



K15U 0245

Reg. No.:

Name :



III Semester B.Sc. Degree (CCSS – 2014 Admn. – Regular)
Examination, November 2015
Complementary Course in Chemistry
3C03 CHE(PS) : CHEMISTRY (For Physical Science)

Time : 3 Hours

Max. Marks : 32

SECTION – A

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

1. What is the no. of vibrational degrees of freedom for CO_2 ?
2. What is mass defect ?
3. Give the structure of the following :
 - a) 1 - amino -2 - propene
 - b) 2-butenal
4. What is heterolysis ?
5. State first law of thermodynamics.

(5×1=5)

SECTION – B

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

6. What are the reaction intermediates in organic reactions ? Comment on their stability.
7. What are Grignard reagents ? Give any one method for preparation.
8. Explain the liquid drop model of nucleus.
9. What is meant by chemical shift ?

P.T.O.



10. Explain the structure of $[\text{Fe}(\text{CN})_6]^{4-}$ and $[\text{NiCN}_4]^{2-}$ on the basis of V B theory.
11. What is its physical significance of free energy ? How is free energy change related to entropy change and enthalpy change ? (2×4=8)

SECTION – C

Answer **any three** questions. **Each** question carries **3** marks.

12. Describe the radiocarbon dating technique.
13. Differentiate between inductive effect and electromeric effect.
14. What are the factors affecting stability of complexes ?
15. Explain the reactions of ferrocene.
16. The enthalpy change and entropy change for a reaction is -112.9 and -145.5 j/k at 700 k. Calculate the free energy change and predict whether the reaction is spontaneous or not. (3×3=9)

SECTION – D

Answer **any 2** questions. **Each** question carries **5** marks.

17. Give a brief account of microwave spectroscopy. What are its applications ?
18. Describe the various stages in the metallurgy of Ni.
19. Give a detailed account of the applications of radioisotopes.
20. Discuss the structure of benzene. (2×5=10)
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