

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



INDUSTRIAL CHEMISTRY

ASSIGNMENT III TEST

Date: 13th February 2007

Time: 3.30- 5.00 p.m.

Answer all the questions.

- 1.(a)(i) Draw a flow chart to show how the following could be manufactured, starting from common salt.
sodium sulphide, sodium bisulphite and sodium sulphite.
- (ii) Write equations to show how they are produced.
- (iii) Give one industrial use of each of these chemicals. (25 marks)
- (b) Briefly describe using equations how
(i) potassium (ii) magnesia can be produced from seawater.
Write any advantage(s) or disadvantage(s) of the methods. (25 marks)
- (c)(i) Briefly describe the use of Beaume hydrometer in the process of recovery of gypsum from sea water. Write three important uses of this gypsum.
- (ii) What is the specific gravity of sea brine when it gives a reading of 3.5^o Be?
- (iii) Suggest a method of production of iodine from natural I - bearing brine. (30 marks)
- (d) Draw a flow diagram for the production of free- flowing table salt. (20 marks)
- 2.(a)(i) Briefly describe, using equations, how soda ash is obtained from underground deposits of Trona in Wyoming.
- (ii) Elsewhere, soda ash is manufactured by the ammonia- soda process (Solvay process).
Write the essential steps involved in it, including any step for recycling. (30 marks)
- (b) Compare and contrast the method using diaphragm cell with that using mercury cathode cell, for the production of chlorine and caustic soda, using brine as the starting material. (20 marks)
- (c)(i) What are fats and oils?
- (ii) Fats and oils are used as a base for many industrial chemicals. What are they?
- (iii) Most fatty acids in nature have an even number of carbon atoms. Explain why this is so. (20 marks)
- (d) Briefly describe the methods used for analysis of oils. Indicate whether or not each of these methods can be used for the determination of purity of oil. (30 marks)

- 3.(a)(i) Draw a flow diagram to show how coconut oil is extracted from copra, indicating the important steps in it.
- (ii) Write the conditions necessary for hydrogenation of oil. What is the purpose of hydrogenating oil? (35 marks)
- (b) Briefly describe, using equations and giving conditions, the reactions of the ester group in oils and fats. (30 marks)
- (c) Compare the methods of manufacture of soap and detergents. (20 marks)
- (d)(i) Briefly describe, using equations and giving conditions, the process 'splitting of fat'.
- (ii) What is/are the product(s) of fat splitting? (15 marks)
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