

Reg. No.

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B.E. / B.TECH. DEGREE EXAMINATIONS, DEC 2019

First Semester

CY18152 – CHEMISTRY FOR MARINE ENGINEERING*(Marine Engineering)***(Regulation 2018)****Time: Three Hours****Maximum : 100 Marks**

Answer ALL questions

PART A - (10 X 2 = 20 Marks)

	CO	RBT
1. List out the chief sources of hardness in water.	1	R
2. Name the impurities present in evaporated sea water.	1	R
3. What is stress corrosion? Give one example for stress corrosion.	2	R
4. Wire mesh corrodes faster at the joints. Why?	2	U
5. All soft water are not demineralised, where as all demineralised water are soft. Justify.	3	U
6. Alkalinity of water cannot be simultaneous presence of OH^- , CO_3^{2-} , and HCO_3^- . Give reason.	3	U
7. Why hard water consumes a lot of soap?	4	U
8. What is standard hard water? Why it is used in EDTA titration?	4	R
9. Differentiate between primary and secondary battery.	5	U
10. Give any few applications of Ni-Cd batteries.	5	R

PART B - (5 X16 = 80 Marks)

11. (a) Classify the sources of water with examples. Discuss in details the impurities present in fresh water and sea water. (16) 1 U
- (OR)**
- (b) (i) Discuss the problems associated with the formation of scales in boilers. (8) 1 R
- (ii) Write note on the various troubles that arise due to the use of hard water in boilers. (8) 1 R

12. (a) (i) Compare the mechanisms of pitting corrosion with stress corrosion. (10) 2 U
(ii) Write a short note on differential aeration corrosion. (6) 2 R
(OR)
- (b) Suggest some methods to control corrosion. Explain the cathodic protection of metal with a neat diagram. (16) 2 U
13. (a) (i) Describe the hot lime-soda process for softening water. (8) 3 R
(ii) Explain the process of priming and foaming in boiler. Suggest some methods to control the same. (8) 3 U
(OR)
- (b) (i) Explain the principle of electrodialysis and explain how it helps in the desalination of brackish water. (8) 3 U
(ii) Write a short note on salinometer and litmus paper. (8) 3 R
14. (a) (i) What is the role of buffer in EDTA titration? Describe the estimation of hardness of water by EDTA method. (10) 4 R
(ii) Mention any two coagulants and their functions in water treatment. (6) 4 U
(OR)
- (b) (i) Draw a suitable diagram and describe the Zeolite process of water softening. Compare Zeolite process with demineralization process. (10) 4 R
(ii) Write a short note on calgon and colloidal conditioning. (6) 4 R
15. (a) (i) Discuss the working principle of a lithium ion battery. (8) 5 U
(ii) What are secondary batteries? Describe the construction and working of a lead acid battery. (8) 5 U
(OR)
- (b) Explain the synthesis of carbon nanotubes and write any six applications of CNT in various fields. (16) 5 U