B. Tech Degree I & II Semester Examination in Marine Engineering, May 2008

MRE 104 ENGINEERING CHEMISTRY

Time : 3 Hours | Maximum Marks : 100

I.	(a)	What are boiler scales? Mention their ill effects.	(5)
	(b)	Briefly explain the estimation of hardness of water by EDTA method.	(7)
	(c)	Write notes on : (i) Electrodialysis (ii) Reverse Osmosis.	(8)
		OR	
II.	(a)	Explain the various steps in the purification of water for municipal supply.	(8)
	(b)	What is break point chlorination? Mention its advantages.	(6)
	(c)	Explain *any two* methods of internal conditioning of boiler feed water.	(6)
III.	(a)	Describe the Otto – Hoffmann method for the manufacture of coke.	(8)
	(b)	How is petrol manufactured by Fisher – Tropsch method?	(6)
	(c)	What is cracking? Explain Octane number and Cetane number.	(6)
		OR	
IV.	(a)	What do you mean by proximate analysis of coal?	(6)
	(b)	Define caloric value of a fuel. What are the characteristics of a good fuel?	(6)
	(c)	Discuss the merits and demerits of gaseous fuels over liquid and solid fuels.	(8)
V.	(a)	What is meant by electro chemical series? What are its applications?	(7)
	(b)	Explain with a neat diagram, the working of hydrogen – oxygen fuel cell.	(8)
	(c)	Explain Edisson cell.	(5)
		OR	
VI.	(a)	Explain the working of Weston – Cadmium cell.	(7)
	(b)	How the solubility of a sparingly soluble salt is determined by emf measurements?	(7)
	(c)	Explain the determination of pH of a solution using glass electrode.	(6)
VII.	(a)	Explain electrochemical theory of corrosion.	(7)
	(b)	Discuss Cathodic protection.	(6)
	(c)	Briefly explain the various factors which influence corrosion.	(7)
		OR	
VIII.	(a)	Differentiate between chemical and electrochemical corrosion with suitable examples.	(8)
	(b)	Describe the process of galvanizing and anodising.	(6)
	(c)	Write notes on : (i) pitting corrosion (ii) stress corrosion.	(6)
IX.	(a)	Distinguish between varnish and enamel.	(6)
	(b)	Mention the constituents of paints and give their functions.	(8)
	(c)	Write a brief note on special paints.	(6)
		OR	
X.	(a)	Briefly explain the important properties of lubricating oils.	(8)
	(b)	Write a note on engineering plastics.	(6)
	(c)	Give the preparation and uses of the following : (i) Kevlar (ii) ABS polymers (iii) PMMA.	(6)

***