

17423

11819

3 Hours / 100 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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any TEN of the following: 20
- Define - Enthalpy.
 - Describe Isolated system.
 - Define Isochoric process.
 - Define - Degree of freedom.
 - Define - Adsorption Isotherm.
 - State the effect of pH value on corrosion.
 - What is erosion corrosion?
 - Write down uses of Teflon.
 - What is Glass lining?
 - Define electrode potential.
 - State the basic difference between absorption and adsorption.
 - Define system and surrounding.

P.T.O.

- 2. Attempt of FOUR of the following:** **16**
- a) Distinguish between extensive and intensive properties.
 - b) Draw phase diagram for sulphur system and explain in detail.
 - c) Explain Freundlich adsorption isotherm.
 - d) Differentiate between Reversible and Irreversible process.
(Any 4 points)
 - e) Give application of polypropylene and PVC.
 - f) Compare physical and chemical adsorption.
- 3. Attempt any FOUR of the following:** **16**
- a) State -
 - (i) 0th Law of thermodynamics
 - (ii) 3rd Law of thermodynamics.
 - b) Write down the applications of adsorption.
 - c) Explain the mechanism of dry corrosion.
 - d) Derive an expression for work done in an isothermal expansion of a gas.
 - e) Explain in brief Galvanic series of metals.
 - f) Differentiate between Lyophilic and Lyophobic solution.
- 4. Attempt any FOUR of the following:** **16**
- a) Explain in brief rubber lining and state its purpose.
 - b) Give the mathematical statement of Gibb's phase rule and express the terms involved in it.
 - c) Explain electroplating in detail.
 - d) Explain the effect of temperature on corrosion.
 - e) Write names of MOC for storage of -
 - (i) Commercial grade caustic lye
 - (ii) Fuming nitric acid
 - (iii) Lig. NH_3
 - (iv) Methanol

- f) Write composition and uses of -
(i) Cast iron
(ii) Mild steel.

5. Attempt any FOUR of the following: 16

- a) Enlist the different methods to prevent corrosion? Explain any one in detail.
b) Distinguish between cathodic inhibitors and anodic inhibitors.
c) Write down the mathematical expression and statement of 1st law of thermodynamics.
d) Describe in detail water system.
e) Write down the methods of preparations of colloids. Explain one in detail.
f) Explain 'Caustic Embrittlement.'

6. Attempt any FOUR of the following: 16

- a) Give the classification of engineering materials.
b) What is lining? State its importance.
c) Compare SS304 and SS316 on the basis of its composition and use.
d) Explain Homogeneous and Heterogeneous system with example.
e) Write down different statements of 2nd law of thermodynamics.
f) Write down derivation for langmuir adsorption isotherm.
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