

**FOURTH SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION
APRIL 2020**

Chemistry

CHE 4C 04—PHYSICAL AND APPLIED CHEMISTRY

Time : Three Hours

Maximum : 64 Marks

Section A

Answer all questions.

Each question carries 1 mark.

1. Example for a lyophilic colloid is _____.
2. Name one method of purification of colloids.
3. Unit of rate constant for a zero order reaction is _____.
4. Write the equation relating the rate constant, energy of activation and temperature.
5. Write an example for a heterogeneous catalytic reaction.
6. Name one application of gas chromatography.
7. Example for a thermosetting plastic is _____.
8. Name any *two* water quality parameters.
9. Example for a food preservative is _____.
10. Name an artificial sweetener.

(10 × 1 = 10 marks)

Section B

Answer any seven questions.

Each question carries 2 marks.

11. What is meant by electrophoresis ?
12. A first order reaction occurs with the half-life time of 2 min. Calculate the rate constant for this reaction.
13. Define gold number.
14. Define rate of a reaction and rate constant.

Turn over

15. Distinguish between adsorption chromatography and partition chromatography.
16. Differentiate between a chromophore and auxochrome.
17. Draw a schematic diagram of the NMR spectrum of pure ethanol.
18. What is fast food ? Mention its health effects.
19. What is meant by thermal pollution ?
20. Distinguish between hard and soft soap.

(7 × 2 = 14 marks)

Section C

*Answer any four questions.
Each question carries 5 marks.*

21. What are the factors influencing the rate of reactions ?
22. Derive the rate equation for a first order reaction.
23. State Beer-Lambert's law and explain its application.
24. Discuss the kinetic and electrical properties of colloids.
25. What are biodegradable plastics? Give examples and its application.
26. Write important steps involved in the manufacture of cement.

(4 × 5 = 20 marks)

Section D

*Answer any two questions.
Each question carries 10 marks.*

27. Explain the following :
 - (a) R_f value.
 - (b) Protective colloid.
 - (c) Chemical shift.
28. Describe the different chromatographic methods used for the separation of mixtures.
29. Explain the effects of air pollution.
30. Write notes on : (a) Synthetic fibres ; (b) Glass.

(2 × 10 = 20 marks)