

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

(CBCSS)

Applied Geology

GEL 2C 08—APPLIED PALAEOLOGY AND SEDIMENTOLOGY

(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.*

I. Short Answer Type Questions. Answer any *four* questions. Each question carries 2 weightage :

- 1 Thermal maturity of fossils.
- 2 Palynology.
- 3 Warkalli Formation.
- 4 Zingg's diagram.
- 5 Rhythmites.
- 6 Cross-bedding.
- 7 Deltas.

(4 × 2 = 8 weightage)

II. Short Essay Questions. Answer any *four* questions. Each question carries 3 weightage :

- 8 Evolutionary history of Foraminifers.
- 9 Classification of Ostracoda.
- 10 Cretaceous-Palaeogene Boundary.
- 11 Significance of the study of fossils.
- 12 Classification of sandstone.
- 13 Bouma sequence.
- 14 Plate boundary basins.

(4 × 3 = 12 weightage)

III. Long Essay. Answer *two* questions. Each question carries 5 weightage :

- 15 Describe the different methods of preservation of fossils
- 16 Discuss the evolution of man
- 17 Explain the lithification, diagenesis and classification of carbonates
- 18 Describe sedimentary facies. Describe the different types of depositional environments

(2 × 5 = 10 weightage)

**SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)  
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Applied Geology

GEL 2C 07—HYDROGEOLOGY

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

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**Part A**

I. Short Answer Type Questions. Answer any *four* questions. Each question carries 2 weightage :

- 1 Juvenile water.
- 2 Unconfined aquifers.
- 3 Hydrologic cycle.
- 4 Specific capacity.
- 5 Groundwater mining.
- 6 Artisan flow.
- 7 Seawater ingression.

(4 × 2 = 8 weightage)

**Turn over**

**Part B**

II. Short Essay Questions. Answer any *four* questions. Each question carries 3 weightage :

- 8 Springs.
- 9 Physical properties of groundwater.
- 10 Geologic methods of groundwater exploration.
- 11 Pump tests.
- 12 Groundwater pollution.
- 13 Ghyben-Herzberg relation.
- 14 Use of remote sensing in groundwater exploration.

(4 × 3 = 12 weightage)

**Part C**

III. Long Essay. Answer *two* questions. Each question carries 5 weightage :

- 15 Discuss in details the use of different diagrams in representing groundwater quality.
- 16 Elaborate in detail the groundwater provinces of India.
- 17 Give an account of the use of radioisotopes in hydrogeology.
- 18 Describe the different types of groundwater flow with special emphasis on Darcy's Law and its application.

(2 × 5 = 10 weightage)

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Applied Geology

GEL 2C 06—ECONOMIC GEOLOGY

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

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4. *There will be an overall ceiling for each Section / Part that is equivalent to the maximum weightage of the Section / Part.*

*Draw diagrams wherever necessary.*

**Section A**

I. Write Short Answers. Answer any *four* questions :

- 1 Exsolution textures.
- 2 Tenor and grade of ores.
- 3 Manganese nodules.
- 4 Neyveli lignite deposits.
- 5 National Mineral Policy.
- 6 Temporal distribution of ores.
- 7 Fixed carbon.

(4 × 2 = 8 weightage)

**Section B**

II. Write Short Essays. Answer any *four* questions :

- 8 Strategic, critical and essential mineral deposits of India.
- 9 Batemen's classification of ore deposits.

**Turn over**

- 10 Structural controls of hydrothermal ore formation.
- 11 Form, setting, distribution and origin of anorthosite-Fe-Ti oxide association.
- 12 Beach placers of Kerala.
- 13 Copper deposits of Malanjkhand and Singhbhum-ore minerals, distribution, host rock and genesis.
- 14 Classification and petrography of coal.

(4 × 3 = 12 weightage)

### Section C

III. Write Long Essays. Answer any *two* questions :

- 15 Describe the methods involved in determining the hardness of polished ore sections.
- 16 Give a detailed account of the Gondwana coal fields of India.
- 17 Discuss the geology and genesis of Lead-Zinc deposits of Rajasthan.
- 18 Describe the important geological features of the major onshore petroleum deposits of Gujarat and Rajasthan. Add a note on Bombay High.

(2 × 5 = 10 weightage)

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Applied Geology

GEL 2C 05—CRYSTALLOGRAPHY AND MINERALOGY

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

**General Instructions**

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*Draw diagrams wherever necessary.*

I. Write Short Answers. Answer any *four* questions :

- 1 Zeolite Group.
- 2 Schoenflies notations.
- 3 Optic Axial Angle.
- 4 Isogyres.
- 5 Asthenosphere.
- 6 Napier's Rule.
- 7 Wadsleyite.

(4 × 2 = 8 weightage)

**Turn over**

II. Write Short Essays. Answer any *four* questions :

- 8 Stereographic projection in the study of crystals.
- 9 Mineralogical composition of the crust of the earth.
- 10 Compare the structure, chemical composition and optical properties of pyroxenes and amphiboles.
- 11 Principles of XRD and Bragg's Law.
- 12 Translational periodicity of crystals.
- 13 Describe the refractive index and relief of minerals in thin sections.
- 14 Determination of Order of Interference Colour of minerals using Michel Levy's Interference Colour Chart.

(4 × 3 = 12 weightage)

III. Write Long Essays. Answer any *two* questions :

- 15 Describe the mineralogy and phase transformations in the lower mantle of the earth.
- 16 Describe the structure, chemical composition, physical properties and optical properties of the garnet group.
- 17 What is Indicatrix ? Describe Uniaxial indicatrix and its uses.
- 18 Derive 32 crystal classes.

(2 × 5 = 10 weightage)