

20U410S

(Pages: 2)

Name:

Reg. No.:

FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2022

(CUCBCSS-UG)

CC15U CHE4 C04 - PHYSICAL AND APPLIED CHEMISTRY

(Chemistry – Complementary Course)

(2016 to 2018 Admissions – Supplementary/Improvement)

Time: Three Hours

Maximum: 64 Marks

Section A

Answer *all* questions. Each question carries **1** mark.

1. The protective action of different lyophilic colloids is expressed in terms of
2. The mobile phase in GLC is a
3. Shift of absorption maximum to shorter wavelength is called
4. The number of signals exhibited by the protons of acetone in its NMR spectrum is
5. Another name for Teflon is
6. Acid rain is caused chiefly due to the pollution by the oxides of nitrogen and
7. The region of atmosphere that contains the ozone umbrella is called
8. The first antibiotic to be discovered was
9. The rate of a reaction with increase in temperature.
10. A catalyst the activation energy of a reaction.

(10 × 1 = 10 Marks)

Section B (Short Answer Type)

Answer any *seven* questions. Each question carries 2 marks.

11. Define molecularity of a reaction.
12. What is half-life period of a reaction?
13. State Hardy-Schulze law.
14. What is meant by associated colloid?
15. What is R_f value?
16. Give two applications of paper chromatography.
17. What is bathochromic shift?
18. What are auxochromes? Give two examples.
19. How is Buna S prepared?
20. What is meant by BOD of a sample of water?

(7 × 2 = 14 Marks)

Section C

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

21. Explain the different purification techniques of colloids.
22. Discuss briefly the collision theory of reaction rates
23. What is TLC? Explain its principle and how it is carried out.
24. (a) State and explain Beer-Lambert's law (b) What are the possible electronic transition in molecules?
25. What are biodegradable polymers? Explain the applications of any two biodegradable polymers.
26. What is greenhouse effect? Explain its consequences and control measures.

(4 × 5 = 20 Marks)

Section D

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

27. (a) Discuss the principle and applications of column chromatography and gas chromatography.
28. (a) Derive the integrated rate equation of a first order reaction.
(b) The first order reaction is 75% complete in 30 minutes. Calculate the half-life and specific reaction rate of the reaction.
29. (a) Define chemical shift and spin-spin coupling.
(b) How NMR spectroscopy is useful in elucidating the structure of (i) Ethanol (ii) diethyl ether (iii) Propanal
30. (a) Explain the term dye. Discuss briefly the requirements of a good dye.
(b) Draw the structures of martius yellow and indigo and discuss their applications.

(2 × 10 = 20 Marks)
