THE OPEN UNIVERSITY OF SRI LANKA
B.Sc/ B.Ed DEGREE PROGRAMME- 2006/2007
Level 5- CHU 3237/ CHE 5237

INDUSTRIAL CHEMISTRY

ASSIGNMENT II TEST

Date: 2nd January 2007 Time: 3.30- 5.00 p.m.

Answer all the questions.

1. (a)(i) What are "glass formers" ?
(ii) Write three examples of important glass formers. What are the limitations in their applications? (20 marks)

(b)(i) Distinguish between glassy, liquid and solid states.
(ii) Draw and explain the plot of volume vs. temperature for the above states. I Identify the glass transition temperature (Tg) in the diagram. (30 marks)

(c)(i) Write the ingredient used in glass industry. Identify the role of each of these in The glass making process.
(ii) As you know viscosity is the most important physical property of glass used in the manufacturing process. Explain what is meant by the working range?
(iii) Draw (not to scale) a graph to show the variation of viscosity with temperature (^{0}C) for soda lime silicate glass and identify the working range.
(iv) What is meant by the 'annealing range' in glass technology? (50 marks)

2. (a)Distinguish between:
(i) mortar and concrete.
(ii) 'flash set' and 'false set'. (20 marks)

(b)(i) Write the major crystalline phases present in Portland cement clinker.
(ii) Write the order in which the major crystalline phases are formed as the temperature in the kiln is increased from 700°C to 1500°C.
(iii) Write down the product(s) formed when each of the clinker phases undergoes hydration in the absence of gypsum.
(iii) Comment on the rates of hydration of these phases. (60 marks)

(c) Explain the role of gypsum on the setting of Portland cement. (20 marks)

3. (a)(i) What do you understand by the terms 'passivation' and 'corrosion inhibitors' ?
(ii) What do you understand by the throwing power of a plating bath? List the factors that determine the value of throwing power. (30 marks)

(b) Draw the curve of current density I vs. potential E for a metal M that exhibits passivation. Label the different regions and the points in the I- E curve. (20 marks)

(c)(i) Name four types of corrosion.
(ii) Inhibition to corrosion could take place by several mechanisms. What are they? (25 marks)

(d)(i) What do you understand by term, 'metal finishing'?
(ii) Give examples of different metal finishing processes. (25 marks)

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