24605

B.Sc VI Semester Degree Examination, May - 2018

CHEMISTRY-VII

Paper - 6.1

(New)

Time : 3 Hours Maximum Marks : 80

Instructions to Candidates:

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 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 : **(10×2=20)**

1. What is a glass?
2. What is the composition of port land cement?
3. What is emulsion paint?
4. Give the different types of air pollution.
5. What are hormones? Give examples.
6. Write the structure and uses of Quinine.
7. What are vitamins? Give an example.
8. What are peptides? Give an example.
9. State Born - Oppenheimer approximation.
10. What is the criteria for a molecule to exhibit rotational spectra?
11. Define degrees of freedom.
12. Classify the molecules into I.R active and I.R. inactive. CO_2; CO, Cl_2; HCl.

Section - B

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

13. a) Explain the manufacture of cement by Dry process. **(6)**

P.T.O

b) Write a note on poly phosphazenes. **(4)**

14. a) Describe the manufacture of Glass by pot furnace method. **(6)**

b) Explain types and sources of air pollution. **(4)**

15. a) Describe the general properties of Inorganic polymers. **(6)**

b) Write a note on constituents of paints. **(4)**

Section - C

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

16. a) Elucidate the structure of citral. **(6)**

b) Write characteristic properties of Enzymes. **(4)**

17. a) Explain the biological importance of Thyroxin and Insulin. **(6)**

b) Explain the secondary structure of proteins. **(4)**

18. a) Explain the classification of enzymes. **(6)**

b) Give the classification of Terpenes. **(4)**

Section - D

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

19. a) Derive the expression for energy and draw energy level diagram of rotational spectra for rigid diatomic molecule. **(6)**

b) Explain briefly the factors which affect the intensity of spectral lines. **(4)**

20. a) Derive energy expression for vibrational spectrum of Anharmonic oscillator for a diatomic molecule. **(6)**

b) Explain the effect of isotopic substitution on a diatomic molecule. **(4)**

21. a) Discuss pure rotational Raman spectra of diatomic molecule. **(6)**

b) The pure rotational spectrum of gaseous HCl contains a series of equally spaced lines separated by 20.80 cm^{-1}. Calculate the internuclear distance of the molecule. The atomic masses of H and Cl are 1.673×10^{-27} kg and 58.06×10^{-27} kg respectively. **(4)**
