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Fifth Semester B.Sc. Degree Examination, November/December 2017
CHEMISTRY – V (New Syllabus)
(Paper – 5.1)

Time : 3 Hours Max. Marks : 80

Instructions : 1) *Section – **A** contains questions from inorganic, organic and physical chemistry.*
2) *Section – **B** contains questions from Inorganic chemistry, Section – **C** contains questions from organic chemistry and Section – **D** contains questions from physical chemistry.*
3) *Answer **all** the four Sections **A**, **B**, **C** and **D**.*

SECTION – A

Answer **any ten** of the following questions : **(10×2=20)**

1. What is meant by spectrochemical series ?
2. Define magnetic susceptibility.
3. State spin selection rule.
4. Write the structure of
   a) Borazine b) $(NpCl_2)_4$.
5. What is functional group region ?
6. What are thiols ? Give an example.
7. Mention the compound which is used as reference in NMR spectra.
8. What is an acidic amino acid ? Give an example.
9. What do you mean by photo inhibitor ? Give an example.
10. Define Dipole moment.
11. State Grotthus-Draper's law.
12. Write Clausius -Mossotti equation.

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SECTION – B

Answer **any two** of the following : **(2×10=20)**

13. a) How do you determine magnetic susceptibility and magnetic moment by Guoy method ? **6**

    b) Write a note on structure of silicates. **4**

14. a) Discuss the spectrum of $\left[Ti\left(H_2O\right)_6 \right]^{+3}$ complex ion. **6**

    b) Write a note on charge transfer spectra. **4**

15. a) Give a brief account of Diamagnetism, Paramagnetism and Anti Ferromagnetism. **6**

    b) Explain the types of electronic spectra of complexes. **4**

SECTION – C

Answer **any two** of the following. **(2×10=20)**

16. a) Describe the principle and applications of NMR spectra. **6**

    b) Write a note on iso-electric point of an amino acid. **4**

17. a) Give any two methods of synthesis of α-amino acids. **6**

    b) Write any two methods of preparation of ethanethiol. **4**

18. a) Explain the principle and applications of I.R. spectra. **6**

    b) Write a note on spin-spin coupling. **4**

SECTION – D

Answer **any two** of the following. **(2×10=20)**

19. a) State and explain Lambert's law. **6**

    b) Find the value of an Einstein of energy for the radiation of wavelength 4240 Å. **4**

20. a) Write a note on induced polarization. **6**

    b) Explain :
    i) Phosphorescence ii) Fluorescence. **4**

21. a) What is Quantum yield ? Give reasons for
    i) Low quantum yield ii) High quantum yield. **6**

    b) Explain photochemical mechanism for the combination of H_2 and Br_2. **4**

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