

17103

21718

2 Hours / 50 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
  - (2) Answer each next main Question on a new page.
  - (3) Illustrate your answers with neat sketches wherever necessary.
  - (4) Figures to the right indicate full marks.
  - (5) Assume suitable data, if necessary.
  - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.

**Marks**

1. Attempt any NINE of the following :

2 × 9 = 18

- (a) State two postulates of Bohr's atomic model.
- (b) Define Isotopes. Give two applications of carbon isotopes.
- (c) Define : (i) Valency (ii) Valence electrons.
- (d) Define Electrolyte. Write its types.
- (e) Why the blue colour of  $\text{CuSO}_4$  turns colourless during electrolysis of  $\text{CuSO}_4$  solution by platinum electrode.
- (f) State Faraday's first law of electrolysis.
- (g) State the factors affecting degree of ionization.
- (h) Define : (i) Ore (ii) Flux
- (i) Give composition of Duralumin.
- (j) Give the classification of Alloys with example of each.
- (k) Define : (i) Plastics (ii) Polymers.
- (l) Distinguish between natural rubber and synthetic rubber.

[1 of 2]

P.T.O.

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

- (a) Differentiate between orbits and orbitals.
- (b) Write the orbital electronic configuration of the following :
- (i)  $\text{Ne}_{10}^{20}$       (ii)  $\text{Si}_{14}^{28}$       (iii)  $\text{K}_{19}^{39}$       (iv)  $\text{Cu}_{29}^{63}$
- (c) Explain the formation of water molecule and name the type of bonding.
- (d) Define degree of ionization. Explain the effect of concentration and temperature on degree of ionization.
- (e) Explain electro-refining of blister copper.
- (f) A current of 4 amperes flowing for 45 minutes deposits 1.062 gm of metal at cathode. Calculate the equivalent weight of the metal. (Given 1 Faraday = 96500 C)

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

- (a) Draw a stepwise detail flow chart for extraction of metal from its ore.
- (b) Define the terms :
- (i) Hardness                      (ii) Toughness
- (iii) Brazing                      (iv) Machinability
- (c) State the purpose of making alloys, with example of each.
- (d) Differentiate between thermosetting and thermo-softening plastics.
- (e) Write the drawback of natural rubber. Name the method used to overcome these drawback.
- (f) What is glass-wool ? Give its properties and applications.
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