D 30495 (Pages : 2) Name...

Reg. No....................................

FIFTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION NOVEMBER 2022

Chemistry

CHE 5B 08—PHYSICAL CHEMISTRY—II

(2019 Admission onwards)

Time : Two Hours Maximum : 60 Marks

Section A (Short Answers)

Answer questions up to 20 *marks.*
Each question carries 2 *marks.*

1. What is meant by order of a reaction ?

2. Explain Michaelis-Menten theory for enzyme catalysis.

3. Derive half life period for zero order reaction.

4. What is homogeneous catalysis ? Give examples.

5. Define CST. Give examples for systems with upper and lower CST values.

6. What is eutectic temperature ?

7. Explain Born-Oppenheimer approximation.

8. How many vibrational modes are possible for H_2O molecule ?

9. What are Chromophores ? Give examples.

10. How many NMR signals are given by ethyl methyl ketone ?

11. State Grothus-Draper law.

12. What is ISC ? How it takes place ?

(Ceiling of marks : 20)

Section B (Short Answers)

Answer questions up to 30 *marks.*
Each question carries 5 *marks.*

13. Derive integrated rate equation for first order kinetics. What are the features of first order kinetics ?

14. How will you determine the surface area of an adsorbent from the isotherm data ?

Turn over

15. Derive Nernst's distribution law.

16. Explain Pattinson's process of desilverisation of lead.

17. Distinguish between deliquescence and efflorescence.

18. What are the informations obtained from the NMR spectra of an organic molecule ?

19. What is the difference between fluorescence and phosphorescence ?

(Ceiling of marks : 30)

Section C (Essay)

Answer any **one** *question.*
Each question carries 10 *marks.*

20. Explain any four methods to determine the order of a reaction.

21. Discuss in detail the microwave spectra of a rigid diatomic molecule. How will you calculate the bond length using microwave spectra ?

(1 × 10 = 10 marks)