1B4A22565 (Pages : 2) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester MSc. Integrated Geology Degree Examination, April 2022

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. Explain the term mass defect.
2. State Hardy-Schulze rule.
3. What is the basic principle of a chromatographic technique?
4. How many normal modes of vibration are possible for (a) H_2O and (b) CO_2 molecules?
5. Explain the terms biomagnification and bioaccumulation.
6. How do CFCs cause stratospheric ozone depletion?
7. Define octane number.
8. Distinguish between antiseptics and antibiotics.
9. What are food preservatives? Give examples.
10. Explain the term gold number.
11. What are nanomaterials?
12. Give the gross selection rule of vibrational spectroscopy?
13. What are fundamental band and overtones?
14. What is C-14 dating?
15. Define the term cooperativity?

PART- B

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

16. Explain the following:
    (i) Tyndall effect (ii) Protective colloids
17. State and explain Beer- Lambert's law.
18. Write any five principles of green chemistry.
19. (a) R_f value and its significance (b) DNA finger printing
20. Define (a) chemical shift (b) Fingerprint region
21. Explain the principle of TLC.
22. Explain the meson field theory of nuclear forces.
23. How are colloidal solutions purified?

PART- C

Answer *any two* questions
Each question carries Ten marks

24. (a) Discuss the NMR spectra of (i) ethanol and (ii) propanal. (6 marks)
    (b) Explain the terms macromolecular colloids and multimolecular colloids. (4 marks)
25. (a) Explain the term dye. Explain briefly different theories of dye. (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) Describe the causes and adverse effects of: (i) acid rain (ii) global warming (5 marks)
27. (a) What is LPG? What are its ingredients? Mention its important uses. (3 marks)
    (b) write a note on Biochemistry of cobalt. (4 marks)
    (c) Explain the toxic effect of CO and CN^- on hemoglobin. (3 marks)

(2 x 10= 20 Marks)

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester MSc. Integrated Geology Degree Examination, April 2022

GL04IB06 – IGNEOUS PETROLOGY

(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. Bowen's reaction series
2. Describe the importance ofliquidus and solidus curve.
3. Define lopolith
4. Volcanic ash and volcanic froth
5. How eutectic system and solid solution system differ in terms of final liquid composition
6. Igneous rock classification based on color index
7. What do you mean by Orbicular structure?
8. State the equation of phase rule. Define each term
9. What are the factors controlling the granularity.
10. What do you mean by phenocryst?
11. Explain *longulites, glubulites, margarites, scopulites, trichites*and*microlites*?
12. Distinguish Xenocrysts and xenoliths?
13. Define ropy lava.
14. What are Reaction rims?
15. Differentiate between Crystallites and Microlites.

PART – B

Answer *all* questions.

Each question carries **Five** marks.

Ceiling -35 Marks

16. Write a note on discordant igneous forms
17. Describe Albite –Anorthite solid-solution system
18. Give an account on primary and secondary mineral composition in igneous rock.
19. Write brief explanatory note on Magmatic differentiation
20. Briefly explain IUGS classification.
21. Discuss the forms of extrusive igneous rocks
22. Briefly explain the classification of Lamprophyre
23. Discussany five igneous mega-structures.

PART - C

Answer any *two* questions.

Each question carries **Ten** marks.

24. What is texture of an igneous rock? Discuss briefly the various textures found in igneous rocks.
25. Write a detailed essay on 'igneous rock classification' based on chemical composition or chemistry of rocks.
26. Give an account of the texture, mineralogy, classification, and modes of occurrence of the Granite family of rocks.
27. Apply the phase rule in each stages of diopside-anorthite system having 70% anorthite and 20% anorthite bulk composition. What are the different types of reactions take place during the crystallization.

(2 x 10 = 20 Mark

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Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester MSc. Integrated Geology Degree Examination, April 2022

GL04IB07 – METAMORPHIC PETROLOGY

(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 metamorphism?
2. How Skarns are formed?
3. What is called protolith? Give all types of protolith.
4. What is Isogrades?
5. How strain shadows are formed?
6. How symplectite texture is formed?
7. What is paired metamorphic belt?
8. Write about metamorphic fluids.
9. What is foliated and non-foliated rocks?
10. Write about the limits of metamorphism.
11. What is regional metamorphism?
12. Write about infiltration mechanism in metasomatism?
13. What is metamorphic differentiation?
14. What is Lepidoblastic texture?
15. Write about amphibolite.

PART – B

Answer *all* questions.

Each question carries **Five** marks.

Ceiling -35 Marks

16. Write a short note on fault-zone and impact metamorphism
17. Discuss ACF Diagram.
18. What is mineral zone and describe Barrowian zone.
19. Write about J.B Thompson metasomatic coloum.
20. Discuss the progressive and retrograde metamorphism.
21. Write about the variables/agents of metamorphism.
22. What are the metamorphic effects on calcareous rock?
23. What are the mineralogical changes in amphibolite facies?

PART - C

Answer any *two* questions.

Each question carries **Ten** marks.

24. Describe the type of metamorphism based on geological setting.
25. Discuss any ten metamorphic texture.
26. Write about metamorphic facies series and plate tectonics.
27. Write about the petrography and origin of a) Slate b) Schist c) Phyllite d) Gneiss e) Eclogite .

(2 x 10 = 20 Ma

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Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester MSc. Integrated Geology Degree Examination, April 2022

GL04IB08 - SEDIMENTARY PETROLOGY

(2020 Admission onwards)

Time: 2 hours Max. Marks : 60

(Draw neat sketches, wherever necessary)

PART – A

Answer *all* questions.

Each question carries **Two** mark.

Ceiling -20 Marks

1. Sedimentary rock classification based on composition and origin.
2. What is Insolation Weathering?
3. Describe particle roundness.
4. Define load casts
5. Explain bounce, brush, prod, roll, and skip marks?
6. Define peloids
7. What are stromatolites?
8. Differentiate between extraclasts and intraclasts.
9. What is hybrid sandstone?
10. Explain dolomitization.
11. Define the compositional maturity of sandstone.
12. What do you mean by aggregate grains?

PART – B

Answer *all* questions.

Each question carries **Five** marks.

Ceiling -30 Marks

13. Write the Udden-Wentworth classification for sediments.
14. Describe thetextural components of limestone
15. Give an account on products of subaerial weathering
16. Briefly explain the mineralogy, chemical composition and classification of shale
17. Describe bed load , suspended load and wash load transportation
18. Discuss the conglomerates classification based onclast lithology
19. (a). Determine the paleocurrent direction of the given data.

Class interval	Frequency	Frequency %
0-29	0	0
30-59	21	19.44
60-89	30	27.78
90-119	33	30.56
120-149	15	13.90
150-169	9	8.33

(b). Calculate the statistical parameters for the given sediment sieve data and interpret the depositional environment.*(Φ5=0.40, Φ16=0.83, Φ25=1.52, Φ50=2.03, Φ75=2.72, Φ84=2.92, Φ95=3.62)*

PART - C

Answer any*one* question.

Each question carries **Ten** marks.

20. What is a sedimentary rock? Give a detailed account on various structures of sedimentary rock.
21. Describe in detail about various diagenetic stages, processes and effects of siliciclastic sedimentary rocks.

(1 x 10 = 10 Mar