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C14–C/CM–104

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BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—2015

DCE—FIRST YEAR EXAMINATION

ENGINEERING CHEMISTRY AND ENVIRONMENTAL STUDIES

Time : 3 hours] [*Total Marks* : 80

PART—A 3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Distinguish between oxidation state and valency.

2. Write electronic configuration of the elements Cr, A1 and K.

3. Define solute, solvent and solution.

4. What is ionic product of water? Mention its value to 0°C.

5. Define temporary hardness and permanent hardness.

6. Define electrochemical equivalent and chemical equivalent.

7. State any three differences between thermoplastic and thermosetting plastic.

8. Classify the fuels based on their occurrence and give one example of each.

9. Write a note about greenhouse effect.

10. Define producer, consumer and decomposer.

PART—B

10×5=50

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. *(a)* Write the differences between ionic compounds and covalent compounds. 6

(b) Explain the metallic bonding. 4

12. *(a)* Define molarity and normality. Find the weight of Na_2CO_3 present in 100 ml of 0·2*N* solution. 1+1+4

(b) Explain Lewis's theory of acid and base. 4

13. *(a)* Explain forth flotation method with neat sketch. 6

(b) Write the composition and uses of brass and German silver. 4

14. *(a)* State and explain Faraday's laws of electrolysis. 6

(b) Calculate the weight of copper deposited from copper sulphate solution if 5·4g silver deposited from silver nitrate solution by the same current. (A. Wt of Cu is 63·5 and A. Wt of Ag is 108) 4

15. *(a)* Explain rusting mechanism of iron. 4

(b) Explain the sacrificial anode method and impressive voltage method of protecting metal from corrosion. 6

16. *(a)* What are the disadvantages of using hard water in industries? 4

(b) Describe ion-exchange process. 6

17. *(a)* Write a note on vulcanization of rubber. 4

(b) Define addition polymerization and condensation polymerization. Give one example for each reaction. 6

18. *(a)* State the causes and effects of deforestation. 6

(b) Define renewable and non-renewable energy resources. Give examples. 4

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