

17325

11920

3 Hours / 100 Marks

Seat No.

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- 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.
 - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.

Marks

1. Attempt any TEN of the following :

20

- (a) Name any two petroleum industry.
- (b) Define normality of a solution.
- (c) Give SI unit of the following :
 - (i) Force
 - (ii) Energy
- (d) Name two operations used for solid-liquid separation.
- (e) Draw the symbol of ball mill.
- (f) Name various modes of heat transfer.
- (g) Explain oxidation with example.
- (h) Explain hydration with example.
- (i) Define conversion of a reaction.
- (j) Give uses of sulphuric acid. (Any Two)
- (k) Convert 100 °F into °C and K.
- (l) Define Viscosity. Give its unit in SI.

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2. Attempt any FOUR of the following :**16**

- (a) Define the following with mathematical expression :
 - (i) Dalton's law
 - (ii) Amagat's law
- (b) Calculate g moles present in 100 gm NaOH.
- (c) Give the advantages of doing size reduction in chemical industry.
- (d) Explain the following with chemical reaction :
 - (i) Nitration
 - (ii) Sulphonation
- (e) Explain block diagram.
- (f) Explain the construction and working of mercury thermometer.

3. Attempt any FOUR of the following :**16**

- (a) A mixture contains 100 gm NaOH and 200 gm Na_2CO_3 . Express the composition of mixture by (i) Weight (ii) Mol.
- (b) Define :
 - (i) Vapour pressure
 - (ii) Partial pressure
- (c) Explain Screening in detail.
- (d) Explain esterification reaction with chemical reaction.
- (e) Give any four properties of sulphuric acid.
- (f) Explain pressure measurement using U-tube manometer.

4. Attempt any FOUR of the following :**16**

- (a) Give the types of chemical industries based on size with examples.
- (b) A solution is prepared by dissolving 200 g NaOH in water to prepare 2 lit. soln. Find normality of the solution.
- (c) Explain distillation in detail.
- (d) With chemical reaction, explain saponification.
- (e) Define :
 - (i) Yield of chemical reaction
 - (ii) Reaction efficiency
- (f) Draw any four personal protective equipments.

5. Attempt any FOUR of the following :**16**

- (a) Convert 0.1 gm/cm^3 into kg/m^3 .
- (b) Convert 100 kg/m. sec into gm/cm. sec.
- (c) Explain gas absorption in detail.
- (d) Give difference between filtration and sedimentation.
- (e) Give properties of nitric acid. (Any Four)
- (f) Draw a neat labelled diagram of Redwood Viscometer.

6. Attempt any FOUR of the following :**16**

- (a) Calculate the weight of 20 k moles of H_2SO_4 .
- (b) Define :
 - (i) Molarity
 - (ii) Molality

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- (c) Explain drying operation in detail.
 - (d) State Bond's law and Kik's law.
 - (e) Give the reactions involved in the manufacture of sulphuric acid.
 - (f) Explain construction of rotameter with a neat diagram.
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