19U411S (Pages: 2) Name: ……..…….

Reg. No…….……

FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2021

(CUCBCSS-UG)

CC15U CHE4 C04 - PHYSICAL AND APPLIED CHEMISTRY

(Chemistry - Complementary Course)

(2015 to 2018 Admissions – Supplementary/Improvement)

Time: Three Hours Maximum: 64 Marks

Section A (One word)

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

1. The size of dispersed particles of a sol is in the range of _____
2. The unit of rate of a reaction is _____
3. _____ is the most powerful chromatographic technique
4. Wavelength is _____ proportional to frequency of radiation
5. _____ transition is the highest energy transition in UV-Vis. spectroscopy
6. _____ polymer is used in non-stick cookware
7. The major greenhouse gas is _____
8. Excess nitrites causes _____ disease in human babies
9. The gaseous mixture above the petroleum deposits is known as _____
10. Sodium benzoate is an example of food _____

(10 × 1 = 10 Marks)

Section B (Short answer)

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

11. What is composting?
12. What are the differences between hard soap and soft soap?
13. Differentiate lyophilic and lyophobic sols
14. What is spin-spin coupling?
15. What is Born–Oppenheimer Approximation?
16. Write the important properties and applications of Kevlar
17. What is eutrophication? What is its impact?
18. Differentiate octane number and cetane number.
19. Write short notes on antiseptics and tranquilizers
20. What are the health effects of hair dyes?

(7 × 2 = 14 Marks)

Section C (Paragraph)

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

21. Define isoelectric point. Explain the stability of sols.
22. Derive the integrated rate equation for first order reaction.
23. Explain the classification of chromatographic techniques.
24. Define Beer–Lambert's law. Derive the equations for absorbance and Transmittance of light in the UV-Vis. Spectroscopy.
25. Explain the theories of color and constitution.
26. What is biodegradable polymer? Write short notes on any two biodegradable polymers.

(4 × 5 = 20 Marks)

Section D (Essay)

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

27. Explain in detail the classification of polymers.
28. Explain the air pollution caused by different gases and their consequences.
29. Give a detailed explanation of catalysis, types and its theories.
30. Explain the following:
    a) Thermal pollution and its control measures.
    b) Radioactive pollution and its control measures.

(2 × 10 = 20 Marks)

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