FIRST SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, NOVEMBER 2021

(CBCSS)

Applied Geology

GEL 1C 04—STRATIGRAPHY AND INDIAN 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.*

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

1 Biostratigraphy.

2 Mobile belts.

3 Saline series.

4 Peninsular gneiss.

5 Stratotypes.

6 Muth Quartzite.

7 Shaw's Graphic correlation.

(2 × 4 = 8 weightage)

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

8 Green stone belts.

9 Khondalites.

10 Age of Deccan Traps.

11 Mass extinction.

12 Cyclostratigraphy.

13 GSSP.

14 Methods of stratigraphic correlation.

(3 × 4 = 12 weightage)

III. Long essay. Answer *two* questions :

15 Write an essay on the distribution, lithology and structure in Dharwar super group.

16 Describe the contributions of Steno, Lehmann, Hutton, Lyell & Smith to Stratigraphy.

17 Briefly describe Boundary problems in major formations of Indian stratigraphy.

18 Give an account of the distribution, lithology classification and fossils present in Cuddapah Super group.

(2 × 5 = 10 weightage)

D 13087 (Pages : 2) Name.....

Reg. No.....

FIRST SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, NOVEMBER 2021

(CBCSS)

Applied Geology

GEL 1C 03—GEOINFORMATICS

(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.*
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Part A

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

1 Vertical aerial photograph.

2 Tone.

3 Radiant energy.

4 Spectral Signature.

5 Rayleigh Scattering.

6 Ellipsoid.

7 Geoprocessing.

(4 × 2 = 8 weightage)

Part B

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

8 GIS for mineral exploration.

9 Spatial analysis.

10 Web GIS.

Turn over

11 Data model in GIS.

12 Image classification.

13 Thermal Infrared Scanner.

14 Electromagnetic spectrum.

(4 × 3 = 12 weightage)

Part C

III. Long essay. Answer *two* :

15 Write an essay on elements of photo interpretation. Add a note on drainage and lineament delineation using satellite imagery.

16 Write an essay on digital image processing.

17 Describe GIS application in urban planning with special reference to geology.

18 Write an essay on database management system in GIS. Add a note on GIS query.

(2 × 5 = 10 weightage)

D 13086 (Pages : 2) Name.....

Reg. No.....

FIRST SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, NOVEMBER 2021

(CBCSS)

Applied Geology

GEL1C02—STRUCTURAL GEOLOGY AND GEOTECTONICS

(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* :

1 Lithological contact.

2 Stress ellipsoid.

3 Rock deformation.

4 Flexural folding.

5 S-fabric.

6 Pre-Cambrian crust.

7 Wilson cycle.

(2 × 4 = 8 weightage)

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

8 Flinn diagram.

9 Pumpelly's rule.

Turn over

10 Petrofabric analysis.

11 Plate tectonics.

12 Palaeomagnetism.

13 Fracture development.

14 Mountain Chains.

(3 × 4 = 12 weightage)

III. Long Essay. Answer *two* :

15 Explain genetic classification of fold after Donath and Parker. Add a note on mechanics of folding.

16 Give an account of tectonites and its application in structural analysis.

17 Explain plate tectonic system of earth and various driving mechanisms of plate movement.

18 Describe processes of geological mapping. How do you represent attitudes of planes and lines on a geological map ?

(2 × 5 = 10 weightage)

D 13085 (Pages : 2) Name.....

Reg. No.....

FIRST SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, NOVEMBER 2021

(CBCSS)

Applied Geology

GEL 1C 01—PHYSICAL GEOLOGY AND GEOMORPHOLOGY

(2019 Admissions 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.*
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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.*

Part I

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

1 Jovian Planets.

2 Meteors and Meteorites.

3 Cycle of Erosion.

4 Bifurcation ratio.

5 Natural levees.

6 Lateritic soils.

7 Soil creep.

(4 × 2 = 8 weightage)

Part II

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

8 Davis model of landscape evolution.

9 Morphometric parameters.

10 Coastal landforms.

11 Gravity measurements.

12 Backwaters of Kerala.

13 Slope movements.

14 Tectonic features of Oceanic crust.

(4 × 3 = 12 weightage)

Part III

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

15 Explain the control of geomorphological features by lithology and structure.

16 Discuss various erosional and depositional landforms of rivers.

17 Discuss the application of geomorphology in ground water exploration.

18 Describe various geomorphic principles.

(2 × 5 = 10 weightage)

D 12257 (Pages : 2) Name.....

Reg. No.....

FIRST SEMESTER P.G. DEGREE EXAMINATION, NOVEMBER 2021

(CCSS)

Applied Geology

GEL 1C 04—STRATIGRAPHY AND APPLIED PALAEONTOLOGY

(2019 Admissions)

Time : Three Hours Maximum : 80 Marks

Draw diagrams wherever necessary.

Part A

Write short notes on the following.

1. Conodonts.
2. Sargur Group.
3. Trace fossils.
4. Stromatolites.
5. Sequence stratigraphy.
6. Morphology of ancient spores.
7. Mobile belts.
8. Pygidium.

(8 × 2 = 16 marks)

Part B

Write short essays on any **six** *of the following.*

9. Basic principles of stratigraphy.
10. Suture patterns in ammonoids.
11. Life during the Palaeozoic Era.
12. Contributions of A.G. Werner and James Hutton towards stratigraphy.
13. Classification and lithology of Cuddapah Supergroup.
14. General morphology and evolution of graptolites.

Turn over

15. Preparation and preservation of microfossils.

16. Morphology and stratigraphic importance of foraminifers.

17. Evolution of dinosaurs.

18. Charnockites and Khondalites of Kerala.

(6 × 6 = 36 marks)

Part C

Write essays on **two** *of the following.*

19. Describe the lithology, classification and age of Vindhyan Supergroup.

20. Discuss the use of microfossils in the study of palaeoenvironment, palaeoecology and palaeogeographic with suitable examples.

21. Discuss the various hypotheses on mass extinctions in geologic history.

22. Trace the evolution of man.

(2 × 14 = 28 marks)

D 12256 (Pages : 2) Name.....

Reg. No.....

FIRST SEMESTER P.G. DEGREE EXAMINATION, NOVEMBER 2021

(CCSS)

Applied Geology

GEL 1C 03—REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEM

(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. Mie scattering.
2. Visible spectrum.
3. Polarisation.
4. Histogram equalization.
5. Low-pass filter.
6. Spectral ratioing.
7. Digital elevation model.
8. Training area.

(8 × 2 = 16 marks)

Part B

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

9. Explain what is meant by false colour composite.
10. Describe the atmospheric effects that influence remote sensing.
11. Describe the geometry of radar images.
12. What are thermal images and how are they used ?

Turn over

13. Explain what is meant by NDVI and how it is used.

14. Discuss what is meant by 'Band Ratioing ? In remote sensing.

15. What is a LISS sensor ? Explain its features.

16. Distinguish between spatial and spectral resolution.

17. Describe 'spectral signature' with examples.

18. Write a note on Wien's Displacement Law and its use in remote sensing.

(6 × 6 = 36 marks)

Part C

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

19. What is meant by hyperspectral remote sensing ? Discuss the concept of image cube.

20. Discuss the various elements of airphoto interpretation.

21. Describe the various processes involved in remote sensing image processing.

22. Discuss the basic elements of a map, and distinguish between a map and an image.

(2 × 14 = 28 marks)

D 12255 (Pages : 2) Name.....

Reg. No.....

FIRST SEMESTER P.G. DEGREE EXAMINATION, NOVEMBER 2021

(CCSS)

Applied Geology

GEL 1C 02—STRUCTURAL GEOLOGY AND GEOTECTONICS

(2019 Admissions)

Time : Three Hours Maximum : 80 Marks

Draw diagrams wherever necessary.

Part A

Write short notes on the following.

1. Brittle deformation.
2. Rheology.
3. Conical folds.
4. Equal area projection.
5. Lithosphere.
6. Mylonites.
7. Release joints.
8. Lineations.

(8 × 2 = 16 marks)

Part B

Write short essays on any **six** *of the following.*

9. Use of Stereographic projection in the study of planar structures.
10. Use of dip isogons in the study of folds.
11. Pumpelly's Rule and its application.
12. Evolution of the Indian plate.
13. Mantle convection and plate movements.

Turn over

14. Stages of rock deformation.

15. Discuss the application of palaeomagnetism in palaeo-position of continents.

16. Types of fractures.

17. Strike slip.

18. Stress and strain ellipsoids.

(6 × 6 = 36 marks)

Part C

Write essays on any **two** *of the following.*

19. What are superposed folds ? Discuss the different types of fold interference patterns.

20. What are brittle and ductile shear zones ? Describe the different types of shear sense indicators.

21. Discuss the evolution of Himalayas.

22. Discuss the evolution of the concept of plate tectonics.

(2 × 14 = 28 marks)

D 12254 (Pages : 2) Name.....

Reg. No.....

FIRST SEMESTER P.G. DEGREE EXAMINATION, NOVEMBER 2021

(CCSS)

Applied Geology

GEL 1C 01—PHYSICAL GEOLOGY AND GEOMORPHOLOGY

(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. Achondrite.
2. The asteroid belt.
3. Isostasy.
4. Moho.
5. Ramsar convention.
6. Catastrophism.
7. Arete.
8. Vadose zone.

(8 × 2 = 16 marks)

Part B

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

9. Distinguish between the crust and the mantle based on their seismic behaviour.
10. Differentiate continental and valley glaciers, and cite examples.
11. Describe the Modified Mercalli scale.
12. Describe the erosional features produced by wind.
13. Discuss the different models of landscape evolution.
14. How did the kayals of Kerala form ? Discuss.
15. Describe the different types of sand dunes.
16. How did the Western Ghats form and what influence does it have on shaping the geomorphology of Kerala ?

17. Give a brief overview of the plateaus of Kerala.

18. What would be the ideal geomorphological site to locate a municipal waste dump and why ?

(6 × 6 = 36 marks)

Part C

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

19. Describe the theories for the evolution of the Earth.

20. Discuss how plate tectonics works and its implications for the future of the Earth.

21. Describe the major erosional and depositional features produced by rivers.

22. Classify landslides. Discuss the causes and types of the recent landslides in Kerala.

(2 × 14 = 28 marks)