Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 25063

B.E./B.Tech. DEGREE EXAMINATION, DECEMBER/JANUARY 2019.

First Semester

Marine Engineering

CY 8101 — CHEMISTRY FOR MARINE ENGINEERING

(Regulations 2017)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the normal level of dissolved oxygen in stream water? How is it decreased?

2. Write about the increase of COD level relevant to dissolved oxygen.

3. What is total alkalinity? Give two major impacts due to this alkalinity.

4. State about the salient features in the application of reverse osmosis process.

5. Highlight the impacts of sludge and scale formation in the boilers.

6. With example, discuss about stress corrosion.

7. List out the major minerals cause hardness. Why hardness is expressed in relation with calcium carbonate?

8. With an example, justify the role of coagulants in the use of hard water.

9. What are nano-particles? Mention the uses of gold nano-particles.

10. Discuss on the principle involved in the application of solar cells.

PART B — (5 × 16 = 80 marks)

11. (a) Give a detailed account on the determination of pH, chlorides, sulphates, fluorides and phosphates in water.   (3+3+3+4+3)

Or

(b) How are BOD and COD determined? Express the reasons for the accumulation of BOD and COD levels in water.   (8+8)

12. (a) Elaborate the method of treatment of hard water by demineralization technique.

Or

(b) Enumerate the process of treatment of brackish water by the principle of electro dialysis.

13. (a) What are the reasons of boiler corrosion? Explain the impacts in the boilers due to boiler corrosion. (6+10)

Or

(b) How is corrosion controlled? Explain the techniques of chemical and mechanical de-aeration to reduce corrosion. (4+6+6)

14. (a) Elaborate the estimation of temporary and permanent hardnesses using EDTA method. (8+8)

Or

(b) (i) Write the necessities for the treatment of hardness in water. (6)

   (ii) Describe the importance of determination of total dissolved solids and dissolved oxygen. (5+5)

15. (a) Describe the principle and mechanism involved in the operational process of lead acid batteries.

Or

(b) Explain the possibilities of considering hydrogen and methanol as fuels cells.

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