Total No. of Questions : 8] **[Total No. of Pages : 1**

P695

[3626-G]-101
M.Sc. GEOLOGY
GL-101 : Mineralogy
(2008) (Sem. - I)

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates :

1) ***You are advised to attempt not more than 5 questions.***
2) ***All questions carry equal marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) What is unit cell? What is space lattice? Write about Fourteen Bravais Lattices.

Q2) Give an account of structure, chemical composition and paragenesis of olivine mineral group.

Q3) Explain the generation of interference colours in anisotropic minerals between cross polarized light.

Q4) Give an account of chemical composition, physical and optical properties and alteration products of alkali felspars.

Q5) Write notes on any two:

a) Any two accessory plates.

b) Orthopyroxenes.

c) Paragenesis of garnets.

d) Isomorphism and solid solutions.

Q6) What is meant by indicatrix? Explain the indicatrices in Uniaxial minerals.

Q7) Give an account of structure, chemical composition and paragenesis of zeolite minerals.

Q8) Write notes on any two:

a) Paragenesis of clay minerals.

b) Seven crystal systems.

c) Calcium amphiboles.

d) Uniaxial Interference Figure.

Total No. of Questions : 8] **[Total No. of Pages : 2**

P696

[3626-G]-102

M.Sc.

GEOLOGY

GL-102 : Principles of Stratigraphy and Palaeontology

(2008) (Sem. - I) (New)

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates :

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***All questions carry equal marks.***
3) ***You are advised to attempt not more than 5 questions.***

Q1) Explain the term 'stratigraphy'. Discuss the stratigraphic classification with special reference to Time-Rock-Units. Add a note on its significance on the correlation.

Q2) Attempt Any Two:

i) Marine Transgession

ii) Rotary Drilling

iii) Dinosaurs

iv) Magnetostratigraphy

Q3) Explain the Term Correlation. Enumerate your answer giving details about the stratigraphic correlation. Add a note on its significance in well to well correlation.

Q4) Attempt Any Two:

i) Biofacies.

ii) Unconformity.

iii) Geological Time Scale.

iv) Extinction.

Q5) What is foraminifera? Describe major morphological characters for taxonomic identifications.

Q6) Write the morphology of the Bivalve Shell.

P.T.O.

Q7) Attempt Any Two:

i) Hinges in Ostracods.

ii) Sampling Criteria for Micropaleontological studies.

iii) Uses of Microfossils.

iv) Evolutionary Trends in Ammonoids.

Q8) Attempt Any Two:

i) Significance of Spore and Pollens in Paleopalynological investigations.

ii) Separation Techniques for Microfossils.

iii) Classification of Foraminifera.

iv) Comparison between Bivalves and Brachiopods.

Total No. of Questions : 8] **[Total No. of Pages : 1**

P697

[3626-G]-103

M.Sc. GEOLOGY

GL-103 : Physics & Chemistry of the Earth

(2008) (Sem. - I)

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates :

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***All questions carry equal marks.***
3) ***You are advised to attempt not more than 5 questions.***

Q1) On what basis galaxies are classified? Explain various types of galaxies.

Q2) Describe the characteristics of different types of seismic waves. Explain behaviour of seismic waves with respect to the earth.

Q3) Explain radioactivity with reference to the structure of an atom.

Q4) Write short notes on (Any Two):

a) Abundance of elements.

b) Quasars.

c) Bode's Law.

d) Gravity anomalies.

Q5) What is isotopic dating? Give the principles of isotopic dating. Explain Rb-Sr Method of dating the rocks.

Q6) Describe in details the density distribution of the earth. Give the density vs depth profile to substantiate your answer.

Q7) Explain the laws of Thermodynamics and discuss the importance of phase diagrams.

Q8) Write short notes on (Any Two):

a) H - R diagram.

b) Carbon Cycle.

c) Curie temperature.

d) Necessity of correction in magnetic declination in compass.

Total No. of Questions : 8] **[Total No. of Pages : 1**

P698

[3626-G]-104
M.Sc. GEOLOGY
GL-104 : SEDIMENTOLOGY
(Sem. - I) (2008)

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates :

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***All questions carry equal marks.***
3) ***You are advised to attempt not more than 5 questions.***

Q1) Describe the concept of sedimentary particles. Comment on the procedure and application of grain size analysis.

Q2) What relationship connect sandstone texture and composition to its origin.

Q3) Describe the source of Iron deposits. Comment on the Phanerozic Iron Stone.

Q4) Write notes on <u>any three</u> of the following:

a) Geologic cycle in oceans.

b) Form of the sediments.

c) Surface texture of glacial origin.

d) Insoluble Residue analysis.

Q5) Distinguish between primary and secondary sedimentary structures.

Q6) Describe in detail, with neat sketches morphology and sediments characteristic of contential shelf environmental facies.

Q7) Explain with the help of neat labeled diagrams the terms associated with sedimentation and tectonics.

Q8) Write notes on <u>any two</u> of the following:

a) Evaporities.

b) Dunhams Limestone Classification.

c) Cross Bedding.

d) Volcanogenic Sediments.

Total No. of Questions : 8] **[Total No. of Pages : 1**

P699

[3626-G]-301

M.Sc. GEOLOGY

GL-302 : EXPLORATION METHODS

(Sem. - III) (2008) (New Course)

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates :

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***All questions carry equal marks.***
3) ***You are advised to attempt not more than 5 questions.***

Q1) What is gravimeter? Describe unstable type of gravimeters.

Q2) Explain the seismic retraction method. Describe the salient features of refraction from two and three horizontally layered models. What will be the response it one of the layers possesses low velocity than the overlying layer?

Q3) What is geochemical prospecting? Describe the different types of sampling procedures.

Q4) Write notes on any two of the following:

a) Types of drilling bits.

b) Types of Magnetometers.

c) Normal Move out and CDP techniques.

d) Geobotanical indicators.

Q5) Describe the principles of electromagnetic method. Describe the parallel line dip angle method of exploration.

Q6) Describe the field procedures involved in Resistivity method. Explain the problems associated with the interpretation of resistivity data.

Q7) Define the term “Sampling”. Give the details of surface method of sampling.

Q8) Write notes on any two of the following:

a) Elevation correction.

b) Trace element analysis.

c) Estimation of ore.

d) Resistivity log.

Total No. of Questions : 8] **[Total No. of Pages : 1**

P700

[3626-G]-302

M.Sc. GEOLOGY

GL-303 : Petroleum Geology

(Sem. - III) (New Course)

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates :

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***All questions carry equal marks.***
3) ***You are advised to attempt not more than 5 questions.***

Q1) Describe the physical properties of Petroleum.

Q2) What is Kerogen? Describe different types of Kerogen and comment of yield of hydrocarbon type.

Q3) What are traps? Enlist various kinds of traps. Explain the traps related with folding.

Q4) Write notes on any two of the following:

a) Composition of biomass.

b) Primary porosity.

c) Reservoir fluids.

d) Oil pool, field and province.

Q5) What do you mean by short and long migration? Explain secondary migration.

Q6) Define the term 'Log'. What is Mudlogging? How will you detect and interprete oil and gas shows during mud logging.

Q7) What is rotary drilling? Enlist different systems present on a rotary rig.

Q8) Write notes on any two of the following:

a) Stratigraphy, structure, reservoir rocks of cambay basin.

b) Horizontal drilling.

c) Properties of drilling mud.

d) Bright spots.

Total No. of Questions : 8] **[Total No. of Pages : 1**

P701

[3626-G]-303

M.Sc. GEOLOGY

GL-304 : Engineering Geology and Geotechniques

(Sem. - III) (New Course)

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates :

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***All questions carry equal marks.***
3) ***You are advised to attempt not more than 5 questions.***

Q1) Describe the factors controlling the Engineering Properties of the rocks.

Q2) Describe the geological investigations carried out for the selection of dam sites.

Q3) Explain the engineering properties of the aggregates.

Q4) Write notes on (any two):

a) Types of synthetic materials used as remedial measures.

b) Estimation of overburden thickness.

c) Types of spillways.

d) Slope stability analysis.

Q5) Explain in detail the engineering properties of rocks used as building stones and road materials.

Q6) Define tunnel and describe geological investigations carried out for the selection of the tunnel sites.

Q7) Describe in detail different types of aggregates.

Q8) Write notes on (any two):

a) Use of Remote Sensing in engineering geology.

b) Types of foundations.

c) Types of bridges.

d) Lining in Tunnels.

Total No. of Questions : 8] **[Total No. of Pages : 1**

P702

[3626-G]-304

M.Sc.

GEOLOGY (Sem. - III)

GL-305 : Computer Applications in Geology and Geographical Information System

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates :

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***All questions carry equal marks.***
3) ***You are advised to attempt not more than 5 questions.***

Q1) What are the five basic operations performed by any computer system? Draw a block diagram to illustrate the basic organization of a computer system and explain the function of the various units.

Q2) Write about the major events in the development of GIS during the 1960^{s}, 1970^{s}, 1990^{s}.

Q3) Explain the NAND and NOR gates. Why are they called Universal gates?

Q4) Explain the difference between Geographic and Rectangular co-ordinate system. What are their relative advantages and disadvantages?

Q5) Write notes on <u>any two</u>:

a) Topology.

b) Hexadecimal and Binary number system.

c) Components of GIS.

d) Operating system.

Q6) Suggest 10 applications for buffering. What is Buffer Analysis?

Q7) What is flow chart? Describe the function of the various flow charting symbols.

Q8) Write notes on <u>any two</u>:

a) Bit and Byte.

b) DBMS.

c) Application software.

d) Edge Matching.

Total No. of Questions : 8] **[Total No. of Pages : 1**

P1240

[3626 - G]-1
M.Sc.
GEOLOGY
GL - 101 : Mineralogy
(Old Course)

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***All questions carry equal marks.***
3) ***You are advised to attempt not more than five questions.***

Q1) Describe the determination of optical sign using uniaxial centered optic axes figure.

Q2) Describe the generation of uniaxial centered optic axes interferance figure.

Q3) Describe the Uniaxial and Biaxial indicatrices.

Q4) Write notes on <u>any two</u> :

a) Rotoinversion symmetry operation.
b) Isomorphism.
c) Single crystal x-ray diffraction method.
d) Isotropic and Anisotropic minerals.

Q5) What is point group? Describe proper point groups.

Q6) Describe the structure and paragenesis of olivine group of minerals.

Q7) Compare the structures of pyroxenes and amphiboles.

Q8) Write notes on <u>any two</u> :

a) Paragenesis of pyroxenes.
b) Alkali felspars.
c) Aluminous garnets.
d) Alteration of amphiboles.

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Total No. of Questions : 8] **[Total No. of Pages : 1**

P1241

[3626 - G]-2
M.Sc.
GEOLOGY
GL - 102 : Principles of Stratigraphy & Palaeontology
(Old Course)

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***All questions carry equal marks.***
3) ***You are advised to attempt not more than five questions.***

Q1) Describe the important features of morphology of hard parts in Brachiopods.

Q2) Describe hard part morphology of lamellibranchs.

Q3) Describe the special features of distribution of Gastropods in time and space.

Q4) What are microfossils? Describe types of microfossils. Enlist the uses of microfossils.

Q5) Write notes on (any two) :

a) Sampling criteria for micropalaeontological studies.
b) Diatomite.
c) Classification of Brachiopods.
d) Ornamentation in Gastropods.

Q6) What are facies? Describe the concept of biofacies.

Q7) Describe how lithostratigraphy can be established in an area.

Q8) Write notes on (any two) :

a) Index fossil.
b) Stratigraphically confined facies.
c) Standard stratigraphic scale.
d) Unconformities.

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Total No. of Questions : 8] **[Total No. of Pages : 1**

P1242

[3626 - G]-3
M.Sc.
GEOLOGY
GL - 103 : Physics and Chemistry of the Earth
(Old Course)

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***All questions carry equal marks.***
3) ***You are advised to attempt not more than five questions.***

Q1) Describe the characteristics of the different types of seismic waves.

Q2) Write an essay on the classification of meteorites.

Q3) What is radioactivity? Discuss the radioactive behaviour of uranium and rubidium.

Q4) Write short notes on any two of the following :

a) Bode's law.
b) Half life.
c) Leaw of radioactivity.
d) Abnormal galaxies.

Q5) Explain the internal structure of the earth.

Q6) Write a concise account of palaeomagnetism.

Q7) State the law of radioactivity. Explain U-Th-Pb dating technique.

Q8) Write short notes on any two of the following :

a) Curie temperature.
b) Outer core.
c) Density distribution within the earth.
d) Magnetic dip and magnetic declination.

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Total No. of Questions : 8] **[Total No. of Pages : 1**

P1243

[3626 - G]-4
M.Sc.
GEOLOGY
GL - 104 : Sedimentology
(Old Course)

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***All questions carry equal marks.***
3) ***You are advised to attempt not more than five questions.***

Q1) Describe various factors associated with textural maturity of sandstones. Add a note on textural maturity and depostional environment.

Q2) What are dolostones? Describe any two modal related to dolostones origin.

Q3) Define size of the sediments. Explain various methods used in presentation of size analysis data.

Q4) Write notes on any two of the following :

a) Geologic cycle in oceans.
b) Importance of field procedure in sedimentology.
c) Biosparite.
d) Structure of clay minerals.

Q5) Explain the concepts of sedimentation and convergent plate boundaries.

Q6) Discuss in detail the procedure and importance of insoluble residue.

Q7) What are biogenic structures? Describe the types of feeding and dwelling structures.

Q8) Write short notes on any two of the following :

a) Deltic facies.
b) Contential slope environment.
c) Lake environmental.
d) Ripple marks.

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Total No. of Questions : 8] **[Total No. of Pages : 1**

P1244

[3626 - G]-31
M.Sc.
GEOLOGY
GL - 301 : Indian Stratigraphy

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***All questions carry equal marks.***
3) ***You are advised to attempt not more than five questions.***

Q1) Write a concise account of the geotectoric framework of India.

Q2) Give a detailed account of the geology of Dharwar craton.

Q3) Discuss the stratigraphic significance of the Triassic rocks of the spiti valley.

Q4) Write short notes on any two of the following :

a) Panchat group.
b) Rajmahal Traps.
c) Cretaceous-Tertiary boundary.
d) Megalodon limestone.

Q5) Give a detailed account of the Jurassic rocks of Kachchh.

Q6) Write an account of the geology of the Cuddapah super group.

Q7) Describe the Lilang supergroup rocks.

Q8) Write short notes on any two of the following :

a) Bundelkhand craton.
b) Kolar greenstones.
c) Sukma group.
d) Dalma volcamies.

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Total No. of Questions : 8] **[Total No. of Pages : 1**

P1245

[3626 - G]-32
M.Sc.
GEOLOGY
GL - 302 : EXPLORATION METHODS

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***All questions carry equal marks.***
3) ***You are advised to attempt not more than five questions.***

Q1) Describe the principle behind resistivity method. Explain the usefullness of resistivity method in groundwater prospecting.

Q2) Describe the salient features of seismic refraction method.

Q3) Describe the concept of Geoid. How gravity survey is carried out? Explain the qualitative interpretation of gravity data.

Q4) Write notes on any two :

a) Elevation correction.
b) Magnetic anamolies.
c) Geobtonical indicators.
d) Unstable gravimeter.

Q5) Explain the surface methods of sampling.

Q6) Describe different types of magnetometers.

Q7) Distinguish between primary dispersion and secondary dispersion.

Q8) Write notes on any two :

a) Usefullness of gravity method in oil exploration.
b) Calibration of gravimeter.
c) Field procedures in resistivity method.
d) CDP technique.

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Total No. of Questions : 8] **[Total No. of Pages : 1**

P1246

[3626 - G]-33
M.Sc.
GEOLOGY
GL - 303 : Petroleum Geology

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***All questions carry equal marks.***
3) ***You are advised to attempt not more than five questions.***

Q1) Describe the surface occurrence of oil.

Q2) Write an account on migration of petroleum.

Q3) Explain classification of traps. Describe various types of primary stratigraphic traps.

Q4) Write notes on (any two) :

a) Properties of oil.
b) Composition of biomass.
c) Chemical reservoir rocks.
d) Salt domes.

Q5) Describe the routine procedures used in the exploration of a petroliferous basin. Discuss the various phases.

Q6) What are quick-look methods of log interpretation? How do these methods indicate the presence of hydrocarbon? Explain.

Q7) Describe in detail the classification of petroliferous basins of India.

Q8) Write notes on (any two) :

a) Horizontal drilling.
b) Spatial and temporal distribution of hydrocarbon.
c) Drilling fluid-its functions.
d) Hydrocarbon prospects of Cambay Basin.

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Total No. of Questions : 8] **[Total No. of Pages : 1**

P1247

[3626 - G]-34
M.Sc.
GEOLOGY
GL - 304 : Engineering Geology & Geotechniques

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***All questions carry equal marks.***
3) ***You are advised to attempt not more than five questions.***

Q1) What are tunnels? Classify and describe the various support systems employed in tunnels.

Q2) How bridges are classified into different types? Describe the types of bridges.

Q3) Describe in detail the phases involved in crushed stone quarrying.

Q4) Write notes on any two of the following :

a) Highway and runway aggregate.
b) Preparation of engineering report.
c) Tunnel alignment in folded and faulted strata.
d) Engineering properties of soil.

Q5) What are dams? Classify them and give the geological considerations for selection of dam site.

Q6) What are landslides? Describe in detail the types of landslides.

Q7) Define aggregate. Give physical properties of aggregate and comment on cement aggregate reaction.

Q8) Write notes on any two of the following :

a) Engineering properties of soil.
b) Silting of reservoir.
c) Hardness and impact test.
d) Estimation of overburden thickness.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P314

[3626-G]-201
M.Sc. - I (Semester - II)
GEOLOGY
GL - 201 : Igneous Petrology (New)

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates:

1) ***You are advised to attempt not more than 5 questions.***
2) ***All questions carry equal marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) Enumerate the principles of IUGs classification for Igneous rocks. Give the classification for ultramafic rocks.

Q2) Give the structure of the Oceanic lithosphere and discuss the process of its formation.

Q3) Explain with suitable diagrams and examples the relation between plate tectonics and magmatism.

Q4) Write short notes on (any two) :

a) Hot spots.

b) Anatomy of the Earth.

c) Mantle Metasomatism.

d) Heat sources in the Earth.

Q5) Discuss the structure and tectonic setting of Deccan Traps? Give the chemostratigraphic classification.

Q6) What are Carbonatites? Give the account of Amba Dongar Carbonatites with respect to its geographic setting and structural characters.

P.T.O.

Q7) What is Magmatic differentiation? Discuss the mechanism of gravitational settling.

Q8) Write short notes on (any two) :

a) Ophiolites.

b) Structure of the Island arcs.

c) Andesites.

d) MORB.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P315

[3626-G]-202
M.Sc. (Semester - II)
GEOLOGY
GL - 202 : Metamorphic Petrology (New)

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates:

1) ***Attempt not more than 5 questions.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***All questions carry equal marks.***
4) ***You are advised to attempt not more than 5 questions.***

Q1) Enlist the various minerals commonly found in metamorphic rocks. Also comment on their genesis and occurrence.

Q2) Write an account of recrystallisation texture and texture produced by deformation during metamorphism.

Q3) Give the petrographic classification of common metamorphic rock. Add a note on their Field observation.

Q4) Write notes on <u>any three</u> of the following :

a) Pressure-Temperature condition of isograde.

b) Metamorphic reaction.

c) ACF diagram.

d) Index minerals and mineral zone.

Q5) Explain the pre-metamorphic changes in Pelitic Sediments. Add a note on Barrovian metamorphism of Pelitic rocks.

Q6) Describe the Eclogite facies metamorphism of basalt with the help of ACF diagrams.

P.T.O.

Q7) Discuss with the help of metamorphic reaction about contact metamorphism of dolostones.

Q8) Write notes on <u>any two</u> of the following :

a) Extraterrestial metamorphism.

b) Metamorphism of Granitoids.

c) Classification of Charnockites.

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Total No. of Questions : 8] **[Total No. of Pages : 1**

P316

[3626-G]-203
M.Sc. - I
GEOLOGY
GL - 203 : Structural Geology & Tectonics
(Semester - II) (New)

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates:

1) ***You are advised to attempt not more than 5 questions.***
2) ***All questions carry equal marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) Discuss the concept of fabric domain.

Q2) Describe the procedure for Mesoscopic structural analysis.

Q3) What are faults? Discuss the genesis of faults and classify them accordingly.

Q4) Write notes on (any Two) :

a) Ductile behaviour of rock.

b) Flexure folds.

c) Slaty cleavages.

d) Lineations.

Q5) Discuss in detail the concept of Continental Drift.

Q6) Discuss magmatism in relation to plate margins.

Q7) Discuss the earth's planetary dynamics and its possible effect on climate.

Q8) Write notes on (any Two) :

a) Benioff zone.

b) Ophiolites.

c) Magnetic stripes

d) Shallow convenction current system.

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Total No. of Questions : 8] **[Total No. of Pages : 1**

P317

[3626-G]-204
M.Sc. - I (Semester - II)
GEOLOGY
GL - 204 : Geomorphology & Remote Sensing in Geology (New)

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates:

1) ***You are advised to attempt not more than 5 questions.***
2) ***All questions carry equal marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) Explain the application of Geomorphology in Geohydrology.

Q2) Describe the role of river and kinds of drainage patterns.

Q3) Describe the depositional landforms created by the action of wind.

Q4) Write notes on any two of the following :

a) Endogenic and exogenic forces.

b) Types of neotectonic movements.

c) Major geomorphic landforms of India.

d) Development of blow holes.

Q5) Describe the working of LAND SAT-3 M.M.S. Draw a neat sketch.

Q6) What are the different photorecognition elements? Write an account of Tone as a photorecognition elements.

Q7) Describe the working of thermal scanner. Explain the identification of various water bodies with thermal scanner.

Q8) Write notes on any two of the following :

a) Atmospheric windows.

b) Wien's law of displacement.

c) Overlap.

d) Drainage density and frequency.

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Total No. of Questions : 8] **[Total No. of Pages : 1**

P318

[3626-G]-401
M.Sc. (Semester - IV)
GEOLOGY
GL - 401 : Economic Geology

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates:

1) ***You are advised to attempt not more than 5 questions.***
2) ***All questions carry equal marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) Describe the structural controls responsible for the localization of ore deposits.

Q2) Write in detail primary ore forming deposits.

Q3) Explain in detail different types of placer deposits.

Q4) Write notes on : (Any two)

a) Late magmatic deposits.

b) Migration of Ore-forming fluids.

c) Types of hydrothermal deposits.

d) Pegmatite deposits.

Q5) Give detailed description of types of Manganese deposits and their genesis.

Q6) Write in detail genesis of Bauxite deposits & add a note on uses of Aluminium.

Q7) What is NMP? Explain the objectives and various terms in NMP.

Q8) Write notes on : (Any two)

a) Applications of Uranium and Thorium.

b) Porphyry Copper deposits.

c) Coalification.

d) Geological distribution of Fe-Ore deposits.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P319

[3626-G]-402
M.Sc. - II (Semester - IV)
GEOLOGY
GL - 402 : Mining Geology, Gemmology and Industrial Mineralogy

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates:

1) ***You are advised to attempt not more than 5 questions.***
2) ***All questions carry equal marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) What are structural guides? Explain different types of structural guides with suitable examples.

Q2) Enlist various methods of mining. Describe any one of them in details.

Q3) What is drilling? Explain use of drilling in mining. Explain any three types of miscellaneous drills.

Q4) Write notes on any two of the following :

a) Significance of gangue minerals.

b) Pediments as topographic guides.

c) Composite stones.

d) Use of polariscope in Gem identification.

Q5) Enlist various crystal systems and gemstones crystallizing in them. How the identification of the following pairs of gemrough can be done on the basis of their crystal form and surface marking.

a) Diamond and colourless sapphire.

b) Peridot and Emerald.

c) Citrine and yellow tourmaline.

d) Ruby and Pyrope.

Q6) Describe the crystalline and amorphous varieties of silica with respect to its varieties, chemical composition, crystal system, physical and optical properties, characteristic inclusions and occurrences.

P.T.O.

Q7) Which minerals are used as raw material in Refractory industry? Give detailed account of any two of them with respect to their important characteristic properties, chemical composition and industrial significance.

Q8) Write notes on <u>any two</u> of the following :

a) Specification and utilization of mica.

b) Use of Gypsum in cement industry.

c) Origin and classification of phosphorites.

d) Talc and steatite.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

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[3626-G]-403
M.Sc. - II (Semester - IV)
GEOLOGY
GL - 403 : Environmental Geology

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates:

1) ***You are advised to attempt not more than 5 questions.***
2) ***All questions carry equal marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) Describe the structure and composition of lithosphere.

Q2) Define biogeochemical cycle. Describe the carbon cycle.

Q3) Explain the processes of soil formation. Comment on the sources of soil pollution and soil degradation.

Q4) Write notes on any two of the following :

a) Concepts of Environmental Science.

b) Phosphorous cycle.

c) Types of Hazards.

d) Effects of floods.

Q5) Describe coastal hazards. Explain sea level changes and its hazards.

Q6) Define "Earthquake". Describe the various causes of earthquakes. Add a note on the terms associated with earthquakes.

Q7) What are the problems related to mining activity. Comment on acid mine drainage.

P.T.O.

Q8) Write notes on any two of the following :

a) Case history of Arsenic poisoning.

b) Flood situation of India.

c) Resource and its management.

d) Drought and its causes.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

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[3626-G]-404
M.Sc. - II (Semester - IV)
GEOLOGY
GL - 404 : Hydrogeology, Watershed Development and Management

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates:

1) ***You are advised to attempt not more than 5 questions.***
2) ***All questions carry equal marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) What are the different components of runoff cycle? Explain their role in fluctuation of groundwater levels.

Q2) What are different geological methods of groundwater exploration?

Q3) Describe the factors controlling occurrence of groundwater.

Q4) Write notes on : (Any two)

a) Porosity.

b) Aquifer performance test.

c) Drinking water quality.

d) Zone of Aeration.

Q5) Explain briefly the concept of Watershed development and explain the important characteristics of a watershed.

Q6) What do you understand by sustainable development of water resources?

Q7) Explain how the geology of an area plays an important role in the placement of a surface or subsurface dam in watershed works?

P.T.O.

Q8) Write notes on : (Any two)

a) Drainage density.

b) Percolation tanks.

c) Water balance equation.

d) Sustainable development of water resources.

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