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Paper : Geology.

Qnos: (A) Define focus, epicentre earthquake, intensity, seismograph and sesimogram.

Ans: Focus:-

The point inside the crust where the pressure is released is called the focus.

Epicentre:-

The point on the earth's surface vertically above the hypocentre point in the ~~str~~ crust where a seismic rupture begins.

Earthquake Intensity:-

Intensity is a measure of an earthquake determined from the observed effects especially damage. for a given earthquake, intensity normally decreases with the distance from epicentre.

Seismograph:-

A seismograph or seismometer is an instrument used to detect and record earthquakes.

Seismogram:-

A seismogram is the recording of the ground shaking at the specific location of the instrument. On a seismogram, the horizontal axis = time, and the vertical axis = ground displacement.

Q. Explain the classification of earthquake according to their mode of origin.

Ans:- Classification of earthquake according to their mode of origin:-

Earth-quakes can originate from sudden motion along a fault, from a volcanic eruption, bomb blast, landslides, or anything else that suddenly releases energy on or in the Earth.

An earthquake originates in one place then spreads out in all directions along the fault plane.

Classification of earthquake:

Class	Magnitude:
Major	7 - 7.9
Strong	6 - 6.9
Moderate	5 - 5.9
Light	4 - 4.9

Q.1: C:- Differentiate b/w Surface, P-waves, S-waves, L-waves, ?

Ans:-

S-waves:-

Because of their movement S-waves only move through solids and are stopped by liquids and gases.

P-waves:-

Because of their movements P-waves travel through any kind of materials, whether it is solid, liquid, or gas.

L-waves:-

The L waves travel along the surface of the earth from the point directly above the quake or epicenter.



Q2: A:- Explain modified mercalli scale.

Modified mercalli scale:-

The modified Mercalli intensity scale (MM or MMI) developed from Giuseppe Mercalli's Mercalli intensity scale of 1902 is a seismic intensity scale used for measuring the intensity of shaking produced by an earthquake.

The following gives MMI, that are typically ~~seen~~ observed at location near the epicenter of the earthquake.

1: **Not felt**:- Not felt by except by very few under specially favorable conditions.

2: **Weak**:-

Felt only by a few people at rest.

3: **Weak**:- felt quite noticeable by people indoors or especially on upper floor of building.

4: **Light**:-

Felt indoor by many, outdoor by few. During the day, at night some are awakened, dishes, windows, and door are disturbed, walls make crackling sounds, sensations are like a heavy truck striking a building.

5: **Moderate**:-

Felt by nearly every one, many awakened. Some dishes and windows are broken.

6:- Strong:- felt by all and many are frightened. Some heavy furniture is moved; a few instances of fallen plaster cause damage is slight.

7:- Very strong:-

Damage is negligible in buildings of good design and construction but slight to moderate in well-built ordinary structures; damage is considerable in poor built or badly designed constructions.

8:- Severe:-

Damage slight in specially designed construction; damage great in poorly built structures.

9:- Violent:-

Damage is considerable in specially designed construction; well designed frame structures are thrown out of plumb.

10:- Extreme:-

Damage is total, waves are seen on ground surfaces, lines of sight and level are distorted, objects are thrown upward into the air.

Q2 B:- Define volcano, volcanic and Explain types of volcano.

Ans:- **Volcano**:- A mountain or hill, typically conical, having a crater or vent through which lava, rock fragments, hot vapours, and gases are or have been erupted from the earth's crust.

Volcanic Cone:-

Volcanic cones are among the simplest volcanic landforms. They are built from volcanic vent, piling up around the vent in the shape of cone with a central crater.

Types of volcano.

Composite volcanoes:-

Composite volcanoes sometimes known as strata volcanoes, are steep cones formed from layers of ash and lava flows.

The eruptions from these volcanoes may be a pyroclastic flow rather than a flow of lava.

Shield volcanoes:-

Shield volcanoes are low with gently sloping sides and are formed from layers of lava eruptions.

are typically non-explosive.

Dome :-

Acid (lava) is much thicker than
which flows from shield volcanoes.
Dome volcanoes have much steeper
sides than shield volcanoes.



Q3:- Q: Explain occurrence of ground water in detail.

Ans: Ground water is water that exists in the pore spaces and fractures in rocks and sediments beneath the earth's surface. It originates as rain fall or snow and then moves through the soil and rocks into the groundwater system, where it eventually makes its way back to the surface streams, lakes, or oceans.

Occurrence of Ground water:-

- ⇒ Rocks Properties affecting groundwater.
- ⇒ Vertical distribution of groundwater.
- ⇒ Zone of Aeration.
- ⇒ Zone of saturation.
- ⇒ Geological formation as Aquifers.
- ⇒ Types of Aquifers.
- ⇒ Storage of coefficients.

Rocks Properties affecting groundwater.

Ground water occurs in many types of geologic formation those known as aquifers are of most important.

- (1) Aquiclude.
- (2) Aquifuge.
- (3) Aquitard.

Vertical distribution of groundwater:-

The subsurface occurrence of groundwater may be divided into zone of aeration and saturation. The zone of aeration of interstices occupied partially by water and partially by air.

Zone of Aeration:-

Water in the soil-water zone exist at less than saturation except temporarily when excessive water reaches the ground surface as form of rainfall or irrigation.

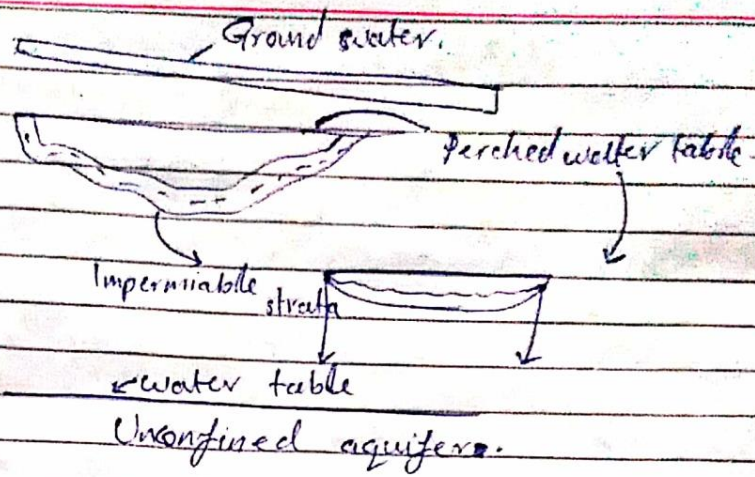
Zone of saturation:-

In the zone of saturation ground water fills all of the interstices, hence the (effective) porosity provide a direction of the water contained per unit volume.

Geological formation as Aquifers:-

Geological origin of aquifers based on the types of porosity and rocks types.
→ limestone etc.

Types of Aquifers:-



Storage coefficient:-

The storage coefficient S equals the volume of water released from the aquifer when the piezometric surface declines a unit distance.

Q3 b:- Define wells and list down types of wells.

Ans:- Well:-

A well is an excavation or structure created in the ground by digging, driving, or drilling to access liquid resources usually water.

Types of wells:-

- Dug/Bored wells are holes in the ground dug by shovel or backhoe.
- Driven wells are constructed by driving pipes into the ground.
- Drilled wells are constructed by

percussion or rotary drilling machines.

Q4:- Explain terminology of a dam along with figure.

Ans:- Terminology of dam:-

what words are used when we discussing dam.

Abutment:- Valley side part against which dam is constructed.

Acre-foot:- Unit of measurement.

Berm:- Nearly horizontal step in upstream or downstream sloping face of dam.

Bolt:- ~~Nearly~~ Disruption of soil surface due to water discharge.

Breach:- Opening through dam that allows reservoir draining. controlled is intentionally constructed opening and uncontrolled is unintended failure of the dam.

Centerline:- Longitudinal view along centerline axis of dam.

Crest: - Uppermost elevation of embankment dam.

Conduit: -

Closed channel that conveys water through, around, or under the dam.

Control section: -

Usually level segment in profile of open channel spillway above which reservoir water discharge through spillway.

Cross section: -

Slice through dam showing elevation vertically and direction of natural water flow horizontally from left to right.

Dam: - Artificial barrier generally constructed across a watercourse for purpose of impounding or diverting water.

Drawn down: -

Lowering or releasing of reservoir water level over time.

Emergency: -

Condition that develops unexpected endangers structural integrity of dam and downstream.

Foundation: -

Natural soil or rocks on which the dam is placed.

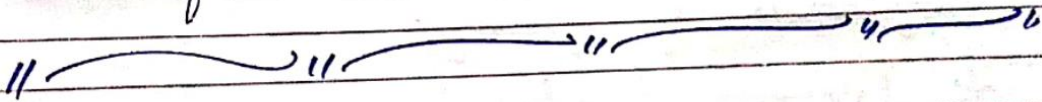
Freeboard:-

Vertical distance between a stated water level in reservoir and dam top.

Gate:- Operable, watertight valve to manage discharge of water.

Groyne:-

Area along intersection of dam face and abutment.



Q5:-a): Define landslides and Explain how to prevent landsliding:-

Ans: landslides:-

A landslide is defined as the movement of a mass of rocks, debris, or earth down a slope.

landslides are a type of mass wasting which denotes any down-slope movement of soil and rocks under the direct influence of gravity.

★ Prevent landslides:-

There are also various direct methods of preventing landslides these include modifying slope geometry, using chemical agents to reinforce slope material, installing structure such as piles and retaining walls, grouting rocks joints and fissures, diverting debris pathways, and rerouting surface and under-water drainage.

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Q5 B):- What is glaciers and movement of glaciers?

Ans:- Glaciers:-

A glacier is a large perennial accumulation of crystalline ice, snow, rocks, sediment, and often liquid water originates on land and moves down slope under the influence of its own weight and gravity.

\* Movement of glaciers:-

A glaciers might look like a solid block of ice, but it is actually moving very slowly. The glacier move because the pressure from the weight of the overlying ice causes it to deform and flow. Lots of crevasses form when the ice flows over large bumps or around a bend in a valley.

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