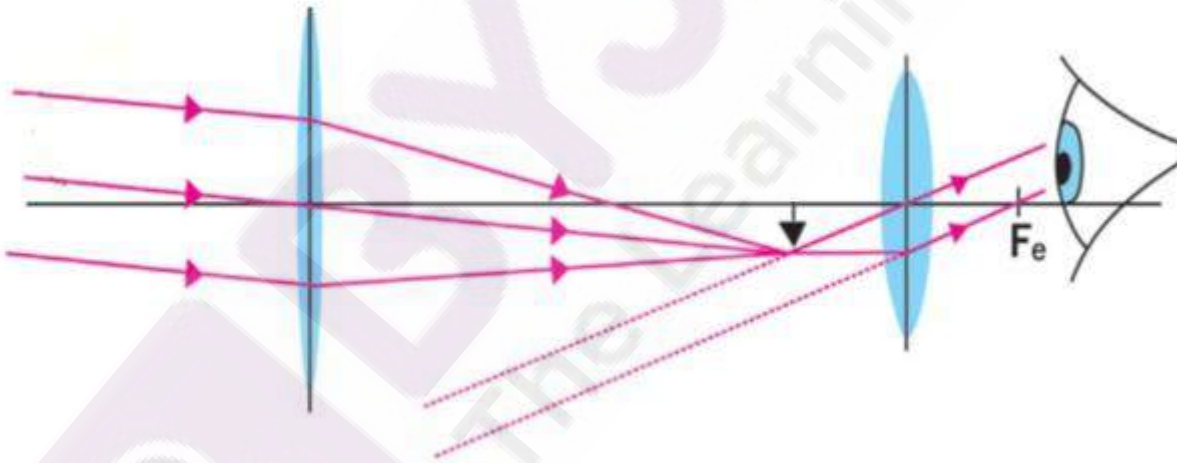
a) Heat is transferred from where to where? 01

b) Which principle do we learn about from this process? 01

c) How will you state the principle briefly? 02

d) Which property of the substance is measured using this principle? 01

ii) Observe the following figure and answer the questions.



a) Which optical instrument shows arrangement of lenses as shown in the figure? 01

b) Write in brief the working of this optical instrument. 02

c) How can we get different magnifications in this optical instrument? 01

d) Draw the figure again and labelled it properly 01