CUET PG 2026 Geology Question Paper with Solutions(Memory Based)

Time Allowed :1 Hours 30 min	Maximum Marks :300	Total Questions :75

General Instructions

1. The exam lasts 90 minutes (1 hour 30 minutes).
2. There are 75 Multiple Choice Questions (MCQs) to be answered.
3. +4 marks for every correct answer. -1 mark (negative marking) for every incorrect answer. 0 marks for unanswered or un-attempted questions.
4. For any discrepancy in questions, the English version is considered final (except for language-specific papers).
5. Click one of the four options to choose an answer.
6. You must click "Save & Next" to confirm your response. Only saved answers are considered for evaluation.
7. Use "Mark for Review & Next" to flag a question for later. You can unselect or change your answer using the "Clear Response" button.
8. All calculations must be done on the Rough Sheets provided at the centre. These must be returned to the invigilator after the exam.

1. Which of the following minerals exhibits the highest hardness on the Mohs scale?
(A) Talc
(B) Gypsum
(C) Quartz
(D) Diamond

Correct Answer: (4) Diamond

Solution:

Concept: The Mohs scale of hardness is a qualitative scale used to measure the scratch resistance of minerals. It ranges from 1 (softest) to 10 (hardest). Each mineral can scratch those below it and is scratched by those above it. The standard Mohs hardness values are:

- Talc = 1 (softest)
- Gypsum = 2
- Quartz = 7
- Diamond = 10 (hardest)

Step 1: Compare the hardness values of the given minerals.
Among the given options:

- Talc is the softest mineral.
- Gypsum is slightly harder than talc.
- Quartz has relatively high hardness.
- Diamond has the maximum hardness on the Mohs scale.

Step 2: Identify the mineral with the highest hardness.
Since Diamond has a hardness of 10, it is the hardest known natural mineral.

Quick Tip

On the Mohs scale, Diamond (10) is the hardest mineral, while Talc (1) is the softest. Always remember: higher number = greater hardness.

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2. The "Discontinuity" that separates the Earth's crust from the mantle is known as?
(A) Gutenberg Discontinuity
(B) Mohorovičić Discontinuity
(C) Lehmann Discontinuity
(D) Conrad Discontinuity

Correct Answer: (2) Mohorovičić Discontinuity

Solution:

Concept: The Earth is composed of different layers: crust, mantle, and core. The boundaries separating these layers are called discontinuities, where there is a sudden change in seismic wave velocity due to differences in composition and density.

- Mohorovičić Discontinuity (Moho): Separates crust and mantle
- Gutenberg Discontinuity: Separates mantle and outer core
- Lehmann Discontinuity: Separates outer core and inner core
- Conrad Discontinuity: Separates upper and lower crust (not always distinct)

Step 1: Identify the boundary between crust and mantle.
The boundary where seismic waves suddenly increase in velocity marks the transition from the crust to the mantle.
Step 2: Match with the correct discontinuity name.
This boundary is known as the Mohorovičić Discontinuity, commonly called the Moho.

Quick Tip

Remember the order of Earth's layers and their boundaries: Crust → **Moho** → Mantle → **Gutenberg** → Core → **Lehmann**.

3. In which type of plate boundary is new oceanic crust typically created?
(A) Convergent boundary
(B) Divergent boundary
(C) Transform boundary
(D) Conservative boundary

Correct Answer: (2) Divergent boundary

Solution:

Concept: Plate tectonics explains the movement of Earth's lithospheric plates. At different types of plate boundaries, different geological processes occur:

- Divergent boundary: Plates move apart and magma rises to create new crust.
- Convergent boundary: Plates move towards each other, leading to subduction or mountain formation.
- Transform (Conservative) boundary: Plates slide past each other without creating or destroying crust.

Step 1: Understand where new crust is formed.
New oceanic crust forms when molten magma rises from the mantle and solidifies at the surface.
Step 2: Identify the boundary where plates move apart.
This process occurs at divergent boundaries, such as mid-ocean ridges, where plates separate and new crust is continuously formed.

Quick Tip

Divergent = "Divide" (plates move apart) $\Rightarrow$ new crust forms. Convergent = "Come together" $\Rightarrow$ crust is destroyed or folded.

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4. Which silicate structure is characterized by a single chain of SiO_4 tetrahedra?
(A) Nesosilicates
(B) Inosilicates (single chain)
(C) Phyllosilicates
(D) Tectosilicates

Correct Answer: (2) Inosilicates (single chain)

Solution:

Concept: Silicate minerals are classified based on how SiO_4 tetrahedra are arranged:

- Nesosilicates: Isolated tetrahedra
- Inosilicates: Chain structures (single or double chains)

- Phyllosilicates: Sheet structures
- Tectosilicates: Three-dimensional framework

Step 1: Understand the meaning of chain structures.
In chain silicates, tetrahedra are linked by sharing oxygen atoms to form continuous chains.
Step 2: Identify the structure with a single chain.
Single-chain structures are a type of inosilicates (e.g., pyroxenes), where each tetrahedron shares two oxygen atoms with adjacent tetrahedra.
Step 3: Select the correct option.
Thus, the silicate structure characterized by a single chain of SiO_4 tetrahedra is inosilicates (single chain).

Quick Tip

Remember: Neso = isolated, Ino = chains, Phylo = sheets, Tecto = 3D framework.

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5. The primary ore mineral of Aluminium is known as?
(A) Hematite
(B) Bauxite
(C) Galena
(D) Chalcopyrite

Correct Answer: (2) Bauxite

Solution:

Concept: An ore is a naturally occurring mineral from which a metal can be economically extracted. Aluminium is one of the most abundant elements in the Earth's crust, but it does not occur in a free state due to its high reactivity. Instead, it is found combined with other elements, primarily in the form of oxide minerals.
Bauxite is the principal ore of aluminium and is composed mainly of hydrated aluminium oxides such as gibbsite ($Al(OH)_3$), boehmite ($\gamma - AlO(OH)$), and diaspore ($\alpha - AlO(OH)$). It often contains impurities like iron oxides and silica.
Step 1: Identify the common ores of the given metals.

- Hematite is an ore of iron.
- Galena is an ore of lead.
- Chalcopyrite is an ore of copper.
- Bauxite is the chief ore of aluminium.

Step 2: Understand why bauxite is important.
Bauxite is the most significant aluminium-bearing ore because it contains a high percentage of aluminium and can be processed efficiently using the Bayer process to extract alumina, followed by electrolysis (Hall-Héroult process) to obtain pure aluminium.

Step 3: Select the correct answer.
Thus, the primary ore mineral of aluminium is Bauxite.

Quick Tip

Match important ores with metals: Iron → Hematite, Copper → Chalcopyrite, Lead → Galena, Aluminium → **Bauxite**.

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6. Which geological era is often referred to as the "Age of Reptiles"?
(A) Paleozoic Era
(B) Mesozoic Era
(C) Cenozoic Era
(D) Precambrian

Correct Answer: (2) Mesozoic Era

Solution:

Concept: Geological time is divided into eons, eras, periods, and epochs based on major events in Earth's history, especially changes in life forms. Each era is characterized by dominant life forms and significant evolutionary developments.

- Paleozoic Era: Known as the "Age of Ancient Life" (marine life and early land organisms).
- Mesozoic Era: Known as the "Age of Reptiles".
- Cenozoic Era: Known as the "Age of Mammals".
- Precambrian: Earliest time in Earth's history with simple life forms.

Step 1: Identify the era dominated by reptiles.
During the Mesozoic Era, reptiles—especially dinosaurs—became the dominant terrestrial animals. This era includes three periods: Triassic, Jurassic, and Cretaceous.
Step 2: Understand key characteristics of the Mesozoic Era.

- Emergence and dominance of dinosaurs.
- Appearance of the first birds and mammals.
- Breakup of the supercontinent Pangaea.

Step 3: Conclude the correct answer.
Since reptiles were the dominant life forms during this time, the Mesozoic Era is called the "Age of Reptiles".

Quick Tip

Remember the sequence: Paleozoic → Ancient life, Mesozoic → **Reptiles (Dinosaurs)**, Cenozoic → Mammals.

7. In Bowen's Reaction Series, which mineral is the first to crystallize in the discontinuous series?
(A) Quartz
(B) Muscovite
(C) Olivine
(D) Biotite

Correct Answer: (3) Olivine

Solution:

Concept: Bowen's Reaction Series explains the sequence in which minerals crystallize from a cooling magma. It is divided into two branches:

- Discontinuous series: Minerals change structure as temperature decreases (Olivine → Pyroxene → Amphibole → Biotite).
- Continuous series: Plagioclase feldspar evolves gradually from calcium-rich to sodium-rich composition.

The discontinuous series is called so because each mineral has a different crystal structure and forms at different temperature ranges.
Step 1: Identify the highest temperature mineral in the discontinuous series.
Minerals crystallize from magma as it cools, with high-temperature minerals forming first.
Step 2: Recall the order of the discontinuous series.

$$\text{Olivine} \rightarrow \text{Pyroxene} \rightarrow \text{Amphibole} \rightarrow \text{Biotite}$$

Step 3: Determine the first crystallizing mineral.
Olivine forms at the highest temperature and is therefore the first mineral to crystallize in the discontinuous series.

Quick Tip

Remember the sequence using: **O**ld **P**eople **A**lways **B**ring (Olivine, Pyroxene, Amphibole, Biotite).

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8. What is the specific name for a tabular igneous intrusion that runs parallel to the bedding planes of the country rock?
(A) Dyke
(B) Sill
(C) Laccolith
(D) Batholith

Correct Answer: (2) Sill

Solution:

Concept: Igneous intrusions are bodies of magma that solidify beneath the Earth's surface. They are classified based on their shape and relationship with surrounding rock layers (country rock):

- Dyke: Cuts across bedding planes (discordant intrusion).
- Sill: Runs parallel to bedding planes (concordant intrusion).
- Laccolith: Dome-shaped intrusion causing uplift of overlying layers.
- Batholith: Massive, irregular deep-seated intrusion.

Step 1: Understand the meaning of "parallel to bedding planes".
If an intrusion follows the existing layers of rock without cutting across them, it is called concordant.
Step 2: Identify the correct type of concordant intrusion.
A tabular (sheet-like) intrusion that lies parallel to bedding planes is known as a sill.
Step 3: Differentiate from similar structures.

- Dyke is also tabular but cuts across layers (discordant).
- Laccolith is dome-shaped, not strictly tabular.
- Batholith is large and irregular.

Step 4: Select the correct answer.
Thus, the correct term is sill.

Quick Tip

Sill = **Same direction as layers** (parallel). Dyke = **Different direction** (cuts across layers).

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9. Which type of fault occurs when the hanging wall moves downward relative to the footwall?
(A) Reverse fault
(B) Normal fault
(C) Strike-slip fault
(D) Thrust fault

Correct Answer: (2) Normal fault

Solution:

Concept: A fault is a fracture in the Earth's crust along which movement has occurred. Faults are classified based on the relative movement of the hanging wall and footwall:

- Normal fault: Hanging wall moves downward relative to footwall (tensional forces).

- Reverse fault: Hanging wall moves upward (compressional forces).
- Thrust fault: A low-angle reverse fault.
- Strike-slip fault: Horizontal movement along the fault plane.

Step 1: Understand hanging wall and footwall.
The hanging wall is the block above the fault plane, while the footwall lies below it.
Step 2: Analyze the given movement.
The question states that the hanging wall moves downward relative to the footwall.
Step 3: Match with the correct fault type.
This type of movement is characteristic of a normal fault, which forms under tensional stress when the crust is being stretched.

Quick Tip

Normal fault = Hanging wall goes **down**. Reverse/Thrust fault = Hanging wall goes **up**.

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10. The famous "Gondwana Supergroup" in India is primarily known for its deposits of?
(A) Petroleum
(B) Coal
(C) Limestone
(D) Iron ore

Correct Answer: (2) Coal

Solution:

Concept: The Gondwana Supergroup refers to a sequence of sedimentary rocks in India formed during the late Paleozoic to early Mesozoic eras. These rocks were deposited in continental environments such as river basins and swamps.
These formations are especially significant because they contain rich deposits of coal, which formed from the accumulation and compression of plant material in ancient swampy environments.
Step 1: Understand the origin of Gondwana deposits.
The Gondwana sediments were laid down in basins under conditions favorable for lush vegetation, which later transformed into coal.
Step 2: Identify the major resource associated with these rocks.
India's major coal fields (e.g., Damodar Valley, Son Valley) are associated with Gondwana formations.
Step 3: Eliminate incorrect options.

- Petroleum is generally associated with marine sedimentary basins.
- Limestone forms in marine environments.
- Iron ore is typically linked with older Precambrian formations.

Step 4: Conclude the answer.
Thus, the Gondwana Supergroup is primarily known for coal deposits.

Quick Tip

Gondwana in India = **Coal reserves**. Think: Ancient forests → Burial → Coal formation.

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11. Which seismic wave is the fastest and can travel through both solid and liquid mediums?
(A) Primary (P) waves
(B) Secondary (S) waves
(C) Love waves
(D) Rayleigh waves

Correct Answer: (1) Primary (P) waves

Solution:

Concept: Seismic waves are energy waves generated by earthquakes. They are mainly classified into body waves and surface waves:

- Body waves: Travel through the Earth's interior (P-waves and S-waves).
- Surface waves: Travel along the Earth's surface (Love and Rayleigh waves).
- P-waves (Primary waves): Compressional waves, fastest, travel through solids, liquids, and gases.
- S-waves (Secondary waves): Shear waves, slower than P-waves, travel only through solids.
- Love and Rayleigh waves: Surface waves, slower but cause maximum damage.

Step 1: Identify the fastest seismic wave.
P-waves are the fastest seismic waves and are the first to be recorded by seismographs.
Step 2: Check the medium of propagation.
P-waves can travel through solids, liquids, and gases, whereas S-waves cannot travel through liquids.
Step 3: Select the correct answer.
Thus, the fastest wave that travels through both solid and liquid media is the Primary (P) wave.

Quick Tip

P-waves = **Primary + Pressure** ⇒ fastest and travel everywhere. S-waves = **Secondary + Shear** ⇒ only solids.

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12. An unconformity where sedimentary layers are deposited over eroded igneous or metamorphic rocks is called a?
(A) Angular unconformity
(B) Disconformity
(C) Nonconformity
(D) Paraconformity

Correct Answer: (3) Nonconformity

Solution:

Concept: An unconformity represents a gap in the geological record caused by erosion or non-deposition. Different types of unconformities are identified based on the nature of rock layers:

- Angular unconformity: Tilted or folded older rocks overlain by horizontal younger strata.
- Disconformity: Parallel sedimentary layers with a gap in time.
- Nonconformity: Sedimentary rocks overlying igneous or metamorphic rocks.
- Paraconformity: Layers are parallel with no visible erosion surface but represent a time gap.

Step 1: Understand the rock types involved.
The question specifies sedimentary rocks deposited over eroded igneous or metamorphic rocks.
Step 2: Match with the correct unconformity type.
This situation corresponds to a nonconformity.
Step 3: Differentiate from other types.

- Angular unconformity involves tilted sedimentary layers.
- Disconformity involves parallel sedimentary layers.
- Paraconformity has no visible erosion but represents missing time.

Step 4: Conclude the answer.
Thus, the correct answer is nonconformity.

Quick Tip

Nonconformity = Sedimentary rocks over **non-sedimentary** (igneous/metamorphic) rocks.

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13. What is the most abundant element in the Earth's crust by weight percentage?
(A) Silicon
(B) Oxygen
(C) Aluminium
(D) Iron

Correct Answer: (2) Oxygen

Solution:

Concept: The Earth's crust is composed of various elements, but their abundance varies significantly. The composition is usually expressed in terms of weight percentage. The major elements in the Earth's crust are:

- Oxygen (∼46.6%)
- Silicon (∼27.7%)
- Aluminium (∼8.1%)
- Iron (∼5.0%)

Oxygen dominates because it forms oxides and silicate minerals, which make up the majority of crustal rocks.
Step 1: Recall the abundance of elements in the crust.
Among all elements, oxygen has the highest percentage by weight.
Step 2: Compare with other options.
Although silicon is also abundant, it is significantly less than oxygen. Aluminium and iron occur in smaller proportions.
Step 3: Conclude the answer.
Thus, oxygen is the most abundant element in the Earth's crust.

Quick Tip

Remember: **Oxygen + Silicon = Majority of crust**. Oxygen alone contributes nearly half of the Earth's crust.

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14. Which sedimentary structure is used to determine the paleo-current direction?
(A) Ripple marks
(B) Mud cracks
(C) Graded bedding
(D) Cross-bedding

Correct Answer: (4) Cross-bedding

Solution:

Concept: Sedimentary structures provide valuable information about depositional environments and flow conditions. Paleocurrent direction refers to the direction of water or wind flow at the time of sediment deposition.

- Ripple marks: Indicate flow direction but may be ambiguous (especially symmetrical ripples).
- Mud cracks: Indicate drying conditions, not flow direction.

- Graded bedding: Indicates direction of deposition (top-bottom), not flow direction.
- Cross-bedding: Formed by inclined layers and clearly indicates current direction.

Step 1: Understand paleocurrent indicators.
Structures that preserve directional flow features are used to determine paleocurrent direction.
Step 2: Analyze cross-bedding.
Cross-bedding forms when sediment is deposited by moving water or wind, creating inclined layers (foresets). These foresets dip in the direction of flow, thus indicating paleocurrent direction.
Step 3: Differentiate from other structures.

- Ripple marks may indicate flow but are not always reliable.
- Mud cracks indicate subaerial exposure.
- Graded bedding indicates vertical sequence, not direction of flow.

Step 4: Conclude the answer.
Therefore, cross-bedding is the most reliable sedimentary structure to determine paleocurrent direction.

Quick Tip

Cross-bedding = **Current direction indicator**. Foreset dip direction = Flow direction.

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15. The transformation of Limestone into Marble is an example of which type of metamorphism?
(A) Contact metamorphism
(B) Regional metamorphism
(C) Dynamic metamorphism
(D) Hydrothermal metamorphism

Correct Answer: (1) Contact metamorphism

Solution:

Concept: Metamorphism refers to the alteration of pre-existing rocks due to changes in temperature, pressure, and chemical environment without melting. Different types of metamorphism are classified based on the dominant factors:

- Contact metamorphism: Caused mainly by high temperature due to nearby magma intrusion.
- Regional metamorphism: Occurs over large areas under high pressure and temperature (mountain building).
- Dynamic metamorphism: Associated with fault zones and high shear stress.

- Hydrothermal metamorphism: Involves chemical alteration by hot fluids.

Limestone is primarily composed of calcium carbonate ($CaCO_3$). When subjected to high temperatures, its minerals recrystallize to form marble, a denser and more crystalline rock.
Step 1: Identify the parent and resulting rock.
Limestone (sedimentary rock) transforms into marble (metamorphic rock).
Step 2: Determine the dominant metamorphic factor.
This transformation mainly occurs due to heat from nearby magma bodies, rather than intense pressure over large areas.
Step 3: Match with the correct metamorphism type.
Such localized heating around igneous intrusions is characteristic of contact metamorphism.
Step 4: Eliminate other options.

- Regional metamorphism involves large-scale pressure and temperature changes.
- Dynamic metamorphism is related to faulting and deformation.
- Hydrothermal metamorphism involves fluid interaction rather than simple recrystallization.

Step 5: Conclude the answer.
Thus, the transformation of limestone into marble is an example of contact metamorphism.

Quick Tip

Limestone + Heat (magma) $\rightarrow$ Marble Think: **Heat nearby = Contact metamorphism**.
