21I404 (Pages: 2) Name: ....

Reg. No: ....

FOURTH SEMESTER M.Sc. INTEGRATED GEOLOGY DEGREE EXAMINATION, APRIL 2023

(CBCSS - PG)

(Regular/Supplementary/Improvement)

CC20 CHE4I C01 – 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 do exchange forces in the nucleus originate?

2. Explain the term nuclear fusion with a suitable example.

3. What are metalloenzymes?

4. What is Bohr's effect?

5. What are anomers?

6. Mention two differences between DNA and RNA.

7. Differentiate between a sol and an emulsion.

8. What is meant by ultrafiltration?

9. Explain the term 2D nanomaterials.

10. What is meant by a green synthesis?

11. What is the basic principle of a chromatographic technique?

12. State Beer-Lambert law.

13. What is the importance of ozone layer?

14. What are antibiotics? Give an example.

15. How is hard glass obtained? Mention its uses.

(Ceiling: 25 Marks)

Section B (Paragraph questions)

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

16. What are isotopes? Give examples Comment on their physical and chemical properties.

17. What are the functions of haemoglobin?

18. What the different types of RNA?

19. Discuss the general properties of emulsions.

20. State any three of the twelve principles of green chemistry.

21. What are the applications of paper chromatography?

22. Explain the general broadness of spectral bands in UV-visible spectroscopy.

23. Discuss how sewage and industrial effluents pollute water.

(Ceiling: 35 Marks)

Section C (Essay questions)

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

24. Discuss the principles and salient features of nuclear reactors.

25. a) Draw the ring structures of anomers of glucose.

   b) Discuss 3 industrial applications of cellulose.

26. Discuss the nature, sources, effects and control measures of radioactive pollution.

27. a) Explain the manufacture of cement and discuss its composition.

   b) Explain the term "setting of cement.

(2 × 10 = 20 Marks)

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