

1B5N23503

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Reg. No:.....

Name:

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester Integrated M.Sc. Geology Degree Examination, November 2023

GLO5IB05 – IGNEOUS PETROLOGY

(2021 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. What is the difference between continuous and discontinuous reaction?
2. What are Reaction rims?
3. Write about the mineralogy of Lamprophyre.
4. Discuss eutectic point in phase diagram.
5. Discuss the textures seen in anorthosite.
6. Igneous rock classification based on color index
7. State the equation of phase rule. Define each term
8. How granodiorites are formed?
9. Describe essential minerals and accessory minerals?
10. Distinguish Xenocrysts and xenoliths?
11. Describe assimilation
12. How igneous rocks are classified on the basis of Silica%.

PART – B

Answer *all* questions.

Each question carries Five marks.

Ceiling -30 Marks

13. Explain how different composition of diopside- anorthite magma crystallize with the help of phase diagram
14. Give an account on Tyrell's tabular classification.
15. Give short account of the texture, mineralogy, classification, and modes of occurrence of the Granite rocks.
16. Briefly explain the igneous classification based on chemical composition of minerals
17. Discuss any five igneous mega-structures.
18. Describe the texture, mineralogy and origin of dunite.
19. Discuss Albite-Anorthite system using phase rule in detail.

PART - C

Answer *any one* question.

Each question carries Ten marks.

20. Give a detailed account on various forms of igneous rock.
21. Explain the concept of texture in igneous rocks? Provide a brief overview of the different textures found in igneous rocks.

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Reg. No:

Name:

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester Integrated M.Sc. Geology Degree Examination, November 2023

GLO5IB06 – METAMORPHIC PETROLOGY

(2021 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. What is the significance of protoliths in metamorphism? Give examples
2. Comment on high pressure facies and its tectonic settings.
3. How skarns are formed?
4. What is metasomatism?
5. Write about impact metamorphism.
6. What condition helps to the formation of fault breccias and fault gouge?
7. How symplectite texture is formed?
8. What do you meant by Buchan zones?
9. With the help of an example write about retrograde metamorphism.
10. What is paired metamorphic belt?
11. What is index mineral and isograd?
12. Write about pyrometamorphism.

PART – B

Answer *all* questions.

Each question carries Five marks.

Ceiling -30 Marks

13. Write about the metamorphic effects on argillaceous rock.
14. Discuss AKF& ACF Diagrams.
15. What is mineral zone and describe Barrowian zone.
16. Briefly discuss about eclogitefacies and its mineral assemblages.
17. Write about the variables/agents of metamorphism.
18. Discuss the regional metamorphism of ultramafic rocks in terms of mineral association and P-T conditions (up to 600°C).
19. Comment on the structures formed in metamorphic rocks and its significance.

PART - C

Answer any *One* question.

Each question carries Ten marks.

20. Describe the type of metamorphism based on geological setting.
21. Discuss any ten metamorphic textures with neat diagram:

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Reg. No:.....

Name:

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester Integrated M.Sc. Geology Degree Examination, November 2023

GLO5IB07 - SEDIMENTARY PETROLOGY

(2021 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. How compaction take place in the formation of rock?
2. Define surface texture
3. Define pseudo-ooids.
4. What is meant by mineral replacement?
5. What is stromatolites
6. Differentiate between graded bedding and massive bedding.
7. Describe the textural maturity of sandstone.
8. What do you mean by laminar and turbulent flow?
9. What is called eddy viscosity?
10. What is Lenticular bedding
11. Define concretions
12. What is hybrid sandstone?

PART - B

Answer *all* questions.

Each question carries Five marks.

Ceiling -30 Marks

13. Write the Udden-Wentworth classification for sediments.
14. Explain Reynolds number and Froude number in the context of sediment transportation
15. Describe the textural components of limestone
16. Give an account on soil profiles and soil classification
17. Comment on different types of conglomerates and its origin.
18. Calculate the statistical parameters for the given sediment sieve data and interpret the depositional environment.

ASTM	Φ size	Sample weight (g)
18	0	2.14
25	0.5	1.28
35	1	9.36
45	1.5	17.07
60	2	16.48
80	2.5	18.80
120	3	14.14
170	3.5	11.99
230	4	1.39

19. Explain various stages and realms of siliciclastic sedimentary rock diagenesis

PART - C

Answer *anyone* question.

Each question carries Ten marks.

20. Give a detailed account on the Framework mineralogy and classification of Sandstones.
21. How are sedimentary structures formed? Can you provide a detailed explanation of the various structures found in sedimentary rocks?

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Reg. No:.....

Name:

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester Integrated M.Sc. Geology Degree Examination, November 2023

GLO5IB08 - STRUCTURAL GEOLOGY AND GEOTECTONICS

(2021 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. Write a short note on the joints seen in sedimentary rocks?
2. Give a short note about the difference between hydrostatic and deviatoric stresses?
3. What is thrust fault?
4. Briefly explain convergent plate boundaries with example?
5. Write the difference between basin and domes?
6. What are mullions?
7. Write about recumbent folds?
8. What is oceanic trenches and brief about the deepest oceanic trench in the world?
9. What are primary lineations?
10. Brief about shear zones?
11. How earthquake and faults are related?
12. What is boudinage structure?

PART – B

Answer *all* questions.

Each question carries Five marks.

Ceiling -30 Marks

13. Explain convection current theory?
14. Explain stress-strain diagram with reference to the rock deformation behaviour?
15. What are the different types of unconformities?
16. Narrate Fluety's classification of fold?
17. What are joints? Classify joints based on their genesis?
18. Write about the interference patterns in folds?
19. Explain horst and graben structure?

PART - C

Answer *anyone* question.

Each question carries Ten marks.

20. Explain the significance and recognition criteria of different geological structures in the field and map?
21. Explain the origin of Himalayas with neat sketches?

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Reg. No:.....

Name:

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester Integrated M.Sc. Geology Degree Examination, November 2023
GL05ID01-Geoscience and Environment

(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. What do you meant by endogenic and exogenic processes? Give examples.
2. What is focus and epicentre of an earthquake?
3. What is petrology?
4. What do you meant by agglomerates?
5. What is glacier moraine? Name the type of moraines.
6. What are active, dormant and extinct volcanoes?
7. What are the main causes of global warming?
8. Write about water pollution and its effects.
9. What is ozone depletion?
10. Distinguish the *Hawaiin* and *Pelean* types of volcanoes.
11. What is Tsunami?
12. What are fissure types of volcanoes?

PART – B

Answer *all* questions.

Each question carries **Five** marks.

Ceiling -30 Marks

13. Define Geology? Write a note on various branches of Geology.
14. Define water cycle? What are the major processes of water cycle?
15. Briefly explain the components of volcanoes with neat sketches.
16. Discuss the internal structure of the earth with neat diagram.
17. Write about the global distribution of volcanoes.
18. Give explanatory note on Air pollution and its causes and effects.
19. Discuss about the intensity and magnitude scales of an earthquake.

PART - C

Answer *anyone* questions.

Each question carries **Ten** marks.

20. Define Mass wasting. Give an account on classification of Mass wasting.
21. What is weathering? Explain the agents and types of weathering.

1 x 10 = 10 Marks

1M7N23001

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Reg. No:.....

Name:

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Seventh Semester Integrated M.Sc Geology Degree Examination, November 2023

GL07IB12 – ADVANCED CRYSTALLOGRAPHY AND MINERALOGY
(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. Give Bragg's equation.
2. Write about the stereographic projection.
3. What is polar angle and face pole in spheroidal projection?
4. Distinguish optic axis interference figure and off-centered interference figure.
5. Describe the types of extinction.
6. Give the Herman-Mougau notation for all classes of tetragonal system.
7. Write about metamictization.
8. Give the chemical formula of Phlogopite and its occurrence.
9. Draw the thermal stability diagram of tremolite and ferroactinolite.
10. Comment on the working principle and use of transmission electron microscopy.
11. Write about the crystal chemistry of sulfates with examples.
12. What is the mineral composition of the Earth's crust?
13. Write about pleochroic haloes and fracturing in minerals.
14. Name the polymorphs of Al_2SiO_5 and draw its stability field diagram.
15. What is called optic angle?

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

16. Briefly describe Napier's rule.
17. Give the Herman- Mougan notation for normal class of isometric and hexagonal system and describe the element of symmetry using stereogram present in it.
18. Give a detailed account on uniaxial indicatrix.
19. Describe the working principle of ICPMS in detail.
20. Give a detailed account on different types of oxides and its structure with examples.
21. Describe the composition of mantle enlightening the transformation of olivine structure.
22. What is point groups and write about the symmetry elements present in point groups.
23. Explain two dimensional Plain lattice.

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

24. Derive the 32 point groups using Schonflies notation.
25. Describe the crystal chemistry of carbonate and phosphate with examples and diagrams.
26. Explain in detail the working principle of XRD and Scanning electron microscope with diagrams. Also, comment on the application in the field of geology.
27. Give a detailed account on structure of silicates with examples and diagrams.

(2 x 10 = 20 Marks)

1M7N23002

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Reg. No:.....

Name:

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Seventh Semester Integrated M.Sc Geology Degree Examination, November 2023

GL07IB13 – ADVANCED GEOMORPHOLOGY

(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. Brief the principle of Uniformitarianism?
2. Write about Mid Oceanic Ridges?
3. Differentiate MBT and MCT.
4. Geomorphic significance of Western Ghats
5. What are the broad areas of geomorphological applications
6. Write the concept of environmental geomorphology.
7. Define Tectonic Geomorphology
8. Give four examples of Ramsar sites in India
9. Write about the erosional slope with an example?
10. What are Bhangar and Khadar deposits?
11. How heave is formed?
12. What are the different stages of the formation of composite fault-line scarp?
13. What are wetlands? Write about the significance of wetlands?
14. What is the concept of Global isostatic adjustment?
15. How tors are formed?

PART – B

Answer *all* questions.

Each question carries **Five** marks.

Ceiling -35 Marks

16. What is meant by slope elements? Explain longitudinal profile of a slope?
17. Give a short note on geomorphological divisions of Kerala.
18. Explain Kober's geosynclinal theory
19. Explain various kinds of mass movements to modify slopes?
20. Define Isostasy? Elucidate any two theories of Isostasy?
21. Explain the application of geomorphology in Hydrogeology?
22. Brief about the backwaters of Kerala
23. What are the landforms formed related to the variation in lithology?

PART - C

Answer any *two* questions.

Each question carries **Ten** marks.

24. Explain the Davisian and Penckian models of slope evolution and development with neat sketches?
25. Give a detailed account on the geomorphic expressions of faulting?
26. What is a soil profile? Give a detail explanation of the process of formation of each horizon in a soil profile and also describe the classification and types of soil?
27. Explain the geological and geomorphological characteristics of three distinct geomorphic provinces of India.

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Reg. No:.....

Name:

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Seventh Semester Integrated M.Sc Geology Degree Examination, November 2023

GLO7IB14 – ADVANCED IGNEOUS AND 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. Define cataclasis?
2. What is LILE?
3. Differentiate Eutectic and Peritectic point?
4. Define isograd?
5. Hornfelsic texture and its implications?
6. What do you meant by Liquid immicibility??
7. Define Spinifex Texture?
8. Define the term Uralitization?
9. What are ring dykes?
10. State Phase rule
11. Define ternary phase diagram.
12. What is paired metamorphic belts?
13. Draw QAP diagram of volcanic rock.
14. Write a short note on classification of igneous rock based on colour?
15. Define Epitaxis?

PART – B

Answer *all* questions.

Each question carries **Five** marks.

Ceiling -35 Marks

16. What are the different magmatic processes?
17. Briefly describe the various types of metamorphism.
18. Define the significance of major and minor element geochemistry of igneous rocks?
19. Write an explanatory note on Barrovian zones?
20. Write a short note on ACF and AKF diagrams?
21. Give a brief note on Ternary phase diagram of Forsterite-Anorthite-Silica.
22. Write a short note on IUGS classification of plutonic rock?
23. Briefly explain the concept of heat and temperature inside the earth?

PART - C

Answer any *two* questions.

Each question carries **Ten** marks.

24. Mineralogical, chemical description and significance of important igneous rocks of Oceanic associations?
25. Explain in detail the Ternary phase diagram of Diopside-Anorthite-Albite.
26. What are metamorphic facies and metamorphic facies series? Give suitable examples?
27. What types of textures can be found in metamorphic rocks and add a note on its significance?

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Reg. No:.....

Name:

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Seventh Semester Integrated M.Sc Geology Degree Examination, November 2023

GLO7IB15-ADVANCED STRATIGRAPHY

(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 meant by Eonothem?
2. Define Son Narmada North Fault.
3. What is a Paraconformity?
4. Why Dharwar Batholith is important?
5. Write about Pala Lahara Gneiss
6. Define sequence stratigraphy?
7. What do you meant by intertrappean and infratrappean beds?
8. Describe the Holocene epoch and its divisions with respect to the Geological timescale?
9. Write about the Lateral Depositional Contacts
10. Brief the distribution of Cuddapahrocks
11. Distinguish stage and series.
12. Describe rangezone?
13. Define System?
14. What is Cyclostratigraphy?
15. Explain Shaw's Graphic correlation

PART – B

Answer *all* questions.

Each question carries **Five** marks.

Ceiling -35 Marks

16. Write about the Palaeogene Sequences of Assam
17. Give an account on stratigraphy of the Siwalik Group
18. Briefly explain Dalmavolcanics
19. Write a note on Rewa and Kaimur Groups.
20. Give principle of lithostratigraphy and explain the different lithostratigraphic units.
21. Write a short notes on the following: (a) Panjal Volcanics (b) Zewan Formation
22. Give a brief account on distribution and classification of Deccan Traps.
23. Write an explanatory note on K-T boundary extinction and its causes.

PART - C

Answer any *two* questions.

Each question carries **Ten** marks.

24. Describe the Mesozoic stratigraphic succession, classification and depositional characteristics of Spiti Valley.
25. Discuss in detailed about the Geology of Kerala.
26. Describe structure, stratigraphy and economic deposits of Dharwar craton.
27. Discuss in detail stratigraphy, depositional characteristics and paleogeography of the Gondwana Supergroup.
