

D.K.M. COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE – 1
SEMESTER EXAMINATIONS
NOVEMBER – 2018 **15CCH3A**
GENERAL CHEMISTRY- III

Time: 3 Hrs

Max. Marks: 75

SECTION – A (10 X 2 =20)

Answer ALL the questions.

1. How the following ions are detected? a) nickel b) copper
2. What are electron deficient compounds?
3. What are coupling reactions? Give Example.
4. State Saytzeff's rule.
5. Why p-nitrophenol is a stronger acid than phenol?
6. Write the preparation of naphthalene.
7. State Carnot's theorem.
8. Write the entropy change for isothermal expansion of an ideal gas.
9. Define Helmholtz free energy.
10. State the third law of thermodynamics.

SECTION – B (5 X 5 =25)

Answer any FIVE of the following questions.

11. Describe the properties and industrial uses of DMF.
12. Describe the applications of solubility product in qualitative analysis.
13. a) How is phenol manufactured from benzene?
b) Discuss the acidic nature of phenol.
14. Define aromaticity based on Huckel's rule.
15. Explain the preparation, structure and uses of anthracene.
16. Show that the entropy of mixing of ideal gases is always positive.
17. Discuss the effect of temperature and pressure on chemical potential.
18. State the criteria for a reversible and spontaneous reactions.

SECTION – C (3 X 10 =30)

Answer ALL the questions.

19. (a) a) Discuss common ion effect with suitable example. (4)
b) Explain the structure of diborane. (6)
(Or)
(b) a) Describe the preparation, properties and uses of borazole. (6)
b) Discuss the diagonal relationship between boron and silicon. (4)
20. (a) Define cyclic process. Prove that the efficiency of Carnot engine is always less than one. (10)
(Or)
(b) a) Derive Clausius - Clapeyron equation. (5)
b) Derive the relation between Gibb's free energy and Helmholtz free energy. (5)
21. (a) a) Explain the mechanism of Halogenation and Sulphonation of benzene. (6)
b) Write notes on Hofmann rule of elimination (4)
(Or)
(b) a) Discuss the mechanism of S_N1 and S_N2 reactions. (5)
b) Write notes on Kolbe's reaction and Schotten – Baumann reaction. (5)

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