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C09–CM–**104**

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BOARD DIPLOMA EXAMINATION, (C–09)
OCT/NOV—2014
DCME—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. Write any three properties of covalent compound.

2. State and explain Pauli's principle.

3. Define solute, solvent and solution.

4. What are buffer solutions? Give any two applications.

5. Equal quantity of electricity is passed through H_2SO_4 and $AgNO_3$ solutions for same time. If 0·5 grams of hydrogen is liberated, what weight of silver is deposited? [Atomic weight of Ag   108]

6. Write any three disadvantages of using hard water in industries.

7. Write any six advantages of plastics over traditional materials.

8. State the composition and uses of *(a)* water gas and *(b)* producer gas.

9. Define *(a)* contaminant, *(b)* chemical oxygen demand (COD) and *(c)* biological oxygen demand (BOD).

10. Write a short note on ozone depletion.

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PART—B 10×5=50

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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)* State the postulates of Bohr's atomic theory. 7

(b) What are the defects of Bohr's theory? 3

12. *(a)* What is molarity? Find the volume of water required to prepare 0·1 *M* HCl solution from 100 ml of 0·5 *M* solution. 5

(b) Explain Lewis theory of acids and bases. 5

13. *(a)* Explain about Froth floatation process. 6

(b) Define the following : 4

    (i) Mineral

    (ii) Ore

    (iii) Gangue

    (iv) Slag

14. *(a)* State and explain Faraday's I and II laws. 6

(b) What is electrochemical series? What is its significance? Give any three points. 4

15. *(a)* Describe cathodic protection by impressed voltage method. 6

(b) What is rusting? Explain with chemical equations. 4

16. *(a)* What are temporary hardness and permanent hardness? 3

(b) Describe the municipal water treatment method with a neat diagram. 7

17. *(a)* What is vulcanization? Explain with chemical equations. 6

(b) Give one method of preparation and two uses of polythene. 4

18. *(a)* Write a note on global warming. 4

(b) Explain any three causes of water pollution. 6

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