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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Eighth Semester, B.E. - Semester End Examination; Aug. / Sep. - 2020

Industrial Chemistry

Time: 3 hrs

Max. Marks: 100

Note: i) Answer **TWO** full questions, selecting **ONE** full question from **UNIT - I** and **UNIT - II**.

ii) Answer any **THREE** full questions, choosing from **UNIT - III**, **UNIT - IV** and **UNIT - V**.

UNIT - I

- 1 a. What are boiler scales? How they are formed? Discuss the ill effects of boiler scales. 7
- b. Explain the desalination of water. Describe the desalination of sea water by reverse osmosis. 7
- c. Discuss the determination of total hardness of water by EDTA method. 6

OR

- 2 a. Define aerobic and anaerobic conditions of sewage. Explain the determination of COD of industrial waste water. 7
- b. What is Sewage? Describe the sewage treatments. 7
- c. Define COD and BOD. Calculate the COD of the effluent sample when 25 ml of the effluent require 12.3 ml of 0.005 M $K_2Cr_2O_7$ for complete oxidation. 6

UNIT - II

- 3 a. Describe the production and industrial applications of hydrogen and carbon dioxide. 7
- b. What are insulators? Explain any three characteristics and applications of electrical and thermal insulators. 7
- c. Define lubricant. Illustrate the following properties of lubricant: 6
- i) Viscosity ii) Pour Point iii) Cloud point

OR

- 4 a. Explain the production and industrial applications of oxygen and acetylene. 7
- b. Describe the functions and applications of Lubricants. 7
- c. What is sound insulator? Discuss the characteristics and applications of sound insulator. 6

UNIT - III

- 5 a. What is glass? Mention physical and chemical properties of glass. 7
- b. What are the raw materials of glass? and mention its characteristics. 7
- c. Describe the annealing and finishing process of glass. 6
- 6 a. Summarize the following properties of ceramics : 7
- i) Physical and Chemical properties
- ii) Optical properties
- b. What are ceramics? Explain the industrial applications of ceramics. 7

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c. Discuss the following properties of Cement:

- i) Quality
- ii) Shrinkage
- iii) Soundness

6


UNIT - IV

- 7 a. What are colloidal solutions? Difference between Lyophilic and Lyophobic solutions. 7
- b. Explain the Tyndall effect and Brownian movement of colloids. 7
- c. Discuss the industrial applications of colloids. 6
- 8 a. Describe the purification of colloidal solution by dialysis. 7
- b. What are paints? Give the classification of paints and mention the pigments of paints. 7
- c. Explain the methods of applying paints. 6

UNIT - V

- 9 a. Define air pollution. Explain the sources, ill effects of carbon monoxide and carbon dioxide. 7
- b. What are particulate matter? Discuss the sources, ill effects and control of particulate matter. 7
- c. Briefly explain radio active pollution. 6
- 10 a. Describe the following are synthesised:
 - i) Safety matches 7
 - ii) Plaster of Paris
 - iii) Naphthalene balls
- b. Explain the cause of depletion of ozone layer and give its ill effects. 7
- c. Illustrate the aerosols and photo chemical oxidants. 6

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