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Name:

Reg. No:

FOURTH SEMESTER M.Sc. INTEGRATED GEOLOGY DEGREE EXAMINATION, APRIL 2024

(CBCSS - PG)

(Regular/Supplementary/Improvement)

CC20 CHE4 IC01 – PHYSICAL AND INORGANIC CHEMISTRY

(Chemistry)

(2020 Admission onwards)

Time: 2.5 Hours

Maximum: 80 Marks

Credit: 4

Part A (Short answer questions)

Answer *all* questions. Each question carries 2 marks.

1. How can the three types of radioactive rays be distinguished?
2. How is binding energy per nucleon related to stability of the nucleus?
3. What are metalloenzymes?
4. What is chlorophyll?
5. Name two polysaccharides.
6. What do RNA and DNA stand for?
7. What is a lyophobic sol? Give an example.
8. What is meant by emulsification?
9. Define a nanoparticle.
10. What is green chemistry?
11. What is the essential difference between adsorption column chromatography and partition column chromatography?
12. How is R_f value useful in the characterisation of a compound?
13. State the selection rule for the vibrational transitions of a harmonic oscillator.
14. Explain the term ozone holes.
15. What are antibiotics? Give an example.

(Ceiling: 25 Marks)

Section B (Paragraph questions)

Answer *all* questions. Each question carries 5 marks.

16. Write a brief note on the nuclear reactors in India
17. Compare the structures of haemoglobin and myoglobin
18. What are nucleosides and nucleotides?
19. Explain the stability of sols.
20. Discuss the applications of nanomaterials in medicine.

21. Write a short note on partition column chromatography.
22. Discuss the sources and consequences of pollution of water by fertilizers.
23. What are artificial sweeteners? Explain with suitable examples.

(Ceiling: 35 Marks)

Section C (Essay questions)

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

24. a) Draw the ring structures of anomers of glucose.
b) Discuss three industrial applications of cellulose.
25. Discuss the significance of the concept of group frequencies in IR spectroscopy and its application in organic structural elucidation.
26. Describe the causes and adverse effects of: i) acid rain ii) global warming
27. a) What are the major fractions of petroleum refining.
b) Explain the term octane number of a fuel.
c) Give the important uses of LPG and CNG.

(2 × 10 = 20 Marks)
