

SE - 837

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F.Y. B.Tech. (Semester - I) (CBCS) Examination, November - 2018

ENGINEERING CHEMISTRY

Sub. Code : 71817

Day and Date : Friday, 30 - 11 - 2018

Total Marks : 70

Time : 02.30 p.m. to 05.00 p.m.

- Instructions :**
- 1) Attempt any three questions from each section.
 - 2) Figures to the right indicate full marks.
 - 3) Draw neat labeled diagram wherever necessary.
 - 4) Use of non-programmable calculator is allowed.

SECTION - I

Q1) a) A sample of Water on analysis was found to contain the following impurities; [6]

	Wt. mg/lit	Mol. wt.
Ca(HCO ₃) ₂	36	162
Mg(HCO ₃) ₂	18	146
MgCl ₂	15	95
CaSO ₄	20	136

Calculate temporary, permanent and total hardness of water in degree Clark.

b) Discuss ion exchange method for the treatment of hard water. [6]

Q2) a) Give schematic representation of single beam spectrophotometer. How will you determine the concentration of unknown solution? [6]

b) State and derive Beers-Lamberts Law. [5]

Q3) a) Give preparation, properties and application of Bakelite plastic. [6]

b) Distinguish between Thermosoftening and Thermosetting plastic. [5]

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Q4) Attempt Any Three :

[12]

- a) Write a note on acidity of water.
- b) Discuss disadvantages of formation of scale and sludge in boiler.
- c) Give the applications of GLC technique.
- d) Write a note on conducting polymer.
- e) Give composition, properties and application of FRP.

SECTION - II

Q5) a) Following results were recorded in Bomb calorimeter experiment. Calculate the gross and net calorific value of the fuel contains 5.6 hydrogen and latent heat of condensation of steam as 587cal/gm. [6]

Weight of coal burnt = 0.9 gm

Mass of water in calorimeter = 2400 gm

Water equivalent of calorimeter = 471 gm

Observed rise in temperature = 2.58°C

Cooling correction = 0.037°C

Fuse wire correction = 12.5 Cal

Acid Correction = 60Cal

b) Explain Boy's calorimeter with neat labeled diagram. [6]

Q6) a) What is electrochemical corrosion? Discuss oxygen absorption mechanism with example. [6]

b) Give any five factors affecting rate of corrosion. [5]

Q7) a) Discuss any six purposes of making alloys. [6]

b) Write composition, properties and application of Nichrome. [5]

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[12]

Q8) Attempt Any Three :

- a) Discuss any four characteristics of a good fuel.
- b) Define dry corrosion? Explain the mechanism of oxidation corrosion.
- c) Explain electroplating process in detail.
- d) Write application of plain carbon steel.
- e) Enlist any four principles of Green Chemistry.

