36523

V Semester B.Sc. Degree Examination, September/October 2020

CHEMISTRY – V

Paper 5.1

(CBCS)

Time : 3 Hours Max. Marks : 70

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 × 1 = 10)**

1. What are Orgel diagrams?

2. Define magnetic moment.

3. Write the structure of $(NPCl_2)_4$.

4. What is meant by Spectrochemical series?

5. What are thiols? Give an example.

6. What is Chemical shift?

7. What are Basic amino acids? Give an example.

8. What are equivalent protons?

9. Write the Clausius-Mosotti equation.

10. What is photo inhibition?

11. State Grothus-Draper's law.

12. What is Phosphorescence?

SECTION – B

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

13. (a) Explain the determination of magnetic susceptibility and magnetic moment by Goy's method. **(6)**

    (b) Write a note on temperature independent paramagnetism. **(4)**

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

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

15. (a) Describe the preparation and structure of $C_2B_{10}H_{12}$. **(6)**

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

SECTION – C

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

16. (a) Give the methods of preparation and chemical reactions of ethane thiols. **(6)**

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

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

    (b) Write a note on basic components of spectrophotometer. **(4)**

18. (a) Explain the principle and applications of NMR spectra. **(6)**

    (b) Write a note on applications of IR spectroscopy. **(4)**

SECTION – D

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

19. (a) Discuss the mechanism of photochemical combination of H_2 and Cl_2. **(6)**

    (b) State and explain Beer's law. **(4)**

20. (a) What is Quantum yield? Give reasons for

(i) High quantum yield

(ii) Low quantum yield **(6)**

(b) Give the difference between photochemical and thermochemical reactions. **(4)**

21. (a) Write a note on orientation polarisation. **(6)**

(b) Discuss the applications of dipole moment in elucidating the structure of CCl_4 and H_2O. **(4)**
