



**VI Semester B.Sc. Degree Examination, September/October 2020**

**CHEMISTRY – VII**

**Paper 6.1**

**(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 is a Clinker?
2. What is annealing of glass?
3. What is the role of pigment in paints?
4. Define inorganic polymers.
5. Write the structure of atropine.
6. What are hormones?
7. Write the structure of Quinine.
8. What is dipeptide?
9. What do you mean by polarizability?
10. State sedation rule.
11. Give the wavelength range of rotational spectra.
12. What is meant by degeneracy?

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SECTION – B

Answer **any two** of the following questions :

(2 × 10 = 20)

13. (a) Explain the manufacture of glass by pot furnace. (6)  
(b) Write a note on cement industries in India. (4)
14. (a) Explain the method of preparation and applications of silicones. (6)  
(b) Write a note on industrial effluents, their effect and treatment. (4)
15. (a) Discuss  
(i) Constituents of paints  
(ii) Setting of paints (6)  
(b) Explain types and sources of air pollution. (4)

SECTION – C

Answer **any two** of the following questions :

(2 × 10 = 20)

16. (a) What are alkaloids? How they are classified? (6)  
(b) Explain the mechanism of enzyme action by Lock and Key model. (4)
17. (a) Elucidate the structure of citral. (6)  
(b) Explain the biological importance of thyroxine and insulin. (4)
18. (a) What are Vitamins? Write the biological importance of Vitamin A, B and C. (6)  
(b) Give the synthesis of dipeptide glycylalanine. (4)

SECTION – D

Answer **any two** of the following questions :

(2 × 10 = 20)

19. (a) Write a note on vibrational spectra of Anharmonic oscillator. (6)  
(b) The separation of rotational spectral lines occurred at  $332 \text{ m}^{-1}$  for NO molecule. Calculate the internuclear bond length.

Reduced mass of NO =  $1.24 \times 10^{-26} \text{ kg}$ ,  $h = 6.626 \times 10^{-34} \text{ Js}$ . (4)



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20. (a) Write a note on pure rotational Raman spectra of a diatomic molecule. (6)  
(b) Explain how is force constant. Calculate in case of vibrational spectra. (4)
21. (a) Derive energy expression and write energy level diagram for rotational spectrum of rigid diatomic molecule. (6)  
(b) Write a note on basic features of different spectrometer. (4)
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