GSSCORE

An Institute for Civil Services

IAS TOPPER'S

TEST COPY

RAVI KUMAR

RANK - 84

GEOGRAPHY
TEST- 1

GS SCORE

TEST - 01

GEOGRAPHY

Time Allowed: 3 hr. *Max. Marks: 250*

Instructions to Candidate

- There are EIGHT question divided in Two Sections.
- Candidate has to attempt FIVE questions in all
- Question No. 1 and 5 are compulsory and out of the remaining, three are to be attempted choosing at least one question from each section.
- The number of marks carried by a question/part is indicated against it.
- Answers must be written in the medium authorized in the Admission Certificate which must be stated clearly on the cover of this Question-cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in medium other than the authorized one.
- Word-limit in questions, wherever specified, should be adhered to.
- Attempts of questions shall be counted in chronological order. Unless struck off, attempt of a question shall be counted even if attempted partly. Any page or portion of the page left blank in the Question-Cum-Answer booklet must be clearly struck off.

40

1. *Invigilator's Signature* Rohit

2. *Invigilator's Signature* Rohit Lodha

Name RAVI KUMAR

Mobile No. _____

Date _____

Signature Ravi

REMARKS

Roll No._____

SECTION-A

Attempt all questions:

1. Answer the following questions in about 150 words each: (10 × 5 = 50)

   (a) Write a short note on the contribution of Ancient period historians and philosophers in the evolution of geomorphological thought.

   (b) Write a short note on Bowen's Reaction Series.

   (c) Describe the terms in detail,

      1. Podzolization

      2. Gleying

   (d) Discuss the continental drift theory of Taylor.

   (e) Write a short note on Misfit meandering.

Could have explained in more comprehensive manner

Q1 c) (1) Podzolization :→ It is the process in which iron or aluminium form sesquioxides when they leached downward. This is a common phenomenon in Boreal type of climate where podzols of Fe and Al are formed. Extensive Podzolization can render soil infertile and unfit for agriculture.

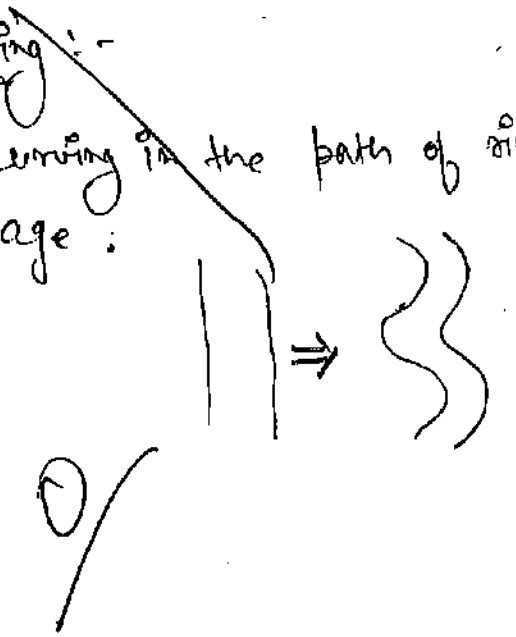
(2) Gleying is the phenomenon where combination of laterisation, leaching and Mineralisation occurs. It is characterised by the leaching out of silica and other minerals and simultaneous formation of humus and fixation of other nutrients. Excessive leaching and laterization can cause Acidification and make land infertile

2

Remarks

e) Misfit Meandering :-

Meandering is carving in the path of river channel in the mature age.



Remarks

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2. Answer the following questions:

(a) What is geomagnetism? Explain and discuss the causes of geomagnetism & also explain how geomagnetism & its application help us understand some aspects of the earth's crust? (250 Words) (20)

(b) It is said that the Holocene epoch which started at the end of the ice age has given rise to Anthropocene epoch. In light of the above statement discuss the significance of Anthropocene epoch. (200 Words) (15)

(c) What do you understand by Social Forestry? Describe its role in sustainable rural development. (200 Words) (15)

(2) a) Geomagnetism refers to the magnetic property exhibited by the Earth.

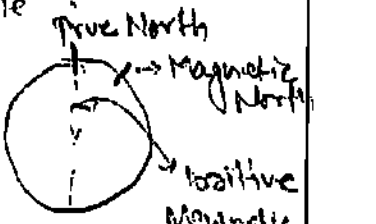
Reason → The molten outer core due to high temperature is built of Nickle and Iron. Its movement causes the dynamic property to earth magnetism. To generally

Three characteristics of Geo. Magnetism :-

(★) Magnetic Declination → Angle between Magnetic North and Geographical north. In horizontal plane

Mag. Declination is positive

⇒ Magnetic North is East of True North.



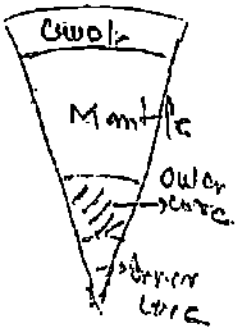
(★) Magnetic Inclination / Dip → The angle in vertical plane between freely hanging magnetic and horizontal.

Dip is zero at Magnetic equator and 90° at Magnetic pole

(★) Magnetic equator → Locus of point where dip is zero.

Remarks

Causes of Geomagnetism →



① The dynamic movement in the outer core which has iron and nickle in molten state due to extensively high temperature cause geomagnetism.

This dynamic feature is responsible for the magnetic pole shifting and polar wandering

Eg :- Stanley Keith Runcorn stated that the Magnetic North Pole has moved from Hawaiian Island to Bathurst Island in Canada via Eastern Siberia over a past 500 ma years.

Evidences of changing Geo-magnetism

→ The basin of sea floor contains rocks away from the mid oceanic ridge which show magnetic anomaly in the constituent atom.

→ The rocks cools and solidifies are ejecting from oceanic ridge and get magnetise according to current magnetic condition.

→ This shows the geo-magnetism shifts through time.

Geomagnetism Application

① Navigations in ships and other devices.

② Birds and animals use geomagnetism for migration

③ Aurora Borelis and Aurora Australies occour due to interaction of charged particles from sun and earth magnetic field.

Remarks

Geomagnetism in Understanding Earth Crust

(1) The Earth crust is continuously being formed at mid oceanic ridge but upwelling magma. This magma cools, solidifies and magnetize coming up here.

(2) Having an understanding of Geomagnetic properties of past, we can infer the geo. magnetic property of Earth crust away from the mid oceanic ridge formed during that past.

↳ No diagram
↳ Explanation is bit general

6.5

c) Social Forestry — The combined development and protection of forest and tree cover by forest officials and community is known as social Forestry.

It facilates the logo of 'of the people, by the people, for the people'.

This term was first used in National Commission on Agriculture by Government of India in 1978. 1976

Characteristics of Social forestry —

(1) Involvement of Community, and not elimination, in the forest protection.

(2) Realising the rights of community on forest produce and their responsibility.

(3) Healthy co-ordination between officials and villagers.

Benefits of Social forestry

(1) Environment →

- Atmosphere is purified by longer forest cover and decrease intensity of pollutant.
- Biodiversity → Protection of flora and fauna and enrichment in the diversity.
- Hydrology → The cycle of Evaporation condensation — Rain-Evaporation is restored and less incidents of draught and flood.
- Soil erosion and degration is prevented.

(2) Economy → Minor forest produce can be sold in market and forms an economic alternative for villages.
→ Timber availability

(3) Social Benefit → eg:- In Bihar, SM Raju combined social forestry and MNREGA to provide the ownership of tree after 5 years of plantation if taken good care of. It provided employment to women, handicapped and poor.

Also the forest of Bihar went from 7% to 12.86% in 3 years

Remarks

Role of Social Forestry in Sustainable Rural Development

(1) The trees grown in flood prone area with the coordination of community inhibiting such areas can save life and property and livelihood of many families.

(2) Planting trees at Community land both for commercial (such as timber, fruit) and Non-Commercial (shade and soil regurination) can a issue incite development at village community.

(3) Giving rights to owner and planter of tree can significantly increase forest cover and economic alternatives.

(4) Planting trees can help in developing sustainable environment such as regurination of soil moisture, soil nutrient and stopping soil degradation and soil erosion can. This will ensure not only the present need but also the future generation need.

As true saying goes 'we have not received this earth as gift from our ancestor but as loan from our sons and daughters', social forestry can immensely work on this line of preserving the land through sustainable development and rural upliftment.

Remarks

In such question, diagram & case studies will fetch you more marks

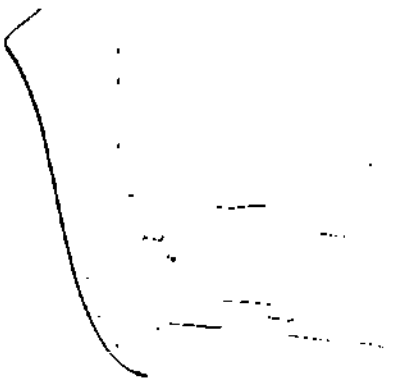
b) The Holocene epoch is the time period after ice age in geological time scale. This stage has seen the emergence of various species of plants and animals. The evolution of Human from Homo-sapien from chempanzy.

Humans have adapted and changed the surrounding that the inhibited. It has marked a new beginning of Anthropocene epoch.

Incomplete

Remarks

Remarks



Remarks

3. Answer the following questions:

(a) The complexity of geomorphic evolution is more common than simplicity. Elaborate. (250 Words) (20)

(b) Discuss the Morisawa's unified classification of channel pattern. (200 Words) (15)

(c) Plastic is considered as "Chemical of emerging concern". In light of the given statement discuss the impact of plastic on the soil and human health. (200 Words) (15)

Remarks

Remarks

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Remarks

4. Answer the following questions:

(a) Interactions between various plates form the most important reason behind the formation of various landforms according to Plate Tectonic theory. Illustrate. (250 Words) (20)

(b) Among all the factors, changes in the channel gradient is the most important factor for creating disturbance in graded profile. Explain with the process of rejuvenation. (200 Words) (15)

(c) The channel morphology of bedrock channels is largely determined by structural and lithological controls. Elaborate. (200 Words) (15)

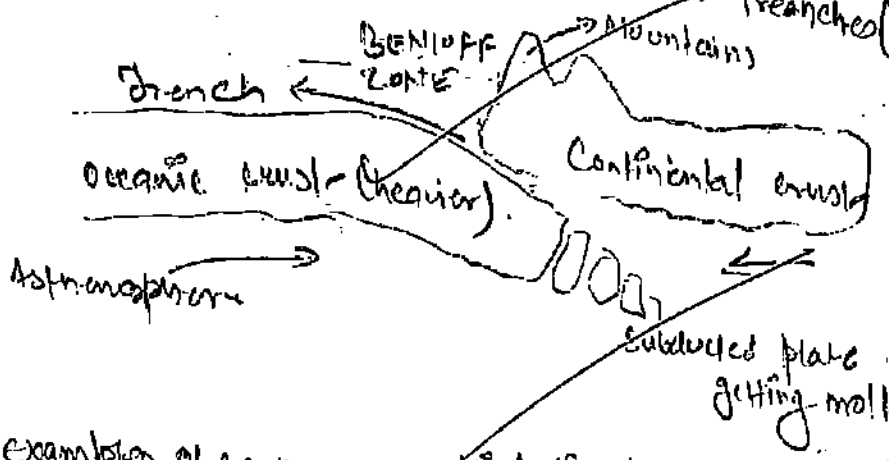
Ans. Plate Tectonic theory was propounded by 'Mckenzie and Parker' and Morgan.

Various landforms are formed as a part of interaction between the plates of lithosphere. in following way:-

(1) Plates moving towards each other → Convergent plate boundary

Such plate boundaries are also called destructive or converging boundaries. The heavier plate subducted under the lighter plate causing the folding in the region.

Some features formed in this ways are
- Mountains (eg Himalayas)
- Volcanoes (eg Mt. Fujiyama)
- Trenches (eg: Mariana Trench)



eg: Examples of convergence → Indian plate subducted under Eurasian plate to forming young fold mountains.

Remarks

Divergent plate boundary

(2) Plates Moving Away from each other ← | →

Such plate boundaries are called divergent or constructive plate boundaries.

These regions are characterized by constant and slow upwelling of magma due to Thermal convective currents.

Some of features such as Ridges can be founded at such plates. eg: Mid-Atlantic Ridge

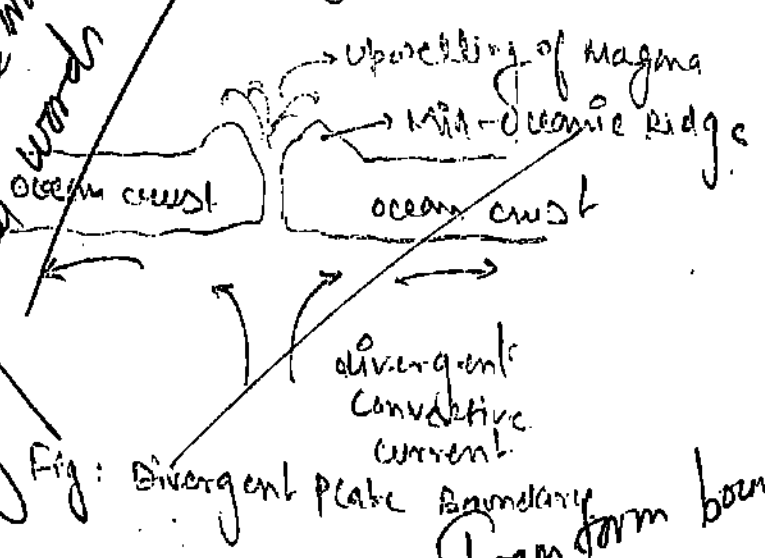
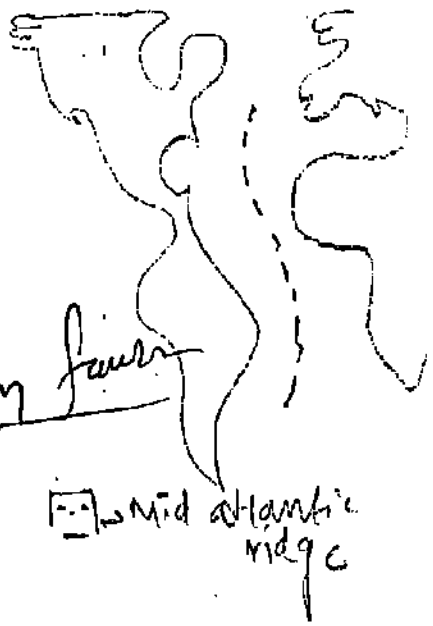


Fig: Divergent plate Boundary



Use more & more geographical words

Transform boundary features

(3) Plates moves past each other ↑ | ↓

When the plates slides against each other transform boundaries are formed. These movement has little significance in directly forming a feature yet it affects the formation of lot of features nearby

Remarks

b) The profile of any topography depends on a range of endogenetic and exogenetic factors.

a) During the development of grated profile, disturbances can occur due to various reasons such as:-

(1) Climatic change
(2) Channel gradient change
(3) Vegetation cover change.

However Channel gradient is the most important factor for creating disturbance.

Let's take example to formation and gradual reduction of Mountain:

(1) Taking Davis' theory of Slope decline, the upliftment has over and now the degration begins.

Remarks

(a) In the initial phase, degradation occurs by downward and headward cutting by running water is predominant. This results are gradual reduction in the profile.

(b) However Rejuvenation can occur and suddenly uplift or downthrust the mountain causing a significant change in the channel gradient.

If mass is uplifted (positive rejuvination)
↓
The gradient becomes steep
↓
The erosional feature of river becomes more intense
↓
The formation of rapid and waterfall intensifies erosion
↓
Causing disturbance in graded profile

If mass is downthrusted (Negative Rejuvination)
↓
The gradient becomes gradual and less steeper
↓
The headward and downward erosional work of river is reduced
↓
Lateral erosion begins creating flood plain.
↓
So the graded profile reduces.

Since fluvial action of running water affects the to profile of any topography, its intensity and channel gradient becomes most important reason for creating disturbance in graded profile.

Refer our model ans

(Most points are very well managed in to structure your answer properly)

Remarks

c) Structural and lithological Controls play significant roles in determining the channel morphology of bed rock channel. because of following reasons :—

① Hard Rocks such as Igneous rock are more resistant to erosional work of river and hence It takes more time on hard rock to deepen the bed River bend.

② Porous Rocks can allow underground flow of water due to pores such as Limestone.

Example

Remarks

Remarks

Remarks

SECTION-B

Attempt all questions:

5. Comment on the following into 150 words: (10 × 5 = 50)

   (a) Explain various theories put forward by various geomorphologists regarding the formation of limestone caves.

   (b) Explain the process of Nivation and Frost Heaving.

   (c) Write a short note on the tectonic-geomorphic model of M. Morisawa

   (d) Write a short note on Cymatogenic Movements suggested by L.C. King.

   (e) Why Continental Drift theory is also called as an impossible hypothesis?

Q.5) a) Limestone caves are the topographical features of Karst topographical cycle which are postulated by various geomorphologist such as Reede (1911) and Cvijic (1917)

It is a unique feature attributed to solutional action of rainwater and running water.

Stage of development of Limestone cave :-

① Young → Rainwater and runoff a stream dissolves carbonated rock such as limestone when the are exposed. This lead surface stream to become sub-surface stream and the erosional and depositional features in limestone bed rock begin.

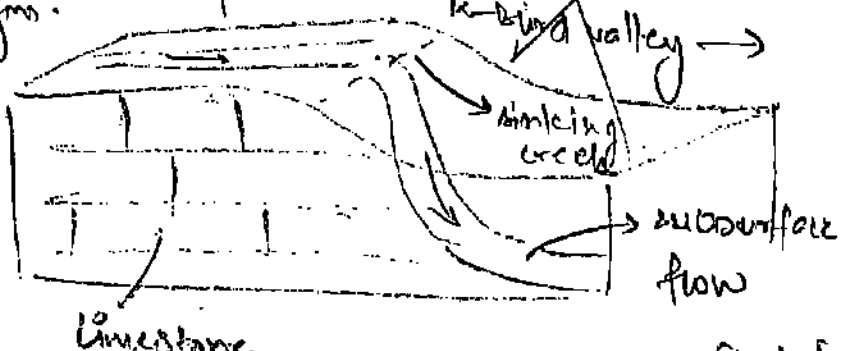
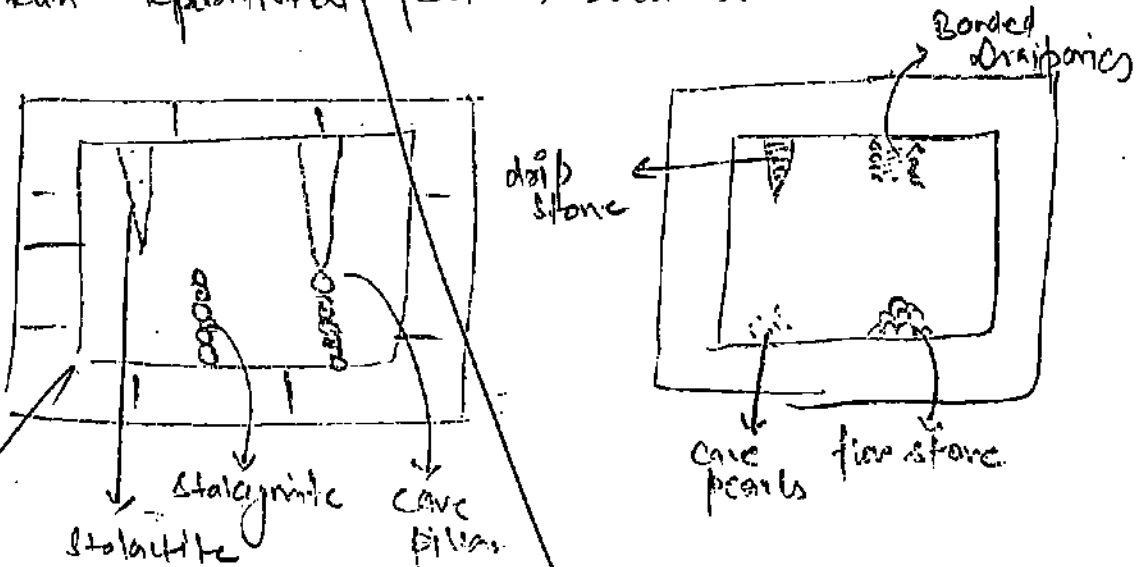


Fig: Entry of water into underground.

Remarks

(2) Mature → The ~~cave is developed~~ erosional and depositional features are created due to subsurface flow. As a result underground limestone cave is formed which certain depositional features such as :-



(3) Old → The cave top collapses and exposed

→ Subsurface stream becomes surface stream.

Q/ To allow limestone cave to develop, there is an inlet and outlet required which facilitates continuous inward and outward flow of water.

→ ×

e) Continental Drift theory was propounded by German geologist Alfred Wegner in 1912 and further in his book 'Die Entstehung Der kontinente and Ozeane' in 1922. Taking forward Suess's Sial-Sima-Nife classification he assumed that climatic regions remain stationary and continental landmass moved. and current location is achieved.

Remarks

However CDT is an impossible Hypothesis.

Reasons

(1) He took the tidal force due to Sun and Moon as the factor for westward movement of South America and North America which is too weak to cause such a massive movement.

(2) He talked about frictionless movement of Sial over Sima this is incorrect otherwise the crumbling of Western part of North and South America into Rockies and Andes could not be possible

2

(3) Plate Movement theory often developed by 'Mckenzie and Parker and Morgan prove to be highly accurate. Vague

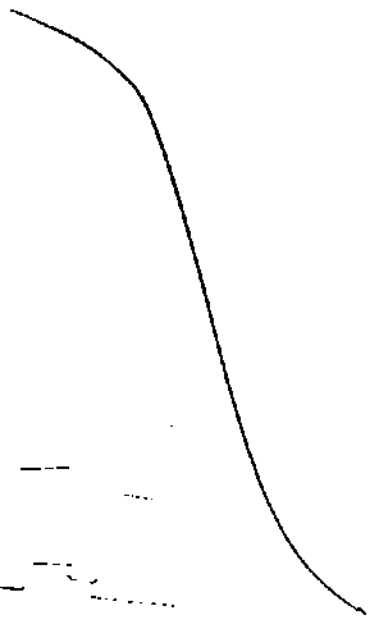
(4) He theory does not provides any justification in Pre-Carboniferous period.

(5) The Climatic zones rigidity is criticised.

Draw diagram

This is not correct

Remarks



Remarks

Remarks

Remarks

Remarks

6. Answer the following questions:

(a) Discuss the role of the geomorphology in hazard management and the urbanization. (250 Words) (20)

(b) Explain the concept of the cycle of erosion put forward by Beede and Cvijic. (200 Words) (15)

(c) How are minerals formed in Igneous and metamorphic rocks? Also Explain various types of sedimentary rocks. (200 Words) (15)

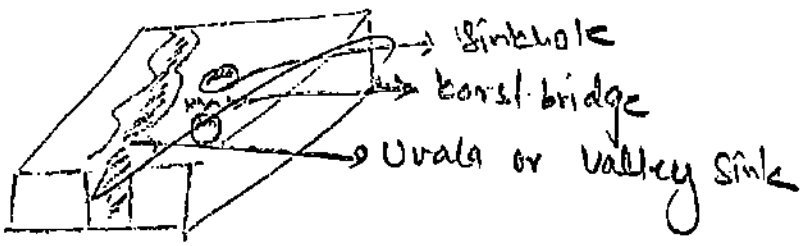
(b) Beede and Cvijic (1917) gave the concept of Karst topography's cycle of erosion. which is unique as it require limestone rock and humide environment.

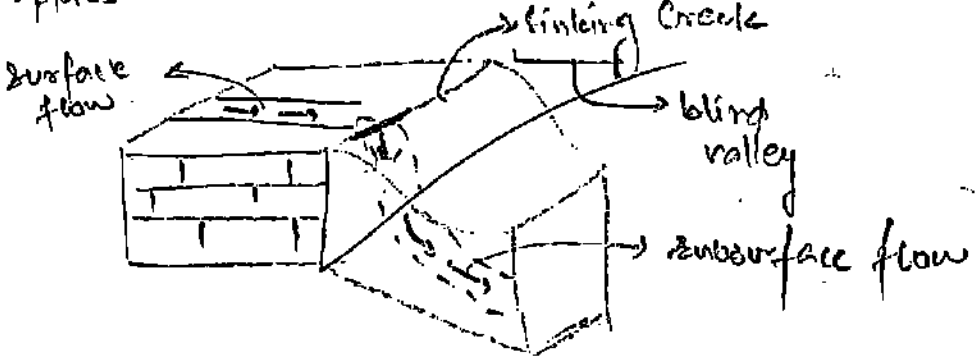
limestone and other carbonated rocks are soluble in water and can easily be eroded and deposited by Running water developing a range of features.

However there are 2 major issues in understanding the concept → Baseline is unclear → Underground water can not be understand and there a 3 different 'stage':-

(1) Youth stage → Solutional erosion is dominant creating range of features. It is done both by running water and rain water to the exposed surface of limestone.

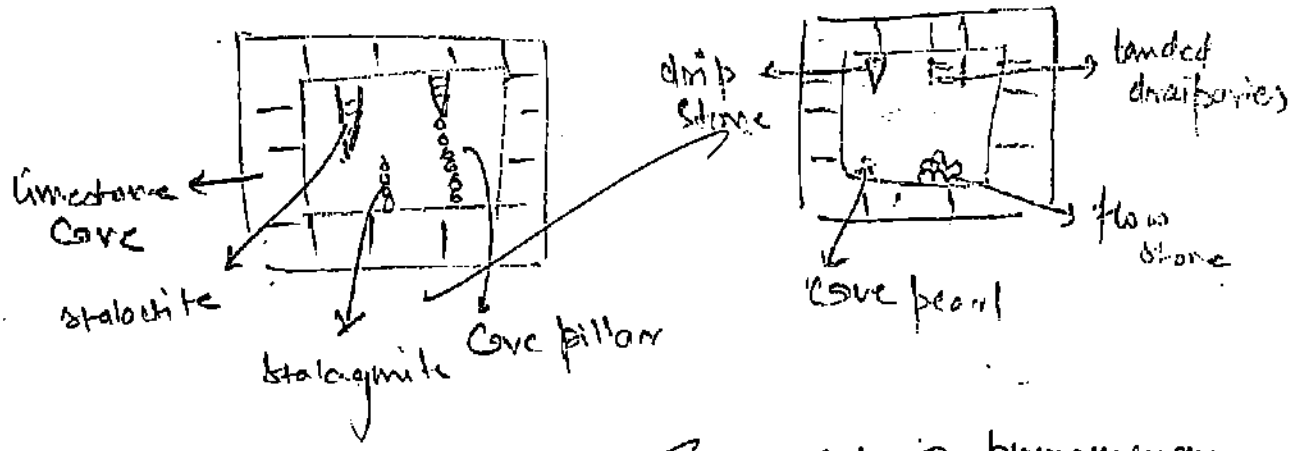
Features:-





Remarks

(2) Mature Stage :- The water get enough time to form and further intensify the formation of Caves. Various depositional features can be found :-



(3) Old Stage :- This stage is characterised by 2 phenomenons
- → Collapse of the cave roofs and destruction of depositional features
- → Appearance of subsurface flow.

The end stage of the cycle of erosion for karst topography is Cryno plain.

5.5

This concept was highly useful in understanding the features in Karst province of Dalmatia while Yugoslavia along Adriatic Sea.

The discovery of wonderful underground caves in Indonesia and Mexico has lead to new recreational economy.

Remarks

(a) Geomorphology as a subject of science has useful applications in various walks of life.

Geomorphology in hazard management

(b) Geomorphology can help in understanding the potency of any region to encounter a severe hazard such as volcanoes and earthquakes. We can then employ important measures to counter such situations.

Eg:- (1) Unstable hill slope can cause severe damage to life and property in case of mass wasting, solifluction, liquefaction. Eg Kumaun Mountain slopes and Southern Himalayan slopes of Kumaon and Garhwal region are highly prone. These areas should be protected by artificial Bunds, tree covers etc.

(2) Building dams on limestones can be costly and failure chances are increased which can trigger flood or even minor earthquake.

(3) Regions which are near tectonically active zones such as Japan, Himalayas should be made earthquake proof building. The Himalayan region is kept under Zone V and the buildings are provided with sufficient reinforcement.

(4) River channel changes rapidly causing flood in adjacent regions. Eg Kosi is known as Sorrow of Bihar. Flood barriers, uplifted plane can be provided to such regions

6

Remarks

Geomorphology in Urbanization

(*) The urban planning is crucial to cater to the demands of the people and a deep understanding of Geomorphology can help in this respect.

Eg:- (1) Urban Areas in mountaineous region should be selected at such sites where slope is stable, which is tectonically less active and gradual sloped.

(2) Setting up urban centres away from the mineral rich regions such as Chhota Nagpur plateau should be recommended as these areas are to provide economical sites of exploration.

(3) At coastal plains, due to frequent flood, the houses should be builts on wooden platform.

(4) Setting up urban centre in Glacial regions where the Glacier is moving down slope should be avoided. Stable zones should be found.

DIAGRAMS ARE MUST

Remarks

c) Igneous Rocks → These rocks are formed when the ejected lava ~~spreads over the earth~~ cools and solidifies. These rocks are contain minerals such as Basalt, silica. Magma is rich source of minerals from deep inside the earth.

Two types of igneous rocks —

① Intrusive Rocks ~~are~~ also known as plutonic rock are formed when lava cools inside the earth surface only.
eg: Granite.

② Extrusive Rocks are formed after ejecting of magma and subsequent cooling and solidifying.
eg: Basalt ~~lava~~ rock which is spread out by in Peninsular India. It can also be found in Hawaiian Island where less viscous lava has spreaded over entire island.

These rocks are hard and ~~comparatively~~ more resistant to erosion.

The silica rich magma is ejeculated in mid-oceanic ridge due to magmatic differentiation.

Metamorphic Rocks → These Rocks are formed when the already existing Rocks undergo changes due to high temperature and pressure. The mineral composition can ~~or~~ do change significantly due to morphic activities.

Types of sedimentary rocks missing

Remarks

Sedimentary Rocks → These rocks are formed when the sediments of existing rocks are accumulated, squeezed and under pressure and over a long period of time.

Remarks

Remarks

Remarks

7. Answer the following questions:

(a) Discuss the view of Airy and Pratt regarding the concept of Isostacy. Also, give the interpretation of the theory of plate tectonics. (250 Words) (20)

(b) What is a Zoogeographic region? Provide a classification of major Faunal regions of the world and discuss Ethiopian Faunal Region and Oriental Faunal Region in detail. (200 Words) (15)

(c) Write a short note on various factors causing rejuvenation in landforms and thus describe the consequent landforms. (200 Words) (15)

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

8. Answer the following questions:

(a) Write a short note on Johnson's Classification of Shorelines (250 Words) (20)

(b) Write a short note on climatic interruptions in the cycle of erosion. (200 Words) (15)

(c) Write a short note on intrazonal Soils. (200 Words) (15)

Remarks

Remarks

Remarks

Remarks

Remarks

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Remarks