D 93548 **(Pages : 2)** **Name.....**

Reg. No.....

FIRST SEMESTER P.G. DEGREE EXAMINATION, NOVEMBER 2020

(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. Outer planets.
2. Chondrite.
3. Aspect.
4. Bergschrund.
5. Estaury.
6. Creep.
7. Atoll.
8. Kole lands.

(8 × 2 = 16 marks)

Part B

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

9. Sources of heat in the crust.
10. Shape of the Earth.
11. Describe the Richter scale.
12. Discuss the differences between transverse and longitudinal dunes.
13. Discuss the contributions of Nicholas Steno to geology.
14. Davis model of landscape evolution.
15. Major relief features of India.
16. Geomorphologically ideal locations for tunnel construction.
17. Define and describe solifluction.
18. Discuss the geological significance of oxbow lakes.

(6 × 6 = 36 marks)

Turn over

Part C

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

19. Compare and contrast the oceanic and continental crust, especially regarding their morphology

20. What is a drainage basin ? What are the parameters which can be used to define such a basin ?

21. Describe the internal structure of the Earth with a suitable cross-sectional diagram

22. Describe the geomorphology of Kerala, and the three-fold longitudinal classification.

(2 × 14 = 28 marks)

D 93549 **(Pages : 2)** **Name.....**

Reg. No.....

FIRST SEMESTER P.G. DEGREE EXAMINATION, NOVEMBER 2020

(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. Asthenosphere.
2. Extension fractures.
3. Mylonites.
4. S-tectonites.
5. Pitch and plunge.
6. Rheology.
7. Rose diagrams.
8. Lineaments.

(8 × 2 = 16 marks)

Part B

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

9. Use of Stereographic projection in structural studies.
10. Ramsay's classification of folds.
11. Shear zones and shear sense indicators.
12. Seismic belts of the earth.
13. Mantle convection.
14. Stages of rock deformation.
15. Application of palaeomagnetism in palae-oposition of continents.
16. Fracture development and propagation of fractures.
17. Superposed folding and types of interference patterns.
18. Growth of continental crust.

(6 × 6 = 36 marks)

Turn over

Part C

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

19. Classify foliations. Explain the use of axial plane foliations in determining major folds.

20. What are stress and strain ellipsoids ? Discuss their use in the study of faults and joints.

21. Describe the composition and structure of mid ocean ridges. Add a note on magnetic anomaly stripes.

22. Describe the different types of plate boundaries and features associated with destructive and accretionary boundaries.

(2 × 14 = 28 marks)

D 93550 **(Pages : 2)** **Name.....**

Reg. No.....

FIRST SEMESTER P.G. DEGREE EXAMINATION, NOVEMBER 2020

(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. Relief displacement.
2. Georeferenced data.
3. Landsat.
4. Active sensor.
5. Isopleth map.
6. Mosaic.
7. Datum.
8. Define photogrammetry.

(8 × 2 = 16 marks)

Part B

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

9. Distinguish between orthophotos and satellite images.
10. Describe how relief displacement can be used to determine scale.
11. Explain the use of false colour composites.
12. What is the spectral range of panchromatic sensing, and what are its advantages ?
13. Describe image enhancement techniques used in remote sensing.

Turn over

14. Describe how mobile mapping is undertaken.

15. Write a note on cylindrical projections.

16. Give examples of spatial and non-spatial data and its differences.

17. What are atmospheric windows ? How are they of use in remote sensing ?

18. Write a note on Stefan-Boltzmann's 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. Describe how supervised and unsupervised classification is carried out, and mention which would be best suited for mapping active quarries in Kerala.

20. Explain the principles of RADAR remotes sensing.

21. Discuss the differences between vector and raster GIS formats, and name GIS packages that are best suited for each type.

22. Discuss the applications of remote sensing in landuse/land cover mapping.

(2 × 14 = 28 marks)

D 93551 **(Pages : 2)** **Name.....**

Reg. No.....

FIRST SEMESTER P.G. DEGREE EXAMINATION, NOVEMBER 2020

(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. Pedostratigraphy.
2. Greenstone belts.
3. Rewa Group.
4. Suture line in ammonites.
5. Palynology.
6. Khondalites.
7. Neptunism.
8. Ostracodes.

(8 × 2 = 16 marks)

Part B

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

9. Mass extinction during the Palaeozoic Era.
10. Evolutionary trends and geologic distribution of Ammonoidea.
11. Evolution of life during Mesozoic Era.
12. Contributions of Nicholaus Steno and William Smith towards stratigraphy.
13. Classification, lithology and age of Dharwar Supergroup.
14. General morphology and evolution of trilobites.
15. Use of microfossils in oil exploration.
16. Classification, morphology and palaeoecology of conodonts.
17. Describe the factors of human evolution.
18. Southern Granulite Terrain.

(6 × 6 = 36 marks)

Turn over

Part C

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

19. Describe the morphology, classification and stratigraphic importance of stromatolites.

20. Describe the mode of sample collection and recovery of microfossils. Give the general classification of microfossils.

21. Give an account of the Precambrian rocks of Kerala.

22. Trace the evolution of horses.

(2 × 14 = 28 marks)

D 93372 **(Pages : 2)** **Name.....**

Reg. No.....

FIRST SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, NOVEMBER 2020

(CBCSS)

Applied Geology

GEL 1C 01—PHYSICAL GEOLOGY AND GEOMORPHOLOGY

(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. *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 Planetesimal hypothesis for the origin of the Earth.

2 Mohorovicic Discontinuity.

3 Geoid.

4 Thalweg.

5 Desert pavement.

6 Widmanstatten patterns.

7 Saltation.

(4 × 2 = 8 weightage)

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

8 Sources of crustal heat flow.

9 Pratt and Airy's theories of isostasy

10 Davis's model of landscape evolution.

11 Draw and label a typical soil profile in the tropics.

12 Define an estauary and list its features.

13 Relict mountains

14 Application of geomorphology in hydrogeological investigations

(4 × 3 = 12 weightage)

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

15 Describe some of the modern techniques for earthquake prediction.

16 Define drainage basin. Describe the different drainage patterns that can develop in drainage basins and the reasons.

17 Describe briefly the geomorphology of Kerala.

18 Classify landslides and describe the nature of land sliding in Kerala during the recent fllods.

(2 × 5 = 10 weightage)

D 93373 **(Pages : 2)** **Name.....**

Reg. No.....

FIRST SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, NOVEMBER 2020

(CBCSS)

Applied Geology

GEL 1C 02—STRUCTURAL GEOLOGY AND GEOTECTONICS

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

Section A

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

1 Rule of V.s.

2 Ductile deformation.

3 Cordilleran arc.

4 Cataclasites.

5 Ninety East Ridge.

6 Wulff net.

7 Snowball garnet.

(4 × 2 = 8 weightage)

Section B

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

8 Evidences for movement on faults.

9 Strain ellipsoid.

Turn over

10 Magnetic anomalies in the ocean crust.

11 Hadean crustal evolution.

12 Explain the forces that move plates.

13 Pumpelley's rule.

14 How can the orientation of a plane be defined ?

(4 × 3 = 12 weightage)

Section C

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

15 Write an essay on the use of tectonites in reconstructing tectonic history of an area.

16 Describe the geometric classification of folds by Ramsay.

17 Describe the nature and formation of large-scale strike-slip, transpression, and transtension faults.

18 Describe the plate tectonic events that lead to the development of the Himalayas.

(2 × 5 = 10 weightage)

D 93374 **(Pages : 2)** **Name.....**

Reg. No.....

FIRST SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, NOVEMBER 2020

(CBCSS)

Applied Geology

GEL 1C 03—GEOINFORMATICS

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

Section A

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

1 FCC.

2 John Snow.

3 Ground Control Points.

4 IRS.

5 Manhattan distance.

6 Dangling node.

7 Map generalization.

(4 × 2 = 8 weightage)

Section B

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

8 Passive vs. active sensors.

9 Stefan-Boltzmann and Wien's Displacement Laws.

10 Discuss how remote sensing can be used to identify potential groundwater zones.

Turn over

11 Differentiate between tone and texture in aerial photo interpretation.

12 Image enhancement techniques.

13 Point-in-polygon test.

14 Rubber sheeting.

(4 × 3 = 12 weightage)

Section C

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

15 Describe how aerial photographs are acquired. Explain the terminology involved.

16 Draw and label the electromagnetic spectrum and describe the wavelength ranges of particular use in remote sensing.

17 What is meant by Digital Image Processing ? Discuss how this is done and the outcome obtained.

18 Discuss the differences between vector and raster data models in GIS with examples.

(2 × 5 = 10 weightage)

D 93375 **(Pages : 2)** **Name**.....

Reg. No.....

FIRST SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, NOVEMBER 2020

(CBCSS)

Applied Geology

GEL 1C 04—STRATIGRAPHY AND INDIAN 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. *There will be an overall ceiling for each Section / Part that is equivalent to the maximum weightage of the Section / Part.*

Section A

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

1 James Hutton.

2 Great Oxygenation Event.

3 Granulite.

4 Bagh beds.

5 Gangamopteris.

6 Leaked fossils.

7 Lonar lake.

(4 × 2 = 8 weightage)

Section B

Short Essay Questions. Answer any *four* questions :

8 Discuss uniformitarianism *vs* catastrophism.

9 What is meant by Global Boundary Stratotype Sections and Points (GSSP) ? Describe.

10 Magnetostratigraphic procedures.

11 Granite-greenstone terrains.

12 Cuddalore sandstone and equivalent.

Turn over

13 Distinguish between Glossopteris and Gangamopteris.

14 Explain sequence stratigraphy.

(4 × 3 = 12 weightage)

Section C

Long Essays. Answer any *two* questions :

15 Discuss the Cretaceous-Tertiary boundary problem in Indian stratigraphy.

16 What are the major extinctions on Earth ? Discuss the causes.

17 Describe the stratigraphy of the Cuddapah supergroup.

18 Describe the environment of deposition of the Siwalik succession and its faunal record.

(2 × 5 = 10 weightage)