

SC-803

Total No. of Pages : 2

Seat No.	
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F.Y. B. Tech. (All Branchs) (Par - I) (Semester - I & II)
Examination, December - 2019
ENGINEERING CHEMISTRY
Sub. Code : 71817

Day and Date : Monday, 2 - 12 - 2019

Total Marks : 70

Time : 2.30 p.m. to 5.00 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.

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

	Wt. mg/lit	Mol.wt.
Mg(HCO ₃) ₂	27	162
CaCO ₃	40	100
MgCl ₂	15	95
CaSO ₄	20	136

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

- b) Explain ion exchange process for the treatment of hard water. [6]
- Q2) a) Explain construction of GLC with neat labeled diagram. [6]
- b) State and derive expression of Beer's law. [5]
- Q3) a) Distinguish between Thermosoftening and Thermosetting plastics. [6]
- b) Give preparation, properties and application of epoxy resin. [5]

P.T.O.

Q4) Attempt any Three.

[12]

- a) Write a note on Alkalinity of water.
- b) Define hardness. Discuss the types of hardness.
- c) Write any four advantages and disadvantages of instrumental methods.
- d) Give any four applications of conducting polymers.
- e) Give composition, properties and application of GRP.

Q5) a) Following observations were recorded in a Boy's gas calorimeter experiment. [6]

Volume of gas used = 0.17 m^3

Weight of water heated = 31.7 kg

Temperature of inlet water = 12°C

Temperature of outlet water = 31°C

Mass of steam condensed = 0.03 kg .

Calculate the higher and lower calorific value of the fuel.

- b) Give principle, construction and working of Bomb calorimeter. [6]

Q6) a) Define electrochemical corrosion. Explain hydrogen evolution mechanism with example. [6]

- b) Write a note on Tinning. [5]

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

- b) Give composition, properties and application of Alnico and Nichrome. [5]

Q8) Attempt any Three. [12]

- a) Distinguish between liquid and gaseous fuels.
- b) Define dry corrosion? Explain the mechanism of oxidation corrosion.
- c) Enlist any four principals of Green Chemistry.
- d) Write composition, properties and applications of plain carbon steels.
- e) Give any four factors affecting the rate of corrosion.

