17103

14115

2 Hours / 50 Marks **Seat No.** | | | | | | | | |

Instructions : (1) All Questions are *compulsory*.

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

Marks

1. Attempt any NINE of the following : **2 × 9 = 18**

(a) Define Orbit and Orbital.

(b) State the number of sub-shells in K, L, M, N shells.

(c) State Hund's rule of maximum multiplicity.

(d) State any two points of Arrhenious theory of ionization.

(e) Define degree of Ionization. Name the factors affecting degree of Ionization.

(f) Differentiate between strong eletrolytes & weak electrolytes.

(g) Calculate the pH of a solution which contains 1.54×10^{-2} mole/lit of strong acid.

(h) Define the terms : Tensile strength, Ductility.

(i) Write the two purposes of making alloys with one example each.

(j) Define flux and slag.

(k) Give four examples of synthetic rubber.

(l) Write two applications of thermosetting plastics.

2. Attempt any FOUR of the following : **4 × 4 = 16**

(a) Define atom & state fundamental particles of an atom with their properties.

(b) State Aufbau principle. Write electronic configuration of $_{19}K^{39}$, $_{11}Na^{23}$

(c) Describe the formation of $CaCl_2$ with diagram and predict valency of Ca and Cl.

(d) State Faraday's laws of electrolysis.

(e) Describe with labelled diagram the process of electroplating of silver.

(f) A given quantity of electricity is passed through two cells containing $CuSO_4$ and $AgNO_3$ solutions respectively. If 0.99 gm of silver and 0.29 gm of copper are deposited, find the equivalent weight of silver when that of copper is 31.6.

3. Attempt any FOUR of the following : **4 × 4 = 16**

(a) With the help of figure explain the Froth Floatation process.

(b) Differentiate calcination and roasting.

(c) Give the composition, properties and applications of Babbit metal.

(d) Define polymerization. Explain addition polymerization with at least one example.

(e) Define abrasion resistance. Write two uses of rubber depending upon it.

(f) Write the properties and applications of thermocole.

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