6054

BOARD DIPLOMA EXAMINATION, (C–16)

MARCH/APRIL—2018

DME—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. What are the fundamental particles of an atom? Give their mass
and charge.

2. Write a short note on Pauli's exclusion principle.

3. Define solute, solvent and solution.

4. What is pH? Calculate the pH of $0.001\ M$ HCl solution.

5. What are metallic conductors and electrolytic conductors? Give
examples.

6. Define soft water and hard water. Give examples.

7. Write the characteristics of plastics.

8. Write the compositions and uses of water gas and producer gas.

9. Define the terms *(a)* pollutant, *(b)* contaminant and *(c)* receptor.

10. Define *(a)* producers, *(b)* consumers and *(c)* decomposers.

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)* What are quantum numbers? Explain the significance of quantum numbers.   5

(b) Write the differences between ionic compounds and covalent compounds.   5

12. *(a)* Define normality. Calculate the normality of 500 ml of solution containing 5·3 grams of sodium bicarbonate. (M. wt. of Na_2CO_3 106.)   5

(b) Explain Bronsted-Lowry theory of acids and bases.   5

13. *(a)* Define alloy. Write the compositions and uses of brass and nichrome.   5

(b) Explain the terms *(i)* mineral, *(ii)* ore, *(iii)* gangue, *(iv)* flux and *(v)* slag.   5

14. *(a)* Distinguish between electrolytic cell and galvanic cell.   5

(b) State and explain Faraday's laws of electrolysis.   5

15. *(a)* Define corrosion. Write any five factors which influencing the rate of corrosion.   6

(b) Explain impressed voltage method.   4

16. *(a)* Explain softening of hard water by ion-exchange process.   5

(b) State the characteristics of drinking water.   5

17. *(a)* What are addition and condensation polymerization? Explain with suitable example.   5

(b) What is vulcanization of rubber? Explain with chemical equation.   5

18. *(a)* Explain the methods of control of air pollution.   5

(b) Define biodiversity. Briefly discuss any four threats to biodiversity.   5

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