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Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, March 2022.

First Degree Programme under CBCSS

Chemistry

Complementary Course for Botany/Microbiology

CH 1331.3 : PHYSICAL AND INORGANIC CHEMISTRY

(2013-2016 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Answer **all** questions, **each** question carries **1** mark)

1. What is meant by molecularity of a reaction?
2. Write the Arrhenius equation.
3. Define Kw.
4. Give one example of immiscible liquid pairs.
5. Define n/p ratio.
6. What is HPLC?
7. Write one example for third order reaction.
8. What are chromophores?
9. Write one example for artificial transmutation.
10. Define pH of solution?

(10 × 1 = 10 Marks)

P.T.O.

(Short answers type, answer **any eight** questions, each carries **2** marks.)

11. What is meant by non ideal solutions?

12. What is meant by mass defect?

13. What is blue shift in UV spectroscopy?

14. What is R_f value?

15. Define distribution law.

16. How the presence of impurity influence critical solution temperature?

17. How a compound is separated by fractional distillation?

18. What is the mechanism of buffer action?

19. Explain adsorption theory of catalysis.

20. What is the rate equation for second order reaction?

21. What is meant by half life time?

22. Give equation for hydrolysis of strong and a strong base reaction.

(8 × 2 = 16 Marks)

SECTION – C

(Short essay type, Answer **any six** questions, each carry **4** marks)

23. Explain various factors influencing reaction rate.

24. Briefly explain neutron activation analysis.

25. Describe Degree of Hydrolysis taking weak acid and weak base as example.

6. Explain fractional distillation using suitable example.

27. Discuss how impurities affect CST and miscibility.

28. Explain intermediate compound formation theory in reaction kinetics.

29. Discuss adsorption theory on heterogeneous catalysis.

30. Explain Nicotine-Water phase diagram.

31. Draw the structure of NMR of any TWO simple organic molecules and explain its nature.

(6 × 4 = 24 Marks)

SECTION – D

(Long essay type, Answer **any two** questions each carries **15** marks)

32. (a) How UV spectroscopy can be used to find conjugation and functional group in a molecule.

    (b) Explain electronic, vibration and rotational energies of a molecule.

33. (a) Give an account on n/p ratio and nuclear stability.

    (b) Explain Gas Chromatography technique through a neat diagram.

34. (a) Describe Wilson's cloud chamber method for detection of radio activity.

    (b) Explain thin layer chromatographic technique and its application.

35. (a) Derive the equation for activation energy.

    (b) Explain different types of catalysis taking suitable example.

(2 × 15 = 30 Marks)
