

2M4A23236

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Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester MSc. Integrated Geology Degree Examination, April 2023

CHE4IC02 - Allied Course II: Physical and Inorganic Chemistry

(2020 Admission onwards)

Time: 2 ½ hours

Max. Marks : 80

**PART- A**

Answer *all* questions

Each question carries Two marks

Ceiling- 25 Marks

1. What is C-14 dating?
2. Give the basic principle of a chromatographic technique.
3. How many normal modes of vibration are possible for (a) H<sub>2</sub>O and (b) CO<sub>2</sub> molecules?
4. What is DDT?
5. How does CO<sub>2</sub> become a pollutant?
6. Define octane number.
7. What are emulsifiers? Give examples.
8. Distinguish between antiseptics and antibiotics with suitable examples.
9. What are food preservatives? Give examples.
10. Explain the term gold number.
11. What are Quantum dots?
12. State the Born-Oppenheimer approximation.
13. Discuss the concept of group frequencies with regard to IR spectroscopy?
14. Define natural radioactivity.
15. What is photosynthesis?

**PART- B**  
**Answer *all* questions**  
**Each question carries Five marks**  
**Ceiling- 35 Marks**

16. Explain the following:

(i) Hardy- Schulze rule (ii) Protective colloids

17. Explain the terms "red shift" and "blue shift" with suitable examples.

18. Write any five principles of green chemistry.

19. Describe (a)  $R_f$  value and its significance (b) Global warming and its origin.

20. Mention the applications of electronic spectroscopy in organic chemistry.

21. Explain the principle of GLC.

22. Correlate N/P ratio and nuclear stability.

23. Discuss various properties of sols.

**PART- C**  
**Answer *any two* questions**  
**Each question carries Ten marks**

24. (a) Discuss the NMR spectra of (i) ethanol and (ii) propanone (6 marks)

(b) Explain the terms electrical double layer and zeta potential. (4 marks)

25. (a) Explain the manufacture of cement. Discuss its composition. (5 marks)

(b) What are the differences between DNA and RNA? (5 marks)

26. (a) Briefly explain the terms green synthesis and green solvents (5 marks)

(b) Explain in detail the major water pollutants. (5 marks)

27. Write a note on:

(a) CNG and its uses. (2 marks)

(b) Mechanism of  $\text{Na}^+/\text{K}^+$  pump (5 marks)

(c) Biochemistry of zinc (3 marks)

**(2 x 10 = 20 Marks)**



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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester Integrated M.Sc. Geology Degree Examination, April 2023  
GL04A13-Natural Resource Management

(2020 Admission onwards)

Time: 2 ½ hours

Max. Marks: 80

*(Draw neat sketches, wherever necessary)*

**PART – A**

Answer *all* questions.

Each question carries **Two** mark.

**Ceiling -25 Marks**

1. What do you mean by natural resource?
2. Define biotic and abiotic factors.
3. List out the ecological importance of forests.
4. What do you mean by ecological footprint?
5. Define Tropical moist evergreen forest.
6. Purpose of Vienna Convention.
7. Distinguish plankton, nekton and benthos?
8. What are stock natural resources?
9. What do you mean by Ramsar Convention?
10. Define fossil fuels.
11. Define Montane wet temperate forest.
12. What is oceanic zone?
13. Define afforestation.
14. What do you meant by problem soils?
15. Classification of lakes based on nutrients level.

### **PART - B**

Answer *all* questions.

Each question carries **Five** marks.

**Ceiling -35 Marks**

16. Distinguish the Renewable resources and Non-renewable resources in detail.
17. Give an account on soil utilisation and its significance.
18. Write about Bioprospecting.
19. Describe the major divisions of marine ecosystem.
20. What is Montreal Protocol? What is its function?
21. How does deforestation affect the environment?
22. Define Estuary. Explain the classification and threats to the estuaries
23. Describe water cycle with neat diagram. Write a note on rivers and types of rivers.

### **PART - C**

Answer any *two* questions.

Each question carries **Ten** marks.

24. What is the purpose of Environment Impact Assessment? Explain the objectives, various steps and processes of EIA.
25. Why biodiversity hotspot important? Write about the threats of biodiversity and its management.
26. What are wetlands? What is their importance? Give a note on types and management strategies of wetlands.
27. What do you meant by sustainable utilization? Give an account on ecological, economic and socio cultural sustainability.

**2 x 10 = 20 Marks**



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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester MSc. Integrated Geology Degree Examination, April 2023

GL04IB04 – OPTICAL AND DESCRIPTIVE MINERALOGY

(2020 Admission onwards)

Time: 2 hours

Max. Marks : 60

*(Draw neat sketches, wherever necessary)*

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**PART – A**

**Answer all questions.**

**Each question carries Two mark.**

**Ceiling -20 Marks**

1. Define Reflection and Refraction.
2. What is Lechatelierite?
3. Distinguish dichroism and pleochroism?
4. Describe thin section preparation.
5. Uses of *Calcite* mineral
6. List out the monoclinic *pyroxene* minerals.
7. What do you mean by optically Positive and negative crystals?
8. Give a short note on birefringence of Uniaxial minerals.
9. What is meant by common mica and brittle mica?
10. Describe zoning in crystals.
11. Define relief of a crystal?
12. What is extinction position in an optical microscope?

### PART - B

Answer *all* questions.

Each question carries Five marks.

Ceiling -30 Marks

13. How accessory plates are used for the determination of slow and fast vibration directions of minerals?
14. Describe methods of producing Plane polarized light
15. Write brief explanatory note on Total internal reflection and Critical angle.
16. Discuss the theoretical details of Optical biaxial Indicatrix.
17. Write a note on chemistry and properties of *Corundum* mineral
18. Discuss the structure, classifications, chemical composition and occurrence of *Garnet group* Minerals
19. Discuss briefly on the construction of Nicol prism.

### PART - C

Answer any *One* question.

20. Give an account on structure, chemistry and properties of *Spinal group* minerals.
21. Discuss the structure, physical and optical properties of *Amphibole group* Minerals. Give their chemical composition and mode of occurrence.

1 x 10 = 10 Marks



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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester Integrated M.Sc. Geology Degree Examination, April 2023

GL04A14 - Intellectual Property Rights

(2020 Admission onwards)

Time: 2 ½ hours

Max. Marks: 80

*(Draw neat sketches, wherever necessary)*

**PART – A**

Answer *all* questions.

Each question carries **Two** mark.

**Ceiling -25 Marks**

1. What is Copyright Act, 1957?
2. Difference between certification mark and collective mark with examples
3. What is meant by related rights?
4. What are different types of patent application?
5. What is meant by Intellectual Property?
6. What is meant by geographical indications?
7. How long rights on copyright and patent last?
8. Why domain name protected?
9. Define broadcast and reproduction right?
10. What is the duration of design registration? Can it be extended?
11. What is the assignment of copyright?
12. Brief about Paris convention?
13. Name the categories of IPR?
14. Examples of trademark and the meaning of trademark symbols?
15. Enumerate the salient features of the Design Act 2000.

### PART – B

Answer *all* questions.  
Each question carries **Five** marks.  
**Ceiling -35 Marks**

16. Why is patent search done? What are the various on-line databases available that provide access to patent documents while conducting patent search?
17. Brief the development of IPR in India and why intellectual property is needed?
18. Explain the patenting of biological invention
19. Briefly explain the term "copyright" and the rights covered by the copyright.
20. Enumerate the salient features of the Trademarks Act, 1999
21. Write about the differences between related rights and copyright
22. What is TRIPS Agreement? Outline the main three features of the TRIPS Agreement.
23. Briefly explain different types of trademarks

### PART - C

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

24. Define IPR? Briefly explain different categories of IPR with examples?
25. What is patent? Explain the procedures of drafting and filing of a patent?
26. Briefly explain copyright, the rights covered by copyright and the need of copyright protection.
27. Explain the patenting of microorganisms and biological processes?

**2 x 10 = 20 Marks**