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**M.Sc. (Semester - I) (New) (NEP CBCS) Examination: March/April-2024
APPLIED GEOLOGY
Mineralogy (2333101)**

Day & Date: Friday, 10-05-2024
Time: 03:00 PM To 05.30 PM

Max. Marks: 60

Instructions: 1) All questions are compulsory.
2) Figure to right indicate full marks.

Q.1 A) Choose correct alternative.

08

- 1) The colour of the streak of the mineral chalcopyrite is _____.
 - a) Black
 - b) Yellow
 - c) Blue
 - d) brass Yellow
- 2) The Isometric system is characterised by: _____.
 - a) 3 axes of 4 fold symmetry
 - b) 4 axes of 3 fold symmetry
 - c) 2 axes of 4 fold symmetry
 - d) 6 axes of 5 fold symmetry
- 3) Which is the hardest mineral?
 - a) Diamond
 - b) Olivine
 - c) Opal
 - d) Topaz
- 4) Which one of the following minerals has $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ chemical formula?
 - a) Apatite
 - b) Orthoclase
 - c) Hornblende
 - d) Gypsum
- 5) Mg garnet is termed as: _____.
 - a) Almandine
 - b) Pyrope
 - c) Spessartite
 - d) Grossularite
- 6) The mineral _____ shows cross hatched twinning between cross Nicols.
 - a) Olivine
 - b) Quartz
 - c) Microcline
 - d) Calcite
- 7) The normal class of trigonal system is : _____.
 - a) Barite type
 - b) Beryl type
 - c) Calcite type
 - d) Axinite type
- 8) Orthoclase is _____.
 - a) Uniaxial Positive
 - b) Biaxial Positive
 - c) Uniaxial Negative
 - d) Biaxial Negative

B) Fill in the blanks OR write True/ False.

04

- 1) The hardness of Fluorite is 4. (True/False)
- 2) Muscovite has sheet silicate structure. (True/False)
- 3) Chemical formula of Mineral Magnetite is Fe_3O_4 . (True/False)
- 4) Adamantine is the lustre shown by Quartz. (True/False)

- Q.2 Answer the Following. (Any Six) 12**
- a) Give physical properties of Quartz.
 - b) What are different optical properties of mineral Microcline?
 - c) Define optic axis.
 - d) What is pseudomorphism?
 - e) What is pinacoid and prism?
 - f) What is the basic structure of tetrahedron?
 - g) Planes and axis of symmetry.
 - h) Define lustre and streak of a mineral.
- Q.3 Answer the following. (Any Three) 12**
- a) Write down stereographic representation of crystal symmetry and their uses.
 - b) Write down applications of XRD in Mineral studies.
 - c) Describe in brief amphibole group of minerals.
 - d) Describe in brief optical and physical properties pyroxene group of minerals.
- Q.4 Answer the following. (Any Two) 12**
- a) Describe in short different silicate structures.
 - b) Define twinning. Explain with neat diagram the contact and penetration twin.
 - c) What is Pleochroism? How will determine the pleochroic scheme in minerals.
- Q.5 Answer the following. (Any Two) 12**
- a) Write a full note on alkali feldspar.
 - b) Optical and physical properties and Paragenesis garnet group of minerals.
 - c) Discuss chemistry, optical and physical properties of Olivine group.

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**M.Sc. (Semester - I) (New) (NEP CBCS) Examination: March/April-2024
APPLIED GEOLOGY**

Igneous and Metamorphic petrology (2333102)

Day & Date: Monday, 13-05-2024
Time: 03:00 PM To 05:30 PM

Max. Marks: 60

Instructions: 1) All questions are compulsory.
2) The figure to right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ)

08

- 1) Eskola gives the concept of _____.
 - a) Depth Zones
 - b) Metamorphic facies
 - c) Metasomatism
 - d) Metamorphic structure
- 2) The chief agent of Cataclastic metamorphism is _____.
 - a) Directed pressure
 - b) Heat
 - c) Uniform pressure
 - d) Chemically active fluids
- 3) Kimberlite is a:
 - a) Mineral
 - b) Igneous rocks
 - c) Sedimentary rock
 - d) Metamorphic rock
- 4) Mylonite represents:
 - a) Regional metamorphism
 - b) Dynamic metamorphism
 - c) Burial metamorphism
 - d) Contact metamorphism
- 5) _____ of following is not a metamorphic rock.
 - a) Phyllite
 - b) Syenite
 - c) Charnockite
 - d) Gneiss
- 6) Quartzite is a metamorphic rock composed of a dense interlocking of _____.
 - a) dolomite
 - b) quartz
 - c) calcite
 - d) garnet
- 7) Lava containing numerous gas cavities of angular shape are:
 - a) Scon
 - b) Pumice
 - c) Amygdales
 - d) Ignimbrites
- 8) A silica undersaturated plutonic igneous rock is:
 - a) Nepheline syenite
 - b) Granodiorite
 - c) Anorthosite
 - d) Syenite

B) Fill in the blanks OR write True or False.

04

- 1) Sill is a concordant body (True/False)
- 2) calc-alkaline magmas appear to be uniquely associated with the convergent margin setting (True/False)
- 3) Marble is formed by cataclastic metamorphism of limestone (True/False)
- 4) In the ACF diagrams used to represent metamorphic facies, the alphabet 'C' represents (FeO + MgO + MnO (True/False)

- Q.2 Answer the following.(Any Six) 12**
- a) Name characteristic minerals of Eclogite facies.
 - b) Petrological characters of marble rock.
 - c) What is assimilation?
 - d) What is dehydration metamorphic reaction?
 - e) Megascopic properties of Gabbro rock.
 - f) Columnar structure of basalt.
 - g) Grade of metamorphism.
 - h) What are lamprophyres?
- Q.3 Answer the following.(Any Three) 12**
- a) Carbonatite.
 - b) Retrograde metamorphism.
 - c) Greenschist facies.
 - d) Cooling behaviour of magma.
- Q.4 Answer the following.(Any Two) 12**
- a) Write note on solid-solid metamorphic reaction.
 - b) Write full note on tholeiitic flood basalt.
 - c) Describe ternary system Diopside-Anorthites-Albite with petrogenetic significance.
- Q.5 Answer the following.(Any Two) 12**
- a) Write full account on IUGS classification of igneous rocks.
 - b) Bring out salient features of Granulite metamorphic facies.
 - c) ACF and AKF diagrams.

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M.Sc. (Semester - I) (New) (NEP CBCS) Examination: March/April-2024
APPLIED GEOLOGY

Sedimentology and Palaeontology (2333108)

Day & Date: Wednesday, 15-05-2024
 Time: 03:00 PM To 05.30 PM

Max. Marks: 60

Instructions: 1) All question are compulsory.
 2) Figure to right indicate full marks.

Q.1 A) Choose correct alternative.

08

- 1) Stalactite and stalagmite structure is shown by _____ sedimentary rock.
 - a) Limestone
 - b) Shale
 - c) Sandstone
 - d) Laterite
- 2) Bauxite is a _____.
 - a) Transported deposits
 - b) Chemical deposits
 - c) Residual deposits
 - d) Ferruginous deposits
- 3) What kind of igneous rock is likely for source for arkose sandstone?
 - a) Basalt
 - b) Granite
 - c) Pegmatite
 - d) Rhyolite
- 4) The chemical composition of dolomite is _____.
 - a) CaCO_3
 - b) $\text{CaMg}(\text{CO}_3)_2$
 - c) MgCO_3
 - d) CaSO_4
- 5) Trilobite belongs to _____.
 - a) Arthropoda Phylum
 - b) Mollusca Phylum
 - c) Perifera Phylum
 - d) Proterozoic phylum
- 6) Trilobite are found in _____.
 - a) Precambrian rock
 - b) Paleozoic rock
 - c) Mesozoic rock
 - d) Cenozoic rocks
- 7) The size of coarse sand range between _____.
 - a) 220 mm
 - b) 0.5-1 mm
 - c) 0.064 mm
 - d) 0.0064 mm
- 8) The geologic period known as the age of fish is known as the _____.
 - a) Devonian period
 - b) Jurassic Period
 - c) Triassic Period
 - d) Quaternary Period

B) Fill in the blanks OR write true/false.

04

- 1) Glabella is a trilobite is associated with Thorax. (True/ False)
- 2) Age of the Ptilophyllum plant fossil is _____.
- 3) _____ is a term that describes the size, shape and orientation of the grains constituting a rock, as well as the relationship between these grains.
- 4) Phacops trilobite fossil geological age is Carboniferous to Permian. (True/ False)

- Q.2 Answer the following. (Any Six) 12**
- a) Hydration.
 - b) Trace fossils.
 - c) Heating and cooling of rock.
 - d) Difference between Bedding and Lamination.
 - e) Sources of sediments.
 - f) Ripple mark.
 - g) Fabric measurements.
 - h) Petrification.
- Q.3 Answer the following. (Any Three) 12**
- a) Write a note on types of foraminifera.
 - b) Write a note on general features of Anthropods with net sketch and label.
 - c) Write a note on sphericity and roundness of sedimentary rock.
 - d) Write a brief account on sedimentary textures.
- Q.4 Answer the following. (Any Two) 12**
- a) Give an account on sedimentation in marginal marine environment.
 - b) Write a note on depositional environment of sandstone and classification.
 - c) Write a note on Mesozoic reptiles.
- Q.5 Answer the following. (Any Two) 12**
- a) Give brief account on Gondwana flora.
 - b) What is fossil? Give an account on mode of preservation of fossils.
 - c) Write a note on process of diagenesis of sedimentary rock.

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M.Sc. (Semester - I) (New) (NEP CBCS) Examination: March/April-2024
APPLIED GEOLOGY
Research Methodology (2333103)

Day & Date: Friday, 17-05-2024
 Time: 03:00 PM To 05:30 PM

Max. Marks: 60

Instructions: 1) All Questions are compulsory.
 2) Figure to right indicate full marks.

Q.1 A) Choose the correct alternatives from the options. 08

- 1) Which of the following is the first step in starting the research process?
 - a) Identification of problem
 - b) Survey of related literature
 - c) Searching sources of information to locate problem.
 - d) Searching for solutions to the problem
- 2) A research paper is a brief report of research work based on
 - a) Primary Data only
 - b) Secondary Data only
 - c) Both Primary and Secondary Data
 - d) None of the above
- 3) An appropriate source to find out descriptive information is _____.
 - a) Bibliography
 - b) Directory
 - c) Encyclopedia
 - d) Dictionary
- 4) What is the meaning of E-Documents?
 - a) All Documents other than printed
 - b) Non-Paper documents
 - c) Audio visual tools
 - d) In electronic form such as Cassettes, CD-ROMs, etc.
- 5) The format of thesis writing is the same as in _____.
 - a) Writing of Seminar representation
 - b) Preparation of research paper/article
 - c) A research dissertation
 - d) Presenting a workshop/conference paper
- 6) _____ will help in finding out a problem for research.
 - a) Professor
 - b) Tutor
 - c) HOD
 - d) Guide
- 7) Empirical Research is related to _____.
 - a) Pure logic
 - b) Observation
 - c) Critical thinking
 - d) Theory
- 8) Which section of a journal article is provided in most online electronic databases?
 - a) Introduction
 - b) Results
 - c) Abstract
 - d) Conclusion

B) Fill in the blanks OR (True/ False).

- 1) Books are not considered as a documents.
a) True b) False
- 2) Histograms are not Graphic representation
a) True b) False
- 3) Conference proceedings are considered as primary documents.
a) True b) False
- 4) A list of the books and articles that a writer used when he/she was writing a particular book or article is called as bibliography.
a) True b) False

Q.2 Answer the following. (Any Six)

12

- a) MS-word
- b) Define impact factor.
- c) What is research article?
- d) What is normal search?
- e) Data recording.
- f) Short comments on Google and Bing search engines.
- g) Uses of coral draw in research.
- h) Name any four internet services.

Q.3 Answer the following. (Any Three)

12

- a) Power point presentation
- b) Patent filling
- c) What is meant by h-index.
- d) Short notes of methods of data collection.

Q.4 Answer the following. (Any Two)

12

- a) What is e-resources? Discuss various types of e-resources.
- b) Discuss importance, purpose, and sources of literature review.
- c) Write full note on plagiarism.

Q.5 Answer the following. (Any Two)

12

- a) Discuss characteristics and types of research objectives.
- b) Discuss different applications of power point presentation in research.
- c) Write full note on ISSN number.

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M.Sc. (Semester - II) (New) (NEP CBCS) Examination: March/April-2024
APPLIED GEOLOGY
Indian Stratigraphy (2333201)

Day & Date: Thursday, 09-05-2024
 Time: 11:00 AM To 01.30 PM

Max. Marks: 60

Instructions: 1) All question are compulsory.
 2) Figure to right indicate full marks.

Q.1 A) Choose correct alternative.

08

- 1) The stratigraphic boundary demarcating the Archaean rocks from Closepet granite is termed as:
 - a) Non-conformity
 - b) Disconformity
 - c) Angular Unconformity
 - d) Eparchaeon Unconformity
- 2) Which of the following is the oldest craton?
 - a) Dharwar Craton
 - b) Singhbhum Craton
 - c) Bastar Craton
 - d) Aravalli Craton
- 3) During which geological time Dinosaur flourished on earth?
 - a) Proterozoic
 - b) Permian
 - c) Jurassic
 - d) Tertiary
- 4) Which is the youngest era in the geological time scale.
 - a) Precambrian
 - b) Palaeozoic
 - c) Mesozoic
 - d) Cenozoic
- 5) The MBF (Main Boundary fault) separates two groups:
 - a) Lower Himalayas and Middle Himalayas
 - b) Vindhyan and Arvallis
 - c) Dharwar rocks from Cuddapah rocks
 - d) Siwalik and Lower Himalayas
- 6) Who propounded the theory of uniformitarianism?
 - a) James Hutton
 - b) Nicholas Steno
 - c) William Smith
 - d) John Playfair
- 7) In stratigraphic correlation, the term homotaxial refers to the formations:
 - a) Deposited at the same stage of the earth's evolutionary history
 - b) Bearing same fossil content despite in different time
 - c) Having similar lithologic package
 - d) Deposited at different geological time
- 8) The oldest group of Cuddapah Super-group is:
 - a) Papaghni Group
 - b) Chitravati Group
 - c) Nallamalai Group
 - d) Kurnool Group

- B) Fill in the blanks OR write True/False.** **04**
- 1) The Lower Gondwana sequence is characterised by the dominance of Ptilophyllum flora. (True/False)
 - 2) The principle that states, 'Within a sequence of layers of sedimentary rock, the oldest layer is at the base and that the layers are progressively younger with ascending order in the sequence' is _____.
 - 3) _____ is the longest unit of geological time scale.
 - 4) The Deccan traps formed at the end of Cretaceous period. (True/False)

- Q.2 Answer the following. (Any Six)** **12**
- a) Write the division of geological time scale.
 - b) What are intertrappean and intratrappean beds?
 - c) What is litho- and bio- stratigraphy?
 - d) Name the formations of Lower Gondwana sequence.
 - e) Write a short note on Papaghani group.
 - f) Define mass extinction and give example.
 - g) Define Craton and list the names of cratons in India.
 - h) List the periods of Paleozoic era.

- Q.3 Answer the following. (Any Three)** **12**
- a) Write a note on K.T boundary problem.
 - b) Distinguish between Upper and Lower Gondwana rocks of India.
 - c) Write a detailed note on Krol formation.
 - d) Write a detailed note on Sargur schist.

- Q.4 Answer the following. (Any Two)** **12**
- a) Discuss in detail lithology, geology, and structural characteristics Dharwar craton.
 - b) Write a brief note on Unconformity and its types.
 - c) Write a detailed note on the stratigraphy and classification of Jurassic formation of Kutchh.

- Q.5 Answer the following. (Any Two)** **12**
- a) Write a brief account on the principles of stratigraphy.
 - b) Write down the stratigraphy, classification and evolution of the Siwalik group.
 - c) Note on evolution and stratigraphic sequence of Vindhyan Basin.

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M.Sc. (Semester - II) (New) (NEP CBCS) Examination: March/April-2024
APPLIED GEOLOGY

Structural Geology and Geotectonics (2333202)

Day & Date: Saturday, 11-05-2024
 Time: 11:00 AM To 01:30 PM

Max. Marks: 60

Instructions: 1) All questions are compulsory.
 2) Figure to right indicate full marks.

Q.1 A) Choose correct alternative.

08

- 1) What are the cracks along with those blocks that have moved relatives to one another?
 - a) Folds
 - b) Joints
 - c) Faults
 - d) Instrusions
- 2) "Strain is proportional to stress in elastic deformation" is known as:
 - a) Poisson's ratio
 - b) Hooke's law
 - c) Smith's law
 - d) None of these
- 3) Factors which increase the ductility of a rock are:
 - a) Temperature and pressure
 - b) Rate of application of stress and temperature
 - c) Temperature and amount of intergranular fluids present in the rock.
 - d) Pressure, rate of application of stress, temperature and amount of intergranular fluids present in the rock.
- 4) Width of outcrop of a bed on the ground depends upon:
 - a) Thickness of the bed
 - b) Dip of the bed
 - c) Slope of the ground
 - d) All the three above
- 5) Dip of a bed is a vector quantity because is has got:
 - a) Direction
 - b) Magnitude
 - c) Direction and magnitude
 - d) None of these
- 6) The line of maximum curvature in a fold is known as:
 - a) Crest.
 - b) Axis.
 - c) Hinge.
 - d) Trough.
- 7) An anticline fold may be defined as a fold that:
 - a) Is convex onward
 - b) Has older rocks in the centre
 - c) The two limbs dip away from each other
 - d) All above definitions are correct
- 8) Drag folds:
 - a) Occur within the competent beds
 - b) Within the competent beds
 - c) Within the incompetent beds are overlain by competent beds
 - d) When vertical stresses act on horizontal beds

- B) Fill in the blanks OR write True / False.** **04**
- 1) The field of geology that deals with the form, classification, mechanism, and causes of these rock structures' evolution are known as _____.
 - 2) A stratum of rock's highest angle of inclination with horizontal is _____.
 - 3) Atoll is a ring-shaped reef, island, or islands that surround or nearly surround a lagoon area of water, in which detrital material may collect.
(True/False)
 - 4) Chevron fold is acoordion fold whose limbs are of equal length.
(True/False)

- Q.2 Answer the following. (Any Six)** **12**
- a) Write a short note on deformation.
 - b) Write a short note on Angular unconformity with sketch.
 - c) Write a short note on Dip joint with sketch.
 - d) Write a short note on Lineament analysis.
 - e) Write a short note on Pure and simple shear strain with sketch.
 - f) Write a short note on Normal fault and reverse fault with sketch.
 - g) Define Strike of the bed and its importance in structural geology.
 - h) Write a short note on ring of fire in Pacific Ocean.

- Q.3 Answer the following. (Any Three)** **12**
- a) Write a note on morphology of the ocean floor.
 - b) Write difference between active plate margins and passive plate margin.
 - c) Write a note on Ramsay's classification of folds.
 - d) Write a brief note on recongnization of unconformity in nature.

- Q.4 Answer the following. (Any Two)** **12**
- a) Write a note on neo-tectonics.
 - b) Write a note on convergent plate boundaries with suitable example.
 - c) Write a note on Mylonites and cataclasites, their origin and significance.

- Q.5 Answer the following. (Any Two)** **12**
- a) Give brief account on sea floor spreading.
 - b) Write a note on Lineation and foliations.
 - c) Write a note on tectonic model of evolution of the Himalayas.

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M.Sc. (Semester - II) (New) (CBCS) Examination: March/April-2024
APPLIED GEOLOGY
Geomorphology (2333208)

Day & Date: Tuesday, 14-05-2024
 Time: 11:00 AM To 01:30 PM

Max. Marks: 60

Instructions: 1) All questions are compulsory.
 2) Figure to right indicate full marks.

Q.1 A) Choose correct alternative.

08

- 1) What is a soil horizon?
 - a) A factor influencing how soil is formed
 - b) A layer of soil
 - c) An organism found within the soil
 - d) A technique used to map soils
- 2) Which river is popularly known as Dakshin Ganga?
 - a) The Krishna
 - b) The Godavari
 - c) The Kaveri
 - d) The Narmada
- 3) The drainage basins of the peninsular rivers in comparison to the Himalayan Rivers are _____.
 - a) Smaller in Size
 - b) Larger in Size
 - c) Same in Size
 - d) Medium in Size
- 4) Landform that forms from deposition of sediment carried by a river as the flow leaves its mouth and enters slower-moving or standing water is _____.
 - a) Tributaries
 - b) Deltas
 - c) Estuaries
 - d) Distributaries
- 5) The Father of Geomorphology is _____.
 - a) King
 - b) W.M Davis
 - c) Savinder singh
 - d) Walther Penk
- 6) _____ topography is formed due to the weathering of soluble rocks such as limestone and dolomite.
 - a) Desert
 - b) Deposition
 - c) Karst
 - d) Glacial
- 7) Merely breaking down of the pre-existing rock is termed as _____.
 - a) Decomposition
 - b) Decay
 - c) Disintegration
 - d) None of these
- 8) What causes all mass movement _____.
 - a) Rain
 - b) Snow
 - c) Gravity
 - d) Deforestation

B) Fill in the blanks/True or False. 04

- 1) Continental drift theory was proposed in 1912 by Alfred Wegener. (True/False)
- 2) OX-BOW lake is formed due to fluvial continuous erosion and deposition along the sides of the meanders. (True/False)
- 3) Krishna river flows from East to west and finally met with Arabian sea. (True/False)
- 4) Rivers develop 'V' shaped valleys. (True/False)

Q.2 Answer the following.(Any Six) 12

- a) What is a pedestal rock?
- b) Label and draw a neat diagram of meander and ox-bow lake
- c) Frost action
- d) Define Isostasy.
- e) Hill slope
- f) Delta.
- g) Scope of geomorphology
- h) Define relief.

Q.3 Answer the following. (Any Three) 12

- a) Short note on soil profile.
- b) Short note on rejuvenation.
- c) Types of sand dune.
- d) Neotectonism.

Q.4 Answer the following. (Any Two) 12

- a) Write a note on chemical weathering.
- b) Explain the erosional land forms associated with rivers.
- c) Types of Landslide.

Q.5 Answer the following. (Any Two) 12

- a) Areal and linear aspects of drainage basin.
- b) Write a note on Normal cycle of erosion.
- c) Drainage pattern.

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M.Sc. (Semester - II) (Old) (CBCS) Examination: March/April-2024
APPLIED GEOLOGY
Igneous Petrology (MSC19201)

Day & Date: Thursday, 09-05-2024
 Time: 11:00 AM To 02:00 PM

Max. Marks: 80

- Instructions:** 1) Question no. 1 and 2 are compulsory.
 2) Attempt any three questions from Q. No. 3 to Q. No. 7.
 3) Figure to right indicate full marks.

Q.1 A) Choose the correct alternative.

10

- 1) Mafic igneous rocks contain more amounts of _____ as compared to felsic igneous rock.
 - a) Quartz
 - b) Aluminum
 - c) Pink feldspar
 - d) Iron
- 2) Gabbro is _____ igneous rock.
 - a) Acidic
 - b) Basic
 - c) Intermediate
 - d) Over saturated
- 3) What is pyrolite material?
 - a) Three-part peridotite and one part basalt.
 - b) A rock found in continental crust.
 - c) A model rock composition which can occur anywhere.
 - d) A rock found on ocean floor.
- 4) In a phase diagram, the solidus curve represents the: _____
 - a) Temperature above which substance is stable in solid state.
 - b) Temperature below which substance is stable in solid state.
 - c) Pressure below which substance is stable in solid state.
 - d) Pressure above which substance is stable in solid state.
- 5) The texture which is exhibited by igneous rocks whose constituent minerals are anhedral and approximately equal in size?
 - a) Hypidimorphic
 - b) Panidiomorphic
 - c) Xenomorphic
 - d) Allotriomorphic
- 6) A coarse grained, equigranular plutonic igneous rock having quartz and feldspars are essential mineral constituents is; _____.
 - a) Marble
 - b) Dolerite
 - c) Basalt
 - d) Granite
- 7) What is pahoehoe flow?
 - a) A type of volcanic crater
 - b) Lake formed by meteoric fall
 - c) A ropy type of lava
 - b) Typical mineral found in Antarctica
- 8) The rapid cooling lava leads to formation of non-crystalline _____ texture.
 - a) Glassy
 - b) Granitic
 - c) Porphyritic
 - d) None of above

- 9) In ternary system _____.
 a) Two of the constituents will crystallize first
 b) All the constituents will crystallize simultaneously
 c) Constituents which become saturated will crystallize first
 d) None of the above is correct
- 10) Lapolith is an example of _____ type of igneous form.
 a) Extrusive
 b) Intrusive
 c) Both the above
 d) None of the above

B) Fill in the blanks or True or False.

06

- 1) Carbonatite is a ligneous rock. (True/False)
- 2) Dunite is a monomineralic rock contain feldspar mineral. (True/False)
- 3) Graphic texture is exhibited by granitic rocks. (True/False)
- 4) What is the mineral composition of Rhyolite?
- 5) The gases and vapours entrapped during the solidification of lava to form _____ structure.
- 6) Chonolith is _____ igneous body.

Q.2 Answer the following.

16

- a) Evolution of Magma.
- b) Discus in short MORB.
- c) Petrographic properties of Gabbro.
- d) Write short note on partial melting.

Q.3 Answer the following.

- a) Write a full note on IUGS classification of igneous rocks.
- b) Explain various texture and structure of igneous rocks.

08

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Q.4 Answer the following.

- a) Describe the Interior of the earth and their chemical composition.
- b) Describe the Magmatism associated with Plate tectonics.

08

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Q.5 Answer the following.

- a) Describe granite and granodiorite clan.
- b) Describe in detail carbonatites. Gives suitable Indian examples.

08

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Q.6 Answer the following.

- a) Enumerate difference between Batholith, phacolith and laccolith with neat diagram.
- b) Write a note on Ab-Or binary silicate systems.

08

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Q.7 Answer the following.

- a) Explain in details Mantle metasomatism.
- b) Write a note on Gibbs energy.

08

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M.Sc. (Semester - II) (Old) (CBCS) Examination: March/April-2024
APPLIED GEOLOGY
Structural Geology and Tectonics (MSC19202)

Day & Date: Saturday, 11-05-2024
Time: 11:00 AM To 02:00 PM

Max. Marks: 80

- Instructions:** 1) Q. Nos. 1 and 2 are compulsory.
2) Attempt any three questions from Q. No. 3 to Q. No. 7.
3) Figure to right indicate full marks.

Q.1 A) Choose correct alternative.

10

- 1) Banded calcareous deposits are called _____.
a) Tufa b) Drip stones
c) Travertine d) Stalactites
- 2) Most common characteristic drainage pattern of the Deccan trap is _____.
a) Radial b) Dendritic
c) Trellis d) None of these
- 3) When plates slide past each other horizontally, it is called _____.
a) Divergent boundaries b) Convergent boundaries
c) Transform boundaries d) None of the above
- 4) Example of wind deposition is _____.
a) Moraine and drumlin b) Leaves
c) Loess and dunes d) Sea cliff
- 5) _____ is sand or gravel beaches which connect one or more offshore islands to each other or to the mainland.
a) Tombolo b) Groyne
c) Bar d) Spit
- 6) Benioff zone is associated with _____.
a) Subduction slab b) Transform fault
c) Mid oceanic ridge d) Mountains
- 7) The _____ boundary between continental plates has given rise to the Himalayan mountains.
a) divergent b) convergent
c) transform fault d) None of given options
- 8) _____ rocks on either side of the mid-ocean or submarine ridges provide the most important evidence to the concept of Sea Floor Spreading.
a) Palaeomagnetic b) Radiometric
c) Structural geological d) Topographical
- 9) A _____ fold is a fold whose axial plane is vertical and the limbs dip equally.
a) symmetrical b) asymmetrical
c) Plunging d) Isoclinal

- 10) An unconformity is _____.
 a) gap in deposition
 b) bedding plain
 c) folded structure is sedimentary rocks
 d) None of the above

B) Fill in the blanks OR write True or False. 06

- 1) The average density of the oceanic crust is 3.0 g/cm^3 . (true/false)
- 2) The angle between any line and its horizontal projection measured in a vertical plane is the _____ of the line
- 3) The angle at which a sedimentary bed is inclined from the horizontal is called the _____.
- 4) Up folds or arches of layered rock are called syncline. (true/false)
- 5) _____ joints are those, which are due to shearing stresses involved in folding and faulting of rocks.
- 6) Volcanic island arcs are associated with ocean-ocean convergent plate boundaries, (true/false)

Q.2 Write short note on. 16

- a) Geometry of the fold
- b) Ocean floor morphology
- c) Formation of joints
- d) Mid oceanic ridge

Q.3 Answer the following. 08

- a) Write a brief note on methods of analysis of neotectonism. 08
- b) Give an account on ACM and PCM and their significance 08

Q.4 Answer the following. 08

- a) Draw neat sketches and discuss different types of fold. 08
- b) Discuss in brief different types of destructives plate margins with suitable examples. 08

Q.5 Answer the following. 08

- a) Write a full note on Lineation and foliation. 08
- b) Write a note on erosional landforms in costal geomorphology. 08

Q.6 Answer the following. 08

- a) What is significant of stress markers in quantification of deformation? 08
- b) Give detail account on tectonic model of evolution of the Himalayas. 08

Q.7 Answer the following. 08

- a) Discuss in brief Mohr circle and its applications. 08
- b) What is unconformity, discuss it types and criteria of the recognized in the field. 08

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M.Sc. (Semester - II) (Old) (CBCS) Examination: March/April-2024
APPLIED GEOLOGY
Hydrogeology (MSC19206)

Day & Date: Tuesday, 14-05-2024
 Time: 11:00 AM To 02:00 PM

Max. Marks: 80

- Instructions:** 1) Question no. 1 and 2 are compulsory.
 2) Attempt any three questions from Q. No. 3 to Q. No. 7.
 3) Figure to right indicate full marks.

Q.1 A) Choose correct alternative.

10

- 1) Turbidity of water is expressed in / by _____.
 - a) Concentration of hydrogen ion in water
 - b) Equivalent parts per million
 - c) Parts per million
 - d) The alkalinity present in it
- 2) Lysimeter is used to measure
 - a) Evaporation
 - b) Transpiration
 - c) Evapo-Transpiration
 - d) Transmissivity
- 3) Specific discharge is synonymous to _____.
 - a) Hydraulic conductivity
 - b) Permeability
 - c) Darcy velocity
 - d) Storativity
- 4) The well loss of a pumping well can be computed with the help of _____.
 - a) De Glee's method
 - b) Jacob's method
 - c) Step drawdown test
 - d) Recovery method
- 5) The steady state flow in compressible fluids is governed by _____.
 - a) Darcy's equation
 - b) Continuity equation
 - c) Bernoulli's equation
 - d) Laplace equation
- 6) Type of porosity found in Quartzite is _____.
 - a) Fracture
 - b) Intergranular and Fractured
 - c) Intergranular
 - d) Porosity do not occur in quartzite
- 7) Hydraulic conductivity (K) is equal to _____.
 - a) $-\frac{V}{dh/dL}$
 - b) $\frac{Q}{A}$
 - c) $pv\frac{D}{\mu}$
 - d) $\frac{p}{\mu}$
- 8) Darcy's flow is in direction of _____.
 - a) Increasing head
 - b) Decreasing head
 - c) Independent of head
 - d) Increasing and decreasing head both
- 9) In case of confined aquifer, the storage co-efficient is equal to _____.
 - a) Specific retention
 - b) Specific yield
 - c) Specific ratio
 - d) Co-efficient of permeability

- 10) Which will be the correct sequence in order of increasing specific yield?
- a) sand - gravel- clay
 - b) silt - gravel – clay
 - c) clay - sand- gravel
 - d) None of the above

B) Fill in the blanks **06**

- 1) The lowering effect on the water table about the base of the well stem is called as cone of _____.
- 2) The infiltration of water in to the subsurface is the groundwater _____.
- 3) Hardwater contains large amount of _____.
- 4) Sand has more Hydraulic conductivity than Gravel. (True/ False)
- 5) Water obtained from precipitation is called as meteoric water (True /False)
- 6) For drinking water, the upper limit of Fluoride content in _____.

Q.2 Answer the following. **16**

- a) Write a note on springs and its types.
- b) Geological mapping.
- c) Explain groundwater quality estimation.
- d) Water table contour maps.

Q.3 Answer the following.

- a) Explain in detail various hydrological properties of rocks. **08**
- b) What is electrical method of groundwater exploration? Explain with neat labelled diagrams. **08**

Q.4 Answer the following.

- a) Write in detail evaluation of aquifer parameters using field studies. **08**
- b) Explain in detail groundwater zones with suitable diagram. **08**

Q.5 Answer the following.

- a) Describe various designing techniques for construction of wells. **08**
- b) Describe in detail the graphical representation of groundwater quality data. **08**

Q.6 Answer the following.

- a) What are different hydrogeological zones of India. **08**
- b) Explain in detail Darcy's law and its applications. **08**

Q.7 Answer the following.

- a) Explain in detail physical and chemical properties of water. **08**
- b) Explain in detail the coastal aquifer contamination and the preventive measures for contamination. **08**

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M.Sc. (Semester - III) (New) (CBCS) Examination: March/April-2024
APPLIED GEOLOGY

Climatology & Oceanography (MSC019301)

Day & Date: Friday, 10-05-2024
 Time: 11:00 AM To 02:00 PM

Max. Marks: 80

- Instructions:** 1) Question no. 1 and 2 are compulsory.
 2) Attempt any three questions from Q. No. 3 to Q. No. 7.
 3) Figure to right indicate full marks.

Q.1 A) Choose the correct alternative.

10

- 1) The grand canyon located in which country?
 - a) Canada
 - b) Bolivia
 - c) Ghana
 - d) US
- 2) Which ocean is S type?
 - a) Pacific
 - b) Atlantic
 - c) Indian
 - d) Antarctica
- 3) Which among the following is the warm ocean current of the Pacific Ocean?
 - a) Kuroshio current
 - b) Humboldt current
 - c) Canaries current
 - d) Labrador current
- 4) The Ninety East Ridge located in _____.
 - a) Arabian sea
 - b) Off coast of Pakistan
 - c) Persian Gulf
 - d) Bay of Benga
- 5) The average gradient of continental slope _____.
 - a) 15°
 - b) 8°
 - c) 4°
 - d) 1°
- 6) The portion of incident radiation energy reflected back from a surface is called as _____.
 - a) Scattering
 - b) Albedo
 - c) Reflection
 - d) 'a' and 'c'
- 7) The total annual insolation is greatest at _____.
 - a) Equator
 - b) Tropic of Cancer
 - c) Tropic of Capricorn
 - d) The arctic circle
- 8) Solar energy received by the earth surface is _____.
 - a) 35%
 - b) 51%
 - c) 48%
 - d) 65%
- 9) Isobars are the line joining the places of _____.
 - a) Equal humidity
 - b) Equal rainfall
 - c) Equal temperature
 - d) Equal pressure
- 10) The lower portion of the atmosphere is heated due to _____.
 - a) Short wave solar radiation
 - b) Long wave solar radiation
 - c) Absorption of solar radiation by water vapors
 - d) None of the above

B) Fill in the blanks OR write true/ false **06**

- 1) _____ margins typically has a narrower and steeper continental shelf and slope.
- 2) Ocean trenches are a feature of convergent plate boundaries, where two or more tectonic plates meet. (True/False)
- 3) The zone of high pressure between 20°-30° north and south latitudes is called Horse latitudes. (True/False)
- 4) The Coriolis force is zero at _____.
- 5) The lowermost layer of the atmosphere is known as stratosphere. (True/False)
- 6) Average salinity of the oceans is _____ parts per thousand.

Q.2 Write a short note on. **16**

- a) Explain Continental Shelf with net sketch and label.
- b) Submarine Canyons with net sketch, label, and examples.
- c) Explain earth sun relationship.
- d) Explain solar radiation.

Q.3 Answer the following

- a) Write a brief account on evolution of Indian Ocean. **08**
- b) Write brief note on what are the factors affects temperature distribution on the Earth. **08**

Q.4 Answer the following.

- a) Write a note on Indian Monsoon. **08**
- b) Write a brief note on physiography of the Indian Ocean. **08**

Q.5 Answer the following.

- a) Write a note on major and minor chemical elements in the Ocean water. **08**
- b) Write a note on latitudinal variations in solar radiation, altitudes, pressure and wind Systems factors of climate control. **08**

Q.6 Answer the following.

- a) Explain petroleum occurrences and exploration activities in India Ocean. **08**
- b) Write a note on Albedo. **08**

Q.7 Answer the following.

- a) Write a note on mid oceanic ridge. **08**
- b) Write a note on continental margin. Explain in brief with suitable examples of active continental margin and passive continental margin. **08**

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M.Sc. (Semester - III) (New) (CBCS) Examination: March/April-2024
APPLIED GEOLOGY
Mineral Exploration (MSC019302)

Day & Date: Monday, 13-05-2024
 Time: 11:00 AM To 02:00 PM

Max. Marks: 80

- Instructions:** 1) Question no. 1 and 2 are compulsory.
 2) Attempt any three questions from Q. No. 3 to Q. No. 7.
 3) Figure to right indicate full marks.

Q.1 A) Choose the correct alternative.

10

- 1) In Hutti area gold is explored from the rock _____.
 a) Green stone rocks b) Kimberlite
 c) Lamproite d) Gabbro
- 2) Sampling is defined as _____ fraction of the bulk.
 a) Recoverable b) Representative
 c) Resource d) Reserve
- 3) Which of the mineral is hosted by kimberlites?
 a) Topaz b) Aquamarine
 c) Corundum d) Diamond
- 4) Reconnaissance survey is carried out on a scale of _____.
 a) 1:25,0000 b) 1:50,0000
 c) 1:2,50,000 d) 1:5,00,000
- 5) Which one of the following states is the leading producer of Iron ore?
 a) Chhattisgarh b) Jharkhand
 c) Karnataka d) Maharashtra
- 6) The application of geophysical logging is for _____.
 a) Correlation b) Identification
 c) Exploration d) All the above
- 7) Seismic reflection method identifies the structures localising _____.
 a) Coal, oil, gas b) Porphyry copper
 c) Hydrocarbons d) None of the above
- 8) Minerals and oil are _____.
 a) Non-renewable b) Artificial resources
 c) Water resources d) Renewable resources
- 9) Gravity method can be used for the identification of _____.
 a) Chromite b) Diamonds
 c) Baryte d) All of the above
- 10) The carnotite uranium deposits can be recognised by the presence of _____.
 a) Halophytic flora b) Selenium flora
 c) Galmic flora d) None of the above

- B) Fill in the blanks OR write True or False. 06**
- 1) Exploration is the term used for systematic examination of a deposit. (True/False)
 - 2) Organic coal is also called a fossil fuel. (True/False)
 - 3) Drilling is the process whereby rigs or hand operated tools are used to make holes to intercept an ore body. (True/False)
 - 4) Monazite is an ore of tin. (True/False)
 - 5) The most important ore of Aluminum is laterite (True/False)
 - 6) Oil Prospecting is achieved by very deep level drilling by modern drilling techniques. (True/False)
- Q.2 Answer the following: 16**
- a) What are Gossans and Anomaly?
 - b) Write short notes on sampling equipment.
 - c) What is background and threshold values?
 - d) What are the pathfinder elements?
- Q.3 Answer the following. 08**
- a) Discuss various sampling techniques in geological exploration. 08
 - b) Explain the principal steps in exploration and exploitation. 08
- Q.4 Answer the following. 08**
- a) Discuss various types of electrical surveys. 08
 - b) Diamond drills. 08
- Q.5 Answer the following. 08**
- a) Write in brief about Geo-chemical exploration method. 08
 - b) Explain the stages of Exploration as per UNFC Norms. 08
- Q.6 Answer the following. 08**
- a) Explain the geological criteria in Exploration. 08
 - b) Write a note on productive plutons. 08
- Q.7 Answer the following. 08**
- a) Geophysical well logging. 08
 - b) Gravity method. 08

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M.Sc. (Semester - III) (New) (CBCS) Examination: March/April-2024
APPLIED GEOLOGY

Engineering Geology & Rock Mechanics (MSC019306)

Day & Date: Wednesday, 15-05-2024
 Time: 11:00 AM To 02:00 PM

Max. Marks: 80

- Instructions:** 1) Question Nos. 1 and 2 are compulsory.
 2) Attempt any three questions from Q. No. 3 to Q. No. 7.
 3) Figure to right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ) 10

- 1) If 'S' is the compressive strength, 'P' is the maximum load applied to the specimen and 'A' is the area then the compressive strength will be:
 - a) $S=P/A$
 - b) $S=A/P$
 - c) $S=P*A$
 - d) $S=P-A$
- 2) Modulus of Rupture is also known as, _____
 - a) Uniaxial compressive strength
 - b) Abrasive resistance
 - c) Transverse strength
 - d) Absorption value
- 3) The value of water absorption is generally expressed in _____.
 - a) ml/kg
 - b) gram/liter
 - c) Percentage
 - d) Milliliter
- 4) The rocks in the order of decreasing resistance to damage by the fire are _____.
 - a) Sandstone, granite, gneiss, marble
 - b) Sandstone, gneiss, granite, marble
 - c) Gneiss, granite, sandstone, marble
 - d) Gneiss, sandstone, granite, marble
- 5) The presence of which of the following mineral in a rock will weaken the strength of the rock,
 - a) Quartz
 - b) Mica
 - c) Altered feldspar
 - d) Both (B) and (C)
- 6) Which property of rocks is determined by Triaxial test?
 - a) Shear Strength
 - b) Compressive Strength
 - c) Tensile Strength
 - d) None of these
- 7) A granite block is subjected to external load at room temperature, but it does not show any visible crack. The reason is,
 - a) Granite is so strong that it never fails under stress
 - b) Granite weak and deforms in a ductile manner
 - c) Stress generated is not sufficient to overcome the elastic limit
 - d) External load does not generate any stress in the granite
- 8) The portion of a dam that touches the ground on upstream side is called as, _____.
 - a) Heel of the dam
 - b) Toe of the dam
 - c) Spillway
 - d) Axis of the dam

- 9) Who proposed Rock Mass Quality (Q- System) in terms of six parameters?
 a) Terzaghi b) Deer & Miller
 c) Barton d) Romama
- 10) The talus cone is produced by, _____.
 a) Rock fall b) Rock glides
 c) Mud flows d) All of these

B) Fill in the blanks OR Write True / False. 06

- 1) An imperceptible slow movement of soil and rocks in down slope is known as _____.
- 2) In deformation of rocks under load, the stress is directly proportional to strain is characteristic of _____ substances.
- 3) Schmidt's hammer is used for determining in-field _____ of a rock.
- 4) The density of the rock with natural moisture is natural density. (True / False)
- 5) Shearing movements are observed in all cases of subsidence. (True / False)
- 6) The engineering classification of cohesive soils is based on _____ limit.

Q.2 Answer the following. 16

- a) Describe importance of geology in civil engineering.
 b) Explain various types of Mines.
 c) What is reverse circulation drilling?
 d) Explain RQD and RMR.

Q.3 Answer the following. 08

- a) Explain in detail various methods of determining engineering properties of rocks. Describe any two engineering properties of rocks. 08
 b) Explain in detail soil mechanics by describing soil profile in detail with neat labelled diagram and geotechnical investigation of soil. 08

Q.4 Answer the following. 08

- a) Describe preliminary geological investigations for the hydroelectric power projects. 08
 b) What is Earthquake and seismicity? Describe various seismic zones of India. 08

Q.5 Answer the following. 08

- a) Explain in brief Rock Mechanics and Rock Engineering. 08
 b) What are Strain and strength of rock? Explain in detail various strength tests. 08

Q.6 Answer the following. 08

- a) Explain in detail various drilling equipment's and their uses in engineering geology. 08
 b) Describe in detail different Geophysical methods for the selection of engineering sites. 08

Q.7 Answer the following. 08

- a) What is mass movement? Describe landslides and cause of hill slope instability. 08
 b) Describe in detail use of remote sensing in engineering geology. 08

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M.Sc. (Semester - IV) (New) (CBCS) Examination: March/April-2024
APPLIED GEOLOGY
Economic Geology (MSC019401)

Day & Date: Thursday, 09-05-2024
 Time: 03:00 PM To 06:00 PM

Max. Marks: 80

- Instructions:** 1) Question no. 1 and 2 are compulsory.
 2) Attempt any three questions from Q. No. 3 to Q. No. 7.
 3) Figure to right indicate full marks.

Q.1 A) Choose correct alternative.

10

- 1) Identify the odd pair of minerals among the following?
 - a) Goethite – siderite
 - b) Pyrite – marcasite
 - c) Pyrite – pyrrhotite
 - d) Hematite – magnetite
- 2) Rich deposits of bauxite in India is observed in _____.
 - a) Rajasthan
 - b) Maharashtra
 - c) Orissa
 - d) Jammu & Kashmir
- 3) Temperature range for the formation of hypothermal deposit is _____.
 - a) 300-700°
 - b) 300-500°
 - c) 300-450°
 - d) 300-400°
- 4) Diamond in kimberlite is good example of _____ deposits.
 - a) Injected
 - b) Segregated
 - c) Disseminated
 - d) Pegmatitic
- 5) The deposits that have formed simultaneously with the enclosing rock are called _____.
 - a) Syngenetic
 - b) Epigenetic
 - c) Hydrothermal
 - d) Metamorphic
- 6) Which one of the following mineral/s is an example of Late Magmatic deposit?
 - a) Magnetite
 - b) Ilmenite
 - c) Chromite
 - d) All the above
- 7) Pyrite would be expected to form in _____.
 - a) Reducing environment
 - b) Oxidising environment
 - c) Both a & b above
 - d) None of the above
- 8) Hydrothermal deposits mostly _____.
 - a) Epigenetic
 - b) Syngenetic
 - c) Residual
 - d) Placers
- 9) Which one of the following is Iron ore?
 - a) Galen
 - b) Chalcopyrite
 - c) Sphalerite
 - d) Magnetite
- 10) Chromite is closely associated with _____.
 - a) Ultrabasic rock
 - b) Intermediate rock
 - c) Acidic rock
 - d) All the above

- B) Fill in the blanks OR write True or False. 06**
- 1) What is the chemical formula for Chalcopyrite?
 - 2) Type of veins commonly found in igneous rocks are _____ vein deposit.
 - 3) Magmatic ore deposits do not commonly occur in forms of injective.
(True / False)
 - 4) Chemical composition of Hematite mineral is Fe_2O_3 . (True / False)
 - 5) The hardness of precious stone emerald is 7.5-8 (True / False)
 - 6) Quartz mineral has 2.65 g/cm^3 specific gravity. (True / False)
- Q.2 Write a short note on: 16**
- a) Physical properties of Pyrite and Galena ore mineral
 - b) Heavy mineral separation method
 - c) Short note on Magmatic fluid
 - d) National mineral policy
- Q.3 Answer the following. 10**
- a) Explain in details cavity filling deposit with suitable example. 10
 - b) Oxidation and supergene enrichment. 06
- Q.4 Answer the following.**
- a) Fluid Inclusion Geothermometry. 08
 - b) Use of micro hardness tester and reflectivity in ore mineral identification. 08
- Q.5 Answer the following.**
- a) Explain geology, stratigraphy and depositional environment of Banded Iron formation. 08
 - b) What is wall rock alteration. Discuss in short various types of alteration. 08
- Q.6 Answer the following.**
- a) Mineralization associated with Divergent and Convergent plate margin. 10
 - b) XRD studies in determinative mineralogy. 06
- Q.7 Answer the following.**
- a) Discuss Late magmatic deposit. 08
 - b) Placer deposit. 08

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M.Sc. (Semester - IV) (New) (CBCS) Examination: March/April-2024
APPLIED GEOLOGY
Fuel Geology (MSC019402)

Day & Date: Saturday, 11-05-2024
 Time: 03:00 PM To 06:00 PM

Max. Marks: 80

- Instructions:** 1) Q. Nos. 1 and 2 are compulsory.
 2) Attempt any three questions from Q. No. 3 to Q. No. 7.
 3) Figure to right indicate full marks.

Q.1 A) Choose correct alternative. 10

- 1) _____ is defined as a process, wherein complex organic molecules namely long chain hydrocarbons or kerogens are broken down into smaller molecules namely light hydrocarbons.
 - a) Cracking
 - b) Melting
 - c) Setting
 - d) Isomerization
- 2) Secondary migration of hydrocarbon takes place from _____.
 - a) Source rock to reservoir rock
 - b) Reservoir rock to source rock
 - c) Reservoir rock to trap
 - d) Trap to the surface
- 3) The rocks having _____ is most suitable reservoir for petroleum.
 - a) High porosity high permeability
 - b) High porosity low permeability
 - c) Low porosity low permeability
 - d) Low porosity high permeability
- 4) The lignite deposits of Bikaner sub-basin in northwestern India are associated with the Palana Formation of _____ age.
 - a) ~55 – 50 Ma
 - b) ~66 – 56 Ma
 - c) ~30 – 25 Ma
 - d) None of these
- 5) Anthracite contains _____ carbon and generally has the highest heating value of all ranks of coal.
 - a) 60% to 70%
 - b) 55% to 65%
 - c) 86% to 97%
 - d) 50% to 60%
- 6) Jharia coalfield is a large coal field located in _____ state of India.
 - a) Maharashtra
 - b) Karnataka
 - c) Jharkhand
 - d) Rajasthan
- 7) Which of the following may be a good reservoir rocks?
 - a) Granite
 - b) granite gneiss
 - c) Massive basalt
 - d) Sandstone
- 8) In Bombay Offshore, limestone has acted as a _____.
 - a) Source rock
 - b) Cap rock
 - c) Reservoir rock
 - d) Both b and c

- 9) Burning of fossil fuels are leading towards _____.
 - a) Pollution
 - b) Global warming
 - c) Both a & b
 - d) None of above
- 10) Smarskite is an ore mineral of _____.
 - a) Thorium
 - b) Uranium
 - c) Cobalt
 - d) Copper

B) Fill in the blanks OR write True or False. 06

- 1) Uranium and Thorium are major minerals for the production of atomic energy. (True / False)
- 2) Kerala is the largest producer of Thorium in India. (True / False)
- 3) Traps that are formed chiefly as a result of folding and faulting are called ____.
- 4) Coal is fossil fuel or fuel that comes from the remains of prehistoric plants or animals. (True / False)
- 5) Sub-bituminous coals are the second division of high-rank coals. (True / False)
- 6) Plutonium-239 and uranium-235 are the most common isotopes used in nuclear weapons. (True / False)

Q.2 Write a short note on. 16

- a) Methods of exploration for radioactive mineral deposits.
- b) Source rock
- c) Types of coal
- d) Geology of Cavery petroliferous basin

- Q.3 Answer the following.**
- a) Give an account of the geology and hydrocarbon occurrence in Bengal basin. 08
 - b) Write a brief note mineralogy and geochemistry of uranium radioactive minerals. 08

- Q.4 Answer the following.**
- a) Write brief note on non- conventional energy resource. 08
 - b) Write a brief account on classification of petroliferous basins in India. 08

- Q.5 Answer the following.**
- a) Give a brief account on Mumbai offshore basin. 08
 - b) Write a note on petroliferous basins in Rajasthan. 08

- Q.6 Answer the following.**
- a) Write a note on coal hydrogenation and coal combustion. 08
 - b) Give brief account on distribution of coal deposits in India. 08

- Q.7 Answer the following.**
- a) Discuss various geological and geophysical techniques of exploration of natural hydrocarbons. 08
 - b) Give application of radioactivity in geochronometry. 08

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**M.Sc. (Semester - IV) (New) (CBCS) Examination: March/April-2024
APPLIED GEOLOGY**

Environmental Geology & Disaster Management (MSC019403)

Day & Date: Tuesday, 14-05-2024
Time: 03:00 PM To 06:00 PM

Max. Marks: 80

- Instructions:** 1) Question no. 1 and 2 are compulsory.
2) Attempt any three questions from Q. No. 3 to Q. No. 7.
3) Figure to right indicate full marks.

Q.1 A) Choose correct alternative.

10

- 1) Which of the following atoms most often limits the primary productivity of an ecosystem?
 - a) Sulphur
 - b) Phosphorus
 - c) Nitrogen
 - d) Carbon
- 2) The volcanic eruption in Iceland falls under which volcanic belt in the world.
 - a) Belts of convergent boundaries
 - b) Divergent plate boundaries
 - c) Hotspots
 - d) None of the above
- 3) Phosphorus cycle absorbs phosphate in the form of _____
 - a) HPO_3^-
 - b) P_2
 - c) PO_4^{3-}
 - d) AlOP_4
- 4) In a food chain the total amount of living material is depicted by
 - a) Pyramid of energy
 - b) Pyramid of numbers
 - c) Pyramid of biomass
 - d) All of these
- 5) The level of harm by a hazard is governed by
 - a) Magnitude of hazard
 - b) Frequency of hazard
 - c) Intensity at the impact point
 - d) All of the above
- 6) Floods can be prevented by
 - a) Afforestation
 - b) Cutting the forest
 - c) Tilling the land
 - d) Removing the top soil
- 7) About 2/3rd of the cyclones that occur in the Indian coastline occur in the
 - a) Bay of Bengal
 - b) Coastal area of south India
 - c) Coastal area of west India
 - d) None of the above
- 8) The word Tsunami has been derived from
 - a) French word
 - b) Latin word
 - c) Japanese word
 - d) Greek word
- 9) Instrument for recording earthquake wave is called.
 - a) Seismogram
 - b) Seismometer
 - c) Scintillometer
 - d) Seismograph

- 10) The two atom bombs dropped in Hiroshima and Nagasaki in Japan by USA during
- a) World war I
 - b) World war II
 - c) Gulf war I
 - d) Gulf war II

B) Fill in the blanks / True OR False 06

- 1) When did Environmental day celebrated?
- 2) The constituent of polluted air which contributes in producing acid rain is _____.
- 3) Elastic rebound theory is related to _____.
- 4) Indo-gangatic plain is the most landslide prone area in India. (True/False)
- 5) The Mount Vesuvius is the example of dormant volcano. (True / False)
- 6) The state disaster management authority is headed by chief minister. (True / False)

Q.2 Answer the following 16

- a) What is the main cause of occurrence of earthquake?
- b) Open cast mining
- c) Write a note on drought
- d) Food web

Q.3 Answer the following.

- a) Describe an ecological pyramid. 08
- b) Write down different causes of Floods. 08

Q.4 Answer the following.

- a) Write note on East coast cyclone hazard. 08
- b) What are different impacts of urbanization on environment? 08

Q.5 Answer the following.

- a) Discuss in detail Biogeochemical cycle. 08
- b) Coastline management 08

Q.6 Answer the following.

- a) Write a note on disaster management. 08
- b) Control and management of waste materials. 08

Q.7 Answer the following.

- a) Discuss various types, sources and causes of pollutants. 08
- b) write note on: 08
 - 1) Fly Ash 2) Use of excessive fertilizers