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C09–CHPC–104/C09–EC–104/C09–PET–104

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BOARD DIPLOMA EXAMINATION, (C–09)

OCT/NOV—2014

DECE—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 is orbital? Draw the shapes of *s* and *p* orbitals.

2. Write the electron configuration of nitrogen (*Z* 7), chromium (*Z* 24) and copper (*Z* 29).

3. 9·8 grams of sulphuric acid dissolved in 2 litres of water. What is the normality of this solution?

4. What are buffer solutions? Give their uses.

5. State any three differences between electrolytic cell and galvanic cell.

6. Differentiate between temporary hardness and permanent hardness.

7. Write any three differences between thermoplastics and thermosetting plastics.

8. State the characteristics of a good fuel.

9. What are primary pollutants and secondary pollutants? Give examples.

10. What is deforestation? State the causes of deforestation.

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)* Describe Bohr's atomic theory. 7

(b) State and explain Pauli's principle. 3

12. *(a)* Explain how the equivalent weights of acids, bases and salts are calculated. Give examples. 5

(b) Describe Arrhenius theory of acids and bases. 5

13. *(a)* Define the following terms : 4

(i) Gangue

(ii) Flux

(iii) Ore

(iv) Mineral

(b) Describe the froth floatation process for the purification of ores. 6

14. *(a)* What is electrochemical series? Give its significance. 4

(b) State and explain Faraday's laws of electrolysis. 6

15. *(a)* Explain the composition cell and stress cell with one example each. 5

(b) Describe the cathodic protection by impressed voltage method. 5

16. *(a)* Explain the ion-exchange process for the softening of hard water. 7

(b) State any three characteristics of drinking water. 3

17. *(a)* Explain the preparation and uses of polythene, polyvinyl chloride (PVC) and Teflon. 6

(b) What are the advantages of plastics over traditional materials? List out any four. 4

18. *(a)* What is water pollution? Explain the causes of water pollution. 7

(b) Write a note on global warming. 3

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