

FOURTH SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)
EXAMINATION, APRIL 2022

(CBCSS)

Applied Geology

GEL 4E 05 A—ENGINEERING GEOLOGY

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each section.*
2. *The minimum number of questions to be attended from the Section/Part shall remain the same.*
3. *The instruction if any, to attend a minimum number of questions from each sub section/sub part/sub division may be ignored.*
4. *There will be an overall ceiling for each Section/Part that is equivalent to the maximum weightage of the Section/Part.*

Section A

(Instructions : Draw neat diagrams wherever necessary)

I. Short answer type questions. Answer any *four* questions :

- 1 Crushing strength and Transverse strength.
- 2 Forces acting on dams.
- 3 Parts of a tunnel.
- 4 Aseismic design of buildings.
- 5 Open-pit mining.
- 6 Petroleum exploration methods.
- 7 Jigging and Tabling.

(4 × 2 = 8 weightage)

Turn over

Section B

II. Short essay questions. Answer any *four* questions :

- 8 Engineering properties of soils.
- 9 Geological consideration in tunnel constructions.
- 10 Geotechnical aspects of Bhakra Nangal project.
- 11 Landslide hazard mitigation measures.
- 12 Underground coal mining methods.
- 13 Deep sea mining.
- 14 Ore concentration by magnetic and electrostatic separation.

(4 × 3 = 12 weightage)

Section C

III. Long essay. Answer any *two* questions :

- 15 Give an account of the important properties of building stones and aggregates.
- 16 Discuss the geological and geotechnical aspects of bridges and highways.
- 17 Write an essay on the alluvial mining methods with emphasis to river sand mining and beach placer mining.
- 18 Describe the principles and processes of crushing, grinding and sizing in ore dressing.

(2 × 5 = 10 weightage)

**FOURTH SEMESTER M.Sc. DEGREE [REGULAR/SUPPLEMENTARY]
EXAMINATION, APRIL 2022**

(CBCSS)

Applied Geology

GEL 4E 04 b—DISASTER MANAGEMENT

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each section.*
2. *The minimum number of questions to be attended from the Section/Part shall remain the same.*
3. *The instruction if any, to attend a minimum number of questions from each sub section/sub part/sub division may be ignored.*
4. *There will be an overall ceiling for each Section/Part that is equivalent to the maximum weightage of the Section/Part.*

Draw neat diagrams wherever necessary.

Part A

I. Short Answer Type Questions. Answer any *four* questions :

- 1 Man-made disasters.
- 2 Coastal erosion.
- 3 Drought mitigation.
- 4 Disaster management models.
- 5 Flood mitigation measures.
- 6 Disaster Response.
- 7 Disaster Damage Assessment.

(4 × 2 = 8 weightage)

Turn over

Part B

II. Short Essay Questions. Answer any *four* questions :

- 8 Biological Disasters.
- 9 Concepts of Risk and Vulnerability Analysis.
- 10 Prevention and mitigation of floods.
- 11 Early warnings and Safety Measures of Disasters.
- 12 Role of Engineers in Disaster Management.
- 13 Psychological Response and Management of people affected by disasters.
- 14 Role of Educational Institutes in post disaster operations and planning.

(4 × 3 = 12 weightage)

Part C

III. Long Essay. Answer any *two* questions :

- 15 Explain nuclear and industrial disasters with reference to their adverse effects and mitigation.
- 16 Describe disaster preparedness and response highlighting on the concepts, plans and role of Information, Education, Communication and Training.
- 17 What is disaster management ? Give an account of the role of Government, International and NGO Bodies in disaster management.
- 18 Give details on the Rehabilitation, Reconstruction and Recovery phases of Disaster Management Cycle with reference to post disaster effects and remedial measures.

(2 × 5 = 10 weightage)

C 22477

(Pages : 2)

Name.....

Reg. No.....

**FOURTH SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)
EXAMINATION, APRIL 2022**

(CBCSS)

Applied Geology

GEL 4E 04A—EXPLORATION GEOLOGY

(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each section.*
2. *The minimum number of questions to be attended from the Section/Part shall remain the same.*
3. *The instruction if any, to attend a minimum number of questions from each sub section / sub part / sub division may be ignored.*
4. *There will be an overall ceiling for each Section / Part that is equivalent to the maximum weightage of the Section / Part.*

Instructions: Draw neat diagrams wherever necessary.

Section A

I. Short answer type questions. Answer any *four* questions.

- 1 Mobility of elements.
- 2 Viola calaminaria.
- 3 Ground water exploration.
- 4 Air borne magnetic survey.
- 5 Biogeochemical anomaly.
- 6 Geochemical anomaly.
- 7 SP method.

(4 × 2 = 8 weightage)

Section B

II. Short essay questions. Answer any *four* questions :

- 8 Stream sediment sampling.
- 9 Refraction and reflection seismic survey.
- 10 Diffusion and leakage anomalies.
- 11 Methods of sampling.
- 12 Phases in mineral prospecting.
- 13 Mode of occurrence of trace elements.
- 14 Interpretation of gravity data.

(4 × 3 = 12 weightage)

Section B

III. Long essay. Answer any *two* questions :

- 15 Explain the principle, operative physical property, measured parameters of the geophysical surveys employed in the exploration for ore mineral deposits.
- 16 Give an account of the bore hole geophysical surveys.
- 17 Discuss the principles and application of radiometric methods in mineral exploration.
- 18 Give an account of the various geologic guides in ore search.

(2 × 5 = 10 weightage)

**FOURTH SEMESTER M.Sc. DEGREE [REGULAR/SUPPLEMENTARY]
EXAMINATION, APRIL 2022**

(CBCSS)

Applied Geology

GEL 4C 10—GEOCHEMISTRY AND ISOTOPE GEOLOGY

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each section.*
2. *The minimum number of questions to be attended from the Section / Part shall remain the same.*
3. *The instruction if any, to attend a minimum number of questions from each sub section / sub part / sub division may be ignored.*
4. *There will be an overall ceiling for each Section / Part that is equivalent to the maximum weightage of the Section / Part.*

Draw neat diagrams wherever necessary.

Part A

I. Short Answer Type Questions. Answer any *four* questions :

- 1 Blocking temperature.
- 2 Distribution co-efficient of trace elements.
- 3 Bulk Silicate Earth.
- 4 Entropy.
- 5 CHUR.
- 6 Nucleosynthesis.
- 7 X-ray fluorescence spectroscopy.

(4 × 2 = 8 weightage)

Turn over

Part B

II. Short Essay Questions. Answer any *four* questions :

- 8 Radiation damage methods of dating.
- 9 Significance of oxygen isotopes in geology.
- 10 Geochemistry of core and mantle of Earth.
- 11 Sensitive High Resolution Ion Microprobe (SHRIMP).
- 12 Laws of thermodynamics.
- 13 Importance of trace elements in Igneous Petrology.
- 14 Geochemistry of weathering and transportation.

(4 × 3 = 12 weightage)

Part C

III. Long Essay. Answer any *two* questions :

- 15 Explain the principles of isotope dating and decay schemes of the radiogenic isotope systems regarding the U-Th-Pb method of dating.
- 16 What are Meteorites ? Describe the various classification schemes and geochemistry of meteorites.
- 17 What is a geochemical cycle ? Explain the principles of geochemical prospecting.
- 18 Discuss the basic principles of Mass independent fractionation stable Carbon and Sulphur isotope systems. Add a brief note on their geological applications.

(2 × 5 = 10 weightage)

FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2022

(CCSS)

Applied Geology

GEL 4C 10—ECONOMIC GEOLOGY

(2019 Admissions)

Time : Three Hours

Maximum : 80 Marks

*Draw neat diagrams wherever necessary.***Part A***Write short notes on all of the following.**Each question carries 2 marks.*

1. Tenor of ore.
2. Strata bound deposit.
3. Strategic minerals.
4. Maceral.
5. Gas Hydrates.
6. Ore microscope.
7. Skarn.
8. Reservoir trap.

(8 × 2 = 16 marks)

Part B*Write short essays on any six of the following.**Each question carries 6 marks.*

9. Textures of ore minerals.
10. Metallogenic epochs.
11. Economic mineral deposits associated with carbonatites.
12. Iron ore deposits of Kudremukh and Bailadila.
13. Structural controls of ore localization.
14. Neyveli Lignite Field.

Turn over

15. Physical properties and chemical composition of petroleum.
16. Study of fluid inclusions and its significance.
17. Geology and origin of lead-zinc deposits of Zawar.
18. Paragenetic sequences and zoning in mineral deposits.

(6 × 6 = 36 marks)

Part C

*Write essays on any two of the following.
Each question carries 14 marks.*

19. Discuss Bateman's classification of ore deposits.
20. Describe the form, distribution, setting and origin of deposits of Anorthosite-Fe-Ti oxide association.
21. Critically analyze the new National Mineral Policy of India.
22. Describe the distribution and geology of oil fields of Cauvery Basin.

(2 × 14 = 28 marks)

FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2022

(CCSS)

Applied Geology

GEL4C09—GEOCHEMISTRY AND SEDIMENTOLOGY

(2019 Admissions)

Time : Three Hours

Maximum : 80 Marks

*Draw neat diagrams wherever necessary.***Part A***Write short notes on all of the following.**Each question carries 2 marks.*

1. Entropy.
2. Uses of stable isotopes of oxygen.
3. SHRIMP.
4. Eh-pH.
5. Rhythmite.
6. Reynold's number.
7. Sieve analysis.
8. Evaporites.

(8 × 2 = 16 marks)

Part B*Write short essays on any six of the following.**Each question carries 6 marks.*

9. Cosmic abundance of elements.
10. Geochemical classification of elements.
11. Principles of isotopic dating.
12. Differentiation of crust, mantle and core.

Turn over

13. Application of Gibb's phase rule in geochemical studies.
14. Genesis of limestone.
15. Udden-Wentworth scale and its significance in textural studies.
16. Modern sedimentary environments.
17. Plate tectonic setting and sedimentation.
18. Penecontemporaneous structures.

(6 × 6 = 36 marks)

Part C

Write essays on any two of the following.

Each question carries 14 marks.

19. Discuss the advantages and limitations of radiometric methods in dating of Precambrian rocks with suitable examples.
20. Describe the Laws of thermodynamics with suitable examples of rock systems.
21. Give an account of the classification and genesis of sandstone.
22. Describe the lithologies and structures formed in various sedimentary environments.

(2 × 14 = 28 marks)