Reg. No..... Name.....

B.SC. DEGREE END SEMESTER EXAMINATION OCTOBER 2016

SEMESTER – 1: CHEMISTRY (COMPLEMENTARY)

COURSE: U1CPCHE1 – : BASIC THEORETICAL AND ANALYTICAL CHEMISTRY

For Supplementary (2014 Admission)

Time: Three Hours Max. Marks: 60

PART A

Answer **all** *questions. Each question carries* 1 *mark.*

1. ..... is the measure of degree of disorder.
2. Give an example of Lewis acid.
3. The mobile phase in gas chromatography is called .....
4. As pKa value increases, the strength of the acid .....
5. Give an example for a redox indicator.
6. Precipitation occurs only when ionic product exceeds .....
7. Give the electronic configuration of Copper atom.
8. The ionic product of water at 25°C is.....

(1 × 8 = 8)

PART B

Answer ***any*** **six** *questions. Each question carries* 2 *marks.*

9. State and explain third law of thermodynamics.
10. What do you mean by conjugate acid- base pair? Give an example.
11. Differentiate between molarity and molality.
12. What is the principle and application of solvent extraction?
13. State and explain Hund's rule of multiplicity.
14. Distinguish between accuracy and precision.
15. State Heisenberg's uncertainty principle. Give its significance.
16. Find the pH of a solution formed by mixing 100mL of 0.2M HCl with 100mL of 0.1M NaOH?

(2 × 6 = 12)

PART C

Answer ***any*** **four** *questions. Each question carries* 5 *marks.*

17. Write a short note on Ion exchange chromatography.
18. Write a note on photoelectric effect.

19. Explain the free energy criterion for the spontaneity of a reaction.

20. Explain Lowry - Bronsted and Lewis Concepts of acid-base with examples.

21. What is common ion effect? Mention two of its applications.

22. What is the principle and use of TLC?

(5 × 4 = 20)

Part D

*Answer **any** **two** questions. Each question carries 10 marks.*

23. Write briefly on:

(a) HPLC (6)

(b) Fractional distillation (4)

24. (a) What are buffer solutions? Discuss the mechanism of a basic buffer. (4)

(b) What are the common errors in quantitative analysis? Suggest methods to minimize them. (6)

25. (a) What are the quantum numbers? Give their significance. (6)

(b) Write a note on paper chromatography (4)

26. (a) Write the Gibbs- Helmholtz equation and derive the expression $-\Delta G = W_{max}$. (5)

(b) Discuss the principle and applications of gas chromatography. (5)

(10 × 2 = 20)

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