

SV - 619

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Seat No.	
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F.Y.B.Tech. (Semester - I & II) (CBCS) Examination, May - 2019

ENGINEERING CHEMISTRY (All Branches)

Sub. Code : 71817

Day and Date : Friday, 03 - 05 - 2019

Total Marks : 70

Time : 10.00 a.m. to 12.30 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	19	162
Mg(HCO ₃) ₂	17	146
CaCl ₂	15	111
MgSO ₄	20	120

Calculate temporary, permanent and total hardness of water in ppm.

- b) Explain reverse osmosis technique for the treatment of hard water. [6]
- Q2) a) With schematic diagram, explain construction and working of single beam spectrophotometer. [6]
- b) Discuss the applications of GLC. [5]
- Q3) a) Distinguish between Thermosoftening and Thermosetting plastics. [6]
- b) Give the preparation, properties and application of Urea formaldehyde plastic. [5]

P.T.O.

Q4) Attempt Any Three.

[12]

- a) Write a note on chloride content in water.
- b) Define hardness. Discuss the types of hardness.
- c) State Beers-Lamberts Law and derive its expression.
- d) Write a note on biodegradable plastics.
- e) Give composition, properties and application of GRP.

SECTION - II

Q5) a) Following results were recorded in a Boy's gas calorimeter experiment.

Volume of gas used= 0.15 m^3

Weight of water heated= 31.7 kg

Temperature of inlet water= 22° C

Temperature of outlet water= 42° C

Mass of steam condensed = 0.03 kg .

Calculate the gross and net calorific value of the fuel assuming that latent heat of condensation of water vapour as 581 kcal/kg . [6]

- b) Write a construction of Bomb calorimeter with neat labeled diagram. Discuss the corrections necessary to get accurate result. [6]

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

- b) Discuss the factors affecting on the rate of corrosion. [5]

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

- b) Write composition, properties and application of Duralumin and Alnico. [5]

Q8) Attempt Any Three:

[12]

- a) Distinguish between solid and gaseous fuels.
- b) Enlist any four principles of Green Chemistry.
- c) Explain galvanizing process in detail.
- d) Write composition, properties and application of brass.
- e) What is "atmospheric corrosion"? Explain the mechanism of oxidation corrosion.

