Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– 1st / 2nd • EXAMINATION – SUMMER 2013

Subject Code: 110001 **Date: 14-06-2013**

Subject Name: Chemistry

Time: 02:30 pm – 05:00 pm **Total Marks: 70**

Instructions:

1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 (a) Fill in the blanks: **[7]**

(i) The process of removal of salt from sea water is termed as_____.

(ii) _____calorimeter is used to determine calorific value of a liquid fuel.

(iii)The main constituent of paint is _____.

(iv)_____ is a solid lubricant.

(v) Nylon-66 is a polymer of adipic acid and_____.

(vi)The mixture of fog and smoke is _____.

(vii) Energy harnessed from the heat inside the earth is known as _____ energy.

(b) What is corrosion? Discuss the factors affecting corrosion. **[4]**

(c) Differentiate between: (i) temporary hardness and permanent hardness (ii) Scale and sludge **[3]**

Q.2 (a) Calculate the temporary and permanent hardness of water sample in ppm, containing following salts: **[5]**
$Ca(HCO_3)_2$ = 9.7 mg/L; $Mg(HCO_3)_2$ = 7 mg/L; $CaSO_4$ = 13.6 mg/L; $MgSO_4$ = 5 mg/L; $CaCl_2$ = 11.1 mg/L; $MgCl_2$ =9.5 mg/L

(b) (i) Give monomers of BUNA-S and Bakellite. **[5]**
(ii) Differentiate between thermoplastic and thermosetting polymers.

(c) What are the characteristics of a good fuel? **[4]**

Q.3 (a) Differentiate between dry and wet corrosion. **[5]**

(b) Write short note on:(i) Green house Effect (ii) Acid rain **[5]**

(c) Discuss in brief physical properties of metals. **[4]**

Q.4 (a) Describe melt spinning and wet spinning of fibres. **[5]**

(b) Discuss advantages and disadvantages of using solar energy and write in brief about solar devices. **[5]**

(c) Write a note on bio-fuel. **[4]**

Q.5 (a) Discuss the setting and hardening of Portland cement. **[5]**

(b) What is a refractory? Give classification of refractories and state properties of good refractory material. **[5]**

(c) Define chromatography and explain paper chromatography. **[4]**

Q. 6 (a) Answer the following: **[5]**

(i) Give statement of "Pilling Bedworth Rule".

(ii) What are thermal insulators? Give examples.

(iii) What is meant by throwing power?

(iv) Why are tinned containers preferred over galvanized ones for storage of food items?

(v) How are exhausted Zeolite regenerated?

(b) Explain reverse osmosis method for desalination of brackish water. **[5]**

(c) Write Dulong's formula and calculate HCV(Higher Calorific Value) and LCV(Lower Calorific Value) of a fuel sample whose elemental analysis is as follows: **[4]**

C = 86%; H = 5%; S = 1.5%; N = 2%; O = 3.5%

Q. 7 (a) Define: (i) Primming (ii) lacquers (iii) Tinning (iv) pH (v) Homopolymer. **[5]**

(b) What is meant by heat treatment of steal? Discuss different types of heat treatments. **[5]**

(c) Name various moulding constituents of plastics and indicate their uses. **[4]**

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