FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2020
(CUCBCSS-UG)
(Regular/Supplementary/Improvement)
CC15U CHE4 C04 - PHYSICAL AND APPLIED CHEMISTRY
(Chemistry - Complementary Course)
(2015 Admission onwards)

Time: Three Hours   Maximum: 64 Marks

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

1. Give an example for Lyophilic colloid.

2. How many peaks will be there in the NMR spectrum of dimethyl ether?

3. The IR stretching frequency of -OH is observed at …………… cm^{-1}.

4. What is the monomer of Nylon - 6?

5. What is the chemical name of Ajinomoto?

6. What do you mean by CNG?

7. What is PHBV?

8. Write an example for first order reaction.

9. Unit of second order rate constant is ……………

10. Define activation energy

(10 x 1 = 10 Marks)

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

11. What is Brownian movement?

12. What is Hardy Schulze rule?

13. What is COD?

14. What is R_f value?

15. State Born-Oppenheimer approximation.

16. What is Cetane number?

17. What are the advantages and disadvantages of detergents over soaps?

18. Give examples for addition and condensation polymers.

19. Define molecularity of a reaction.

20. Define half life period of a reaction.

(7 x 2 = 14 Marks)

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

21. How will you distinguish a colloidal solution from true solutions and suspensions?

22. What are the characteristic electronic transitions of molecules? Explain.

23. What are the structure and applications of Neoprene & Teflon?

24. What is greenhouse effect?

25. Classify the different types of insecticides with examples.

26. The rate of a reaction triples when the temperature changes from 20 ^{o}C to 50 ^{o}C. Calculate the energy of activation for such a reaction.

(4 x 5 = 20 Marks)

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

27. Write an essay on the applications of colloids.

28. Illustrate the principle and procedures of doing column and thin layer chromatography.

29. Write an essay on water pollution.

30. Derive an expression for rate constant of a first order reaction. Explain the influence of temperature on reaction rate.

(2 x 10 = 20 Marks)

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