

**Q.1) Which of the following soils found in India are poor in nitrogen, phosphorous and humus?**

1. Red and Yellow Soil
2. Black Soil
3. Laterite Soil
4. Peaty Soil

**Select the correct answer using the codes given below:**

- a) 1, 2 and 3 only
- b) 2, 3 and 4 only
- c) 1, 3 and 4 only
- d) All the above

**Q.1) Solution (a)**

The fine-grained **red and yellow soils** are normally fertile, whereas coarse-grained soils found in dry upland areas are poor in fertility. **They are generally poor in nitrogen, phosphorous and humus.**

Chemically, the **black soils are rich in lime, iron, magnesia and alumina.** They also contain potash. **But they lack in phosphorous, nitrogen and organic matter.** The color of the soil ranges from deep black to grey.

Humus content of the laterite soil is removed fast by bacteria that thrives well in high temperature. **These soils are poor in organic matter, nitrogen, phosphate and calcium,** while iron oxide and potash are in excess.

Peaty soils are found in the areas of heavy rainfall and high humidity, where there is a good growth of vegetation. Thus, **large quantity of dead organic matter accumulates in these areas, and this gives a rich humus and organic content to the soil.**

**Do you know?**

- In ancient times, soils used to be classified into two main groups – Urvara and Usara, which were fertile and sterile, respectively.

**THINK!**

- Soil amendment.

**Q.2) Consider the following statements about soil erosion:**

1. Sheet erosion takes place on level lands after a heavy shower and the soil removal is not easily noticeable.
2. Gully erosion is common on steep slopes. Gullies deepen with rainfall, cut the agricultural lands into small fragments and make them unfit for cultivation.

**Which of the above statements is/are correct?**

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) None

**Q.2) Solution (c)**

Water erosion which is more serious and occurs extensively in different parts of India, takes place mainly in the form of **sheet and gully erosion**.

Sheet erosion takes place on **level lands after a heavy shower** and the soil removal is not easily noticeable. But it is harmful since it removes the finer and more fertile top soil.

Gully erosion is **common on steep slopes**. Gullies deepen with rainfall, cut the agricultural lands into small fragments and make them unfit for cultivation.

**Do you know?**

- Soil erosion is a serious problem for Indian agriculture and its negative effects are seen in other spheres also. Eroded materials are carried down to rivers and they lower down their carrying capacity and cause frequent floods and damage to agricultural lands.

**THINK!**

- Soil Conservation.

**Q.3) Which of the following methods are best suitable to prevent gully erosion?**

1. Finger gullies can be eliminated by terracing.
2. In bigger gullies, the erosive velocity of water may be reduced by constructing a series of check dams.
3. Head ward extension of gullies can be controlled planting cover vegetation.

**Select the correct answer using the codes given below:**

- a) 1 and 3 only
- b) 2 and 3 only
- c) 3 only

d) All the above

### Q.3) Solution (d)

The Efforts should be made to prevent gully erosion and control their formation are as follows. Finger gullies can be eliminated **by terracing**. In bigger gullies, the erosive velocity of water may be reduced by **constructing a series of check dams**. Special attention should be made to control head ward extension of gullies. This can be done by **gully plugging, terracing or by planting cover vegetation**.

### Do you know?

- Contour bunding, Contour terracing, regulated forestry, controlled grazing, cover cropping, mixed farming and crop rotation are some of the remedial measures which are often adopted to reduce soil erosion.

### Q.4) Government of India had launched Soil Health card Scheme for farmers. Which of the following statements regarding Soil Health Card Scheme are correct?

1. It will contain the status of his soil with respect to Macro-nutrients, Secondary-nutrient, Micro - nutrients and Physical parameters.
2. The SHC will indicate fertilizer recommendations and soil amendment required for the farm.
3. It is mandatory for the farmer to follow the recommendations of SHC.

### Select the code from below:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) All of the above

### Q.4) Solution (a)

Soil Health Card (SHC) is a Government of India's scheme promoted by the Department of Agriculture & Co-operation under the Ministry of Agriculture and Farmers' Welfare. It is being implemented through the Department of Agriculture of all the State and Union Territory Governments.

### Soil Health Card

SHC is a printed report that a farmer will be handed over for each of his holdings. It will contain the status of his soil with respect to 12 parameters, namely N,P,K (Macro-nutrients) ; S (Secondary- nutrient) ; Zn, Fe, Cu, Mn, Bo (Micro - nutrients) ; and pH, EC, OC (Physical parameters). Based on this, the SHC will also indicate fertilizer recommendations and soil amendment required for the farm.

The card will contain an advisory based on the soil nutrient status of a farmer's holding. It will show recommendations on dosage of different nutrients needed. Further, it will advise the farmer on the fertilizers and their quantities he should apply, and also the soil amendments that he should undertake, so as to realize optimal yields.

It will be made available once in a cycle of 3 years, which will indicate the status of soil health of a farmer's holding for that particular period. The SHC given in the next cycle of 3 years will be able to record the changes in the soil health for that subsequent period.

**Q.5) Which of the following factors controls the soil formation?**

1. Climate
2. Parent material
3. Topography
4. Biological factors

**Select the correct answer using the codes given below.**

- a) 1, 2 and 3 only
- b) 2, 3 and 4 only
- c) 2 and 4 only
- d) All the above

**Q.5) Solution (d)**

#### **FACTORS RESPONSIBLE FOR SOIL FORMATION**

Soil formation is the combined effect of physical, chemical, biological, and anthropogenic processes on soil parent material.

#### **Parent material**

This is the material from which the soil has developed.

The parent material can influence the soil in a number of ways: colour; texture; structure; mineral composition and permeability/drainage.

## Climate

The absorption of the solar radiation at the soil surface is affected by many variables such as soil color, vegetation cover, and aspect. In general, the darker the soil color, the more radiation is absorbed and the lower the albedo. The absorption differs in areas with deciduous trees (soil surface is shaded by trees most of the year) and arable land (soil surface is not shaded throughout the year).

Biological processes are intensified by rising temperatures. Reaction rates are roughly doubled for each 10°C rise in temperature, although enzyme-catalyzed reactions are sensitive to high temperatures and usually attain a maximum between 30 and 35°C.

## Biological Factors

The soil and the organisms living on and in it comprise an ecosystem. The active components of the soil ecosystem are the vegetation, fauna, including microorganisms, and man.

Earthworms are the most important of the soil forming fauna in temperate regions, being supported to a variable extent by the small arthropods and the larger burrowing animals (rabbits, moles).

## Time

Time is a factor in the interactions of all the above factors as they develop soil.

## Topography/Relief

Relief is not static; it is a dynamic system (its study is called geomorphology). Relief influences soil formation in several ways.

- It influences soil profile thickness i.e. as angle of slope increases so does the erosion hazard.
- It has an effect on climate which is also a soil forming factor.
- Gradient affects run-off, percolation and mass movement.
- It influences aspect which creates microclimatic conditions.

## Do you know?

- The soils of the Extra-Peninsula are formed due to the depositional work of rivers and wind. They are very deep. They are often referred to as **transported or azonal soils**.

## THINK!

- Sedentary soils.

**Q.6) Which of the following methods can be useful in soil conservation?**

1. Use of Early Maturing Varieties of crops.
2. Contour Ploughing
3. Strip cropping
4. Crop rotation

**Select the correct answer using the codes given below.**

- a) 1, 2 and 3 only
- b) 2, 3 and 4 only
- c) 1, 3 and 4 only
- d) All the above

**Q.6) Solution (d)**

Soil conservation is the prevention of soil from erosion or reduced fertility caused by overuse, acidification, salinization or other chemical soil contamination.

#### **Use of Early Maturing Varieties**

Early maturing varieties of crops take less time to mature and thus put lesser pressure on the soil. In this way it can help in reducing the soil erosion.

#### **Contour Ploughing**

If ploughing is done at right angles to the hill slope, the ridges and furrows break the flow of water down the hill.

This prevents excessive soil loss as gullies are less likely to develop and also reduce run-off so that plants receive more water.

#### **Strip Cropping**

Crops may be cultivated in alternate strips, parallel to one another. Some strips may be allowed to lie fallow while in others different crops may be sown.

Various crops are harvested at different intervals. This ensures that at no time of the year the entire area is left bare or exposed.

The tall growing crops act as wind breaks and the strips which are often parallel to the contours help in increasing water absorption by the soil by slowing down run off.

#### **Crop Rotation**

Adopting sustainable agricultural practices is the most important measure to conserve soil.

In many parts of India, a particular crop is sown in the same field year after year. This practice leads to exhaustion of certain nutrients in the soil making it infertile.

Crop rotation is a practice in which a different crop is cultivated on a piece of land each year.

This helps to conserve soil fertility as different crops require different nutrients from the soil. Crop rotation will provide enough time to restore lost nutrients.

For example, potatoes require much potash, but wheat requires nitrate. Thus, it is best to alternate crops in the field.

Legumes such as peas, beans, and many other plants, add nitrates to the soil by converting free nitrogen in the air into nitrogenous nodules on their roots. Thus, if they are included in the crop rotation nitrogenous fertilizers can be dispensed with.

**Do you know?**

- Overgrazing accentuates erosion. During the dry period, there is shortage of fodder and the grass is grazed to the ground and torn out to the roots by animals. Soil is pulverized (reduce to fine particles) by the hoofs of animals. All this leads to weak top layer.
- So overgrazing needs to be checked to prevent soil erosion.
- This can be done by creating separate grazing grounds and producing larger quantities of fodder.

**THINK!**

- Sand fences.

**Q.7) Which of the following schemes of the union government helps to conserve the soil?**

1. National Mission for Sustainable Agriculture.
2. Pradhan Mantri Krishi Sinchayee Yojana.
3. Paramparagat Krishi Vikas Yojna.
4. Pradhan Mantri Fasal Bima Yojana

**Select the correct answer using the codes given below.**

- a) 1, 2 and 3 only
- b) 2, 3 and 4 only
- c) 1, 3 and 4 only
- d) All the above

**Q.7) Solution (a)**



**National Mission for Sustainable Agriculture**

Aims at making agriculture more productive, sustainable and remunerative and climate resilient by promoting location specific integrated/composite farming systems; **soil and moisture conservation measures; comprehensive soil health management**; efficient water management practices and mainstreaming rainfed technologies.

**PMKSY (Watershed Development)**

Effective management of runoff water and improved **soil & moisture conservation activities** such as ridge area treatment, drainage line treatment, rain water harvesting, in - situ moisture conservation and other allied activities on watershed basis.

**Paramparagat Krishi Vikas Yojna (PKVY)**

Aim of the project is to maximize the utilization of natural resources through **eco-friendly cultivation**.

Organic farming is a method of farming system which primarily aimed at cultivating the land and raising crops in such a way, **as to keep the soil alive and in good health by use of organic wastes** (crop, animal and farm wastes, aquatic wastes) and other biological materials along with beneficial microbes (bio-fertilizers) to release nutrients to crops for increased **sustainable production in an eco-friendly pollution free environment**.

**Pradhan Mantri Fasal Bima Yojana**

Pradhan Mantri Fasal Bima Yojana was launched in January 2016. This scheme replaced the existing two crop insurance schemes viz. National Agricultural Insurance Scheme (NAIS) and Modified NAIS and is being implemented since Kharif season of 2016 (June 2016).

The scheme covers Kharif, Rabi, annual commercial as well as horticultural crops

- For Kharif crops, the farmer's part of premium is 2% of sum assured.
- For Rabi crops, the farmer's part of premium is 1.5% of the sum assured.
- For annual commercial and horticultural crops, the farmer's part of premium is 5%.

The remaining part of premium is paid equally by the central and respective state governments.

**Do you know?****Mera Gaon, Mera Gaurav**

- This scheme is being launched involving agricultural experts of agricultural universities and ICAR institutes for effective and deeper reach of scientific farming to the villages.



- A group of experts will be associated with one particular village to create awareness and adoption of new technologies including farm investment, loans, availability of inputs and marketing.
- All the scientists from ICAR and agricultural universities will participate in this initiative.

**THINK!**

- Krishi Dak.

**Q.8) Which of the following statements are correct regarding the process of Crop rotation?**

1. It is the process of growing different crops in a field simultaneously.
2. It helps in natural pest control
3. It prevents depletion of a particular nutrient from soil and helps in maintaining soil fertility for a longer time.

**Select the code from following:**

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) All of the above

**Q.8) Solution (b)**

**Crop Rotation**

This system is the practice of growing several dissimilar or different crop types (or no crop at all) in the same area and in sequential seasons.

Historians believe that farmers in the Middle East already practiced crop rotation as early as 6,000 B.C, although they didn't fully understand the science behind it. The logic behind crop rotation is when the same crop is grown at the same place for several years the soil is depleted of certain nutrients.

Doing rotation, a crop that draws one kind of nutrient from the soil is followed during the consequent season by a crop that returns the nutrient to the soil or draws a distinct ratio of nutrients.

## 9 Environmental benefits of crop rotation

The crop rotation is a thousand years old technique that has been proven to help the environment, improve the soil and many other things. It refers to the practice of growing different types of crops or none at all, in the same area over a sequence of seasons.

- ### 1 Automatic Pests Control

The diversification of cropping sequences takes away the host organism and causes a disruption in the annual life cycle of insects, diseases, and weeds. This results in better soil fertility and carbon storage.


- ### 2 Right Nitrogen Management

The use of this in large amounts, increases the nitrogen within the soil profile of certain farms. The system improves the availability of soil nitrogen and reduces use of the nitrogen fertilizer.


- ### 3 Fallow Fields Periods Shorten

Crop rotation helps to increase productivity by replacing fallow periods with growing different crops that replenish soil nutrients.


- ### 4 Against Soil Erosion

Rotating crops helps to improve soil stability by alternating between crops with deep roots and those with shallow roots. Also, enhanced water infiltration and minimized surface runoff.

Improvement in soil tilth and microbial communities will help bring down soil erosion due to more stable soil structure.


- ### 5 Minimize Greenhouse Gas Emissions

The implementation of crop rotation cuts the nitrogen fertilizer use and drastically reduces the greenhouse gas emissions. Reduced synthetic fertilizer also reduces the greenhouse gas emissions from manufacture and transportation of the fertilizer.


- ### 6 Treats Water Pollution

The rotations with a high share of crops and lesser dependence on pesticides bring down the use of pesticides as well as runoff into groundwater.


- ### 7 Increased Ability to Store Carbon

Crop rotation practices can result in increased soil carbon content through high crop cover periods. Also, it reduces the frequency and tillage intensity.


- ### 8 Better Soil Structure

The diversity in the root structure will enhance the chemical, physical and biological structure of the soil. Better soil structure creates several macropores and enables new root growth of the next crops. Improving the soil organic matter and nutrient pools is also a benefit of crop rotation that results in increasing water-holding capacity of the soil.


- ### 9 Increased Ability to Store Carbon

Crop rotation systems are one cropping system alternative. This can cut agriculture's dependence on external inputs through internal nutrient recycling. By choosing the crop rotation systems you can have a massive impact on soil quality and fertility, environmental quality, and farm profitability.



**Sources**

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- [http://www.ucsusa.org/food\\_and\\_agriculture/solutions/advance-sustainable-agriculture/crop-diversity-and-rotation.html](http://www.ucsusa.org/food_and_agriculture/solutions/advance-sustainable-agriculture/crop-diversity-and-rotation.html)

  
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**Q.9) Which of the following statements is/are correct regarding 'E' horizon of soil?**

1. It is a permanent horizon found under the regolith.
2. It is formed by horizontal loss of minerals.

**Select the code from below:**

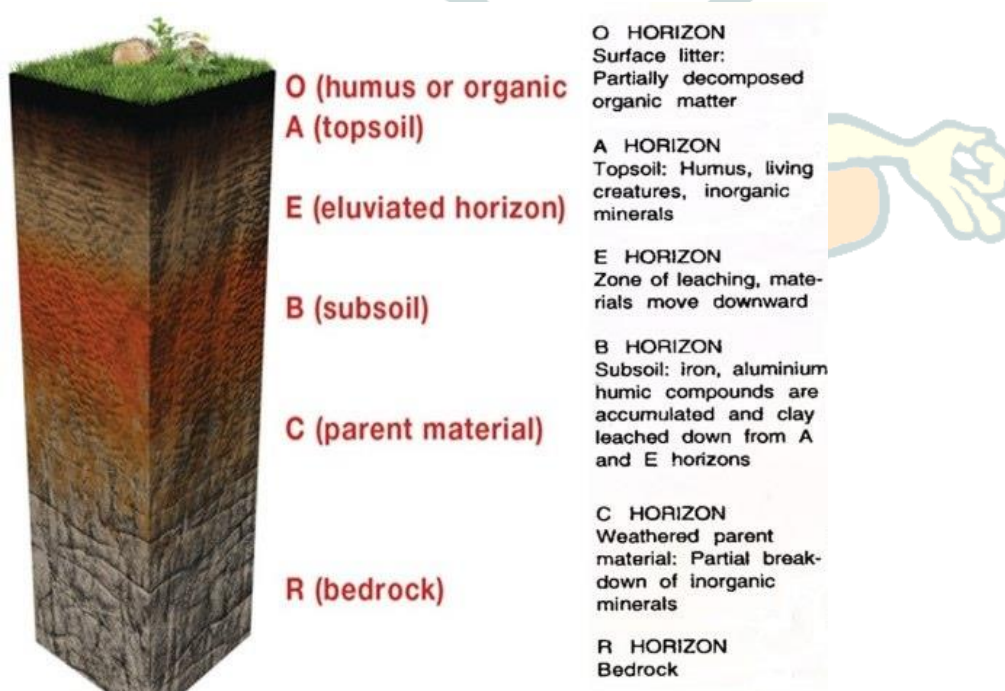
- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

**Q.9) Solution (b)**

**Soil Profile:**

If you look in a soil pit or on a roadside cut, you will see various layers in the soil. These layers are called **soil horizons**. The arrangement of these horizons in a soil is known as a **soil profile**. Soil scientists, who are also called pedologists, observe and describe soil profiles and soil horizons to classify and interpret the soil for various uses.

Soil horizons differ in a number of easily seen soil properties such as color, texture, structure, and thickness. Other properties are less visible. Properties, such as chemical and mineral content, consistence, and reaction require special laboratory tests. All these properties are used to define types of soil horizons.



Soil scientists use the capital letters **O**, **A**, **B**, **C**, and **E** to identify the master horizons, and lowercase letters for distinctions of these horizons. Most soils have three major horizons -- the surface horizon (**A**), the subsoil (**B**), and the substratum (**C**). Some soils have an organic horizon (**O**) on the surface, but this horizon can also be buried. The master horizon, **E**, is used for subsurface horizons that have a significant loss of minerals (eluviation). Hard bedrock, which is not soil, uses the letter **R**.

**Q.10) What is the correct sequence of the processes of soil erosion?**

1. Splash erosion
2. Sheet erosion
3. Rill erosion
4. Gully erosion

**Select the code from following:**

- a) 1 – 2 – 3 – 4
- b) 2 – 3 – 4 – 1
- c) 4 – 3 – 2 – 1
- d) 3 – 4 – 1 – 2

**Q.10) Solution (a)**

### **Soil Erosion**

Soil erosion refers to the removal of Top soil by an external agent.

Water erosion takes place in following states:

#### **Splash erosion:**

The impact of raindrops on the soil surface can break down soil aggregates and disperse the aggregate material. Lighter aggregate materials such as very fine sand, silt, clay and organic matter are easily removed by the raindrop splash and runoff water; greater raindrop energy or runoff amounts are required to move larger sand and gravel particles.

Soil movement by rainfall (raindrop splash) is usually greatest and most noticeable during short-duration, high-intensity thunderstorms.

**Sheet Erosion**

Sheet erosion is the movement of soil from raindrop splash and runoff water. It typically occurs evenly over a uniform slope and goes unnoticed until most of the productive topsoil has been lost. Deposition of the eroded soil occurs at the bottom of the slope or in low areas.

**Rill Erosion**

Rill erosion results when surface water runoff concentrates, forming small yet well-defined channels. These distinct channels where the soil has been washed away are called rills when they are small enough to not interfere with field machinery operations. In many cases, rills are filled in each year as part of tillage operations.

**Gully Erosion**

Gully erosion is an advanced stage of rill erosion where surface channels are eroded to the point where they become a nuisance factor in normal tillage operations

**Q.11) Soil structure refers to the way soil particles are grouped together into larger masses called peds. Which of the following statements regarding soil structure is/are correct?**

1. It determines the workability of soil i.e. how easily it can be ploughed.
2. Peds are bound by soil colloids.

**Select the code from below:**

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

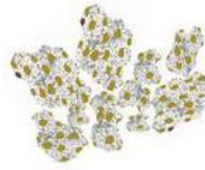
**Q.11) Solution (c)**

**Soil Structure:**

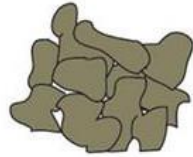




Granular (high permeability)



Aggregated (high permeability)



Blocky (moderate permeability)



Columnar/prismatic (moderate permeability)



Platy (low permeability)



Massive (low permeability)

### Soil Structure

It refers to the way soil particles are grouped together into larger masses called peds. These are bound by soil colloids.

This defines the workability of the soil. i.e. How easily one can plough/turn it.

**Q.12) Which of the following soils can be cut and directly used as a brick in construction?**

- a) Black soil
- b) Alluvial Soil
- c) Laterite Soil
- d) Red Soil

**Q.12) Solution (c)**



Laterite soil is primarily found in the tropical regions which receive heavy seasonal rainfall. High rainfall encourages the leaching of soil where lime and silica are leached away and a soil rich in oxides of aluminium predominate and abundance laterite is called bauxite. Due to the presence of iron oxides the colour of laterite soil is basically red. This soil is poor in lime content and hence it is acidic. Laterite soils are found on the high level plateau and hilly areas that receive high rainfall and are specifically well developed on the Eastern Ghats in Orissa. It is also found in the southern regions of the Western Ghats including the adjoining coastal regions in Ratnagiri District and Malabar.

Because of intense rainfall the soil becomes hard and can be directly cut into bricks.

**Q.13) Consider the following statements regarding Coconut crop:**

1. It is a tropical crop which can be grown only in sandy soil.
2. Coconut requires saline water to grow.
3. There are two major varieties of coconut – tall and dwarf.

**Which of the above statements are NOT correct?**

- a) 1 and 2
- b) 3 only
- c) 1 and 3
- d) None of the above

**Q.13) Solution (a)**

**Coconut Palm**



The coconut palm (*Cocos nucifera* linn.) is the most useful palm in the world. Every part of the tree is useful to human life for some purpose or the other.

The copra obtained by drying the kernel of coconut is the richest source of vegetable oil containing 65 to 70 per cent oil.

The coconut palm is found to grow under varying climatic and soil conditions. It is essentially a tropical plant growing mostly between 20°N 20°S latitudes. However, a rainfall of about 2000 mm per year, well distributed throughout, is ideal for proper growth and maximum production.

Coconut is grown under different soil types such as loamy, laterite, coastal sandy, alluvial, clayey and reclaimed soils of the marshy low lands. The ideal soil conditions for better growth and performance of the palm are proper drainage, good water-holding capacity, presence of water table within 3m and absence of rock or any hard substratum within 2m of the surface.

Note: Coconut requires fresh water. In coastal areas it is dependent on underground fresh water. And it is found above littoral zone.

There are only two distinct varieties of coconut, the tall and the dwarf.

The tall cultivars that are extensively grown are the West Coast Tall and East Coast Tall. The dwarf variety is shorter in stature and its life span is short as compared to the tall. Tall x Dwarf (TxD), Dwarf x Tall (DxT) are the two important hybrids.

Coconut is propagated through seedlings raised from selected seednuts. Generally 9 to 12 month old seedlings are used for planting. Select seedlings, which have 6-8 leaves and 10-12 cm collar girth when they are 9-12 month old. Early splitting of leaves is another criteria in the selection of coconut seedling.

**THINK!**

Mangroves

**Q.14) Consider the following about Laterite Soils:**

1. These soils are found in hot and humid areas.
2. High temperature and heavy rainfall with alternate wet and dry periods are important conditions for the formation of these soils.
3. These soils are rich in nutrients and fertile.

**Which of the statements given above is/are correct?**

- a) 2 only
- b) 2 and 3 only
- c) 1 and 2 only
- d) 1, 2 and 3

**Q.14) Solution (c)**

Laterite Soils are formed under conditions of high temperature and heavy rainfall with alternate wet and dry periods (especially monsoonal regions).

Laterite soils are found in regions of very high rainfall. Due to rains the minerals get leached to lower horizons. These soils are found in hot and humid areas.

Heavy rainfall promotes leaching (nutrients gets washed away by water) of soil whereby lime and silica are leached away and a soil rich in oxides of iron and aluminium compounds is left behind. They lack fertility due to intensive leaching. Hence, statement (3) is incorrect.

**Q.15) Which among the following statements are true in regard to Arecanut in India?**

1. It is one of the major plantation crops, well grown in clay loamy soils
2. India is the world's largest producer of arecanut
3. Largely grown in the Western Ghats, Eastern Ghats and North Eastern region
4. Arecanut flourishes well in tracts with high rainfall and with a wide range of temperature, from a minimum of 4°C to maximum of 40°C

**Choose the appropriate code:**

- a) 3 and 4 only
- b) 1, 2 and 3 only
- c) 1, 3 and 4 only
- d) All of the above

**Q.15) Solution (d)****Arecanut**

- India is the world's largest producer of arecanut contributing nearly 74 % towards world production.
- Arecanuts/Betel Nuts are largely grown in the Western Ghats, Eastern Ghats and North Eastern region.

- Arecanut flourishes well in tracts with high rainfall and with a wide range of temperature, from a minimum of 4°C to maximum of 40°C.
- Arecanuts can grow and thrive best in well drained soils with good organic matter. The largest area under the crop is found in gravelly laterite soils of red clay type. It can also be grown on fertile clay loam soils. Sticky clay, sandy, alluvial, brackish and calcareous soils are not suitable for arecanut cultivation.

**Q.16) Thick deposits of glacial clay and other materials embedded with moraines, are called as –**

- a) Kankars
- b) Pats
- c) Karewas
- d) Regurs

**Q.16) Solution (c)**

Karewas are lacustrine deposits (deposits in lake) in the Valley of Kashmir and in Bhadarwah Valley of the Jammu Division. These are the flat topped mounds that border the Kashmir Valley on all sides. They are characterized with fossils of mammals and at places by peat.

Karewas are thick deposits of glacial clay and other material embedded with moraine. It is found only in Kashmir region and very suitable for saffron cultivation.

Karewas were formed during the Pleistocene Period (1 million years ago), when the entire Valley of Kashmir was under water. Due to the rise of Pirpanjal, the drainage was impounded and a lake of about 5000 sq. km area was developed and thus a basin was formed. Subsequently, the lake was drained through Bramulla gorge. The deposits left in the process are known as karewas. The thickness of karewas is about 1400 m.

**Q.17) Which of the statements given below is/are correct in regard to Jute, considered as the golden fibre of India?**

1. Jute cultivation requires a warm and humid climate with acidic to neutral soils.
2. Jute grows well on the new alluvial soils having higher silt content.
3. Jute cultivation is mainly concentrated in the eastern and north eastern India.

**Choose the correct answer from the code given below:**

- a) 2 and 3 only
- b) 1 and 2 only
- c) 1 and 3 only

d) 1, 2 and 3

**Q.17) Solution (d)**

Jute is considered as the golden fibre of India. It is the commercially available natural fibre which is utilized mostly as packaging material, nowadays facing a steep competition from cheap synthetics in packaging sector. Besides the traditional packaging sector, jute has been used in both textile and non-textile sectors in large and small industries.

Jute is eco-friendly, biodegradable and has much higher CO<sub>2</sub> assimilation rate which is creating an opportunity for the survival and growth of jute industry in the era of environmental concern. Global production of jute and allied fibres is around 3.0 million tonnes, 92.5% of which comes from India and Bangladesh alone. India ranks first in area and production of jute followed by Bangladesh and earns approximately Rs. 1400 crores/annum through export of jute goods mainly Jute diversified products (JDPs).

**Climatic requirement and soil**

Jute requires a warm and humid climate and can be grown within a temperature range of 24 to 37°C and a relative humidity of 57 to 97%. Jute crop thrives well with alternate rains and sunshine. The crop can grow in both moisture stress and water stagnating condition.

The amount of rainfall and its distribution have marked effects on the growth of crop and ultimately yield of fibre. In the ideal situation, 120-150 mm pre monsoon rain followed by a dry period of 30-40 days and 1200 to 1500 mm of precipitation over last 75-80 days is considered to be the most ambient condition for growth of jute crop.

Jute grows well on the new alluvial soils having higher silt content but can also grow on various other types of soil. In India, it is grown in mainly colluviums, red and lateritic, calcareous soils. Acidic to neutral soils are suitable for jute cultivation. Jute cultivation is mainly concentrated in the eastern and north eastern India.

**Q.18) Consider the below statements:**

1. Peaty – Marshy Soils are soils with large amount of organic matter and considerable amount of soluble salts.
2. The most humid regions have this type of soil.
3. Since they are not acidic, this type of soil is good for paddy cultivation.

**Which of the statements given above are correct?**

- a) 1 and 2 only
- b) 1 and 3 only
- c) 2 and 3 only
- d) 1, 2 and 3 only

**Q.18) Solution (a)**

Peaty – Marshy Soils are soils with large amount of organic matter and considerable amount of soluble salts. The most humid regions have this type of soil. They are black, heavy and highly acidic. Hence statement (3) is incorrect. They are deficient in potash and phosphate.

Most of the peaty soils are under water during the rainy season but as soon the rains cease, they are put under paddy cultivation.

**Q.19) Consider the following statements:**

1. The soils are covered with a thick brown mantle which inhibits soil growth.
2. They are coarse and alkaline, rich in soluble salts.
3. They are poor in organic matter and have a varying percentage of lime.
4. These soils are derived from the adjoining rocks and the coastal regions.

**Which of the soil possess the above characteristics?**

- a) Laterite soil
- b) Peaty soil
- c) Desert soil
- d) Loamy soils

**Q.19) Solution (c)**

Desert soils possess all the characteristics provided in the statements. Hence (c) is correct answer.

Desert soils are grey in colour in temperate region and red in hot deserts of the tropics. The soils are unleached and alkaline but very much lacking in humus because of little vegetation found.

**Q.20) In which of the following areas ravines are present in India?**

1. Along the banks of Narmada
2. Along the foothills of Shivalik

3. Chambal
4. Chota Nagpur region

**Select the correct code:**

- a) 1, 2 and 3 only
- b) 2, 3 and 4 only
- c) 1, 3 and 4 only
- d) 1, 2, 3 and 4

**Q.20) Solution (d)**

A ravine is generally a fluvial slope landform of relatively steep (cross-sectional) sides, on the order of twenty to seventy percent in gradient.

Ravines may or may not have active streams flowing along the downslope channel which originally formed them; moreover, often they are characterized by intermittent streams, since their geographic scale may not be sufficiently large to support a perennial watercourse. A ravine is a deep valley which is formed due to linear/dendritic fluvial erosion of loose unconsolidated and bare soils byes.

In all the given areas - along the banks of Narmada and foothills of Shivalik, Chambal and Chota Nagpur region – Ravines are found.

**Q.21) 'Dree Festival' is concerned with which of the following tribes?**

- a) Nyishi
- b) Apatanis
- c) Shompen
- d) Onge

**Q.21) Solution (b)**

The Apatani tribe, which is located in a small Ziro valley town in Arunachal Pradesh, celebrates the three-day Dree Festival in July every year for good harvest season.

The Apatani tribe is known for their colourful culture, festivals, intricate handloom designs, skills in cane, bamboo crafts, and vibrant traditional village councils called bulyañ. The Apatani tribe is located in Arunachal Pradesh's small town named Ziro valley.

The tribe practices their own religion, which is known as Donyi-Polo. They pray to the Sun (Donyi) and the Moon (Polo).

The tribe has four major festivals namely Dree, Yapung, Myoko and Murung. While Dree festival is celebrated in July, Yapung is celebrated in September or October, Myoko is celebrated in March and Murung is celebrated in January.

These festivals are celebrated to ensure better cultivation, protection of the grains from hailstone, storms, insects and wild animals.

**Q.22) Which of the following countries is/are partners of the 'Equator Initiative'**

1. Sweden
2. Norway
3. Finland

**Select the correct statements**

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) All of the above

**Q.22) Solution (a)**

Partners of the Equator Initiative include the governments of Germany, Norway, and Sweden, as well as Conservation International, the Convention on Biological Diversity, EcoAgriculture Partners, Fordham University, the International Union for Conservation of Nature, The Nature Conservancy, PCI Media Impact, Rainforest Foundation Norway, Rare, UN Environment, UNDP, UN Foundation, USAID, and the Wildlife Conservation Society.

**Read More - <https://www.equatorinitiative.org/about/partners/>**

The Equator Prize, organized by the Equator Initiative within the United Nations Development Programme, is awarded biennially to recognize outstanding community efforts to reduce poverty through the conservation and sustainable use of biodiversity.

The Equator Prize recognizes innovative community initiatives that promote nature-based solutions for local sustainable development.

Swayam Shikshan Prayog (SSP), a Pune-based NGO, has won the 2017 United Nations Development Programme (UNDP)'s Equator Prize for its women led climate resilient agro-



ecological farming model and innovative solutions in climate resilient farming in the Marathwada region of India.

Source: <http://www.thehindu.com/news/national/other-states/pune-ngo-wins-un-prize-for-sustainable-farming-model/article19205990.ece>

**Q.23) Consider the following statements about 'World Petroleum Congress'**

1. It is organised by Organization of the Petroleum Exporting Countries
2. It is to be held every three years
3. The inaugural World Petroleum Congress was held in United Arab Emirates in 2017

**Select the correct statements**

- a) 1 Only
- b) 1 and 2
- c) 2 and 3
- d) Only 2

**Q.23) Solution (d)**

The World Petroleum Council (WPC) is an oil and gas industry forum and international organization representing the petroleum sector worldwide.

WPC has been called "the world's premier oil & gas forum since 1933." It is widely recognised to "include the most prestigious national oil and gas companies and agencies of the world".

The premier conference that is organized by the World Petroleum Council is called the World Petroleum Congress. Starting in 1933, the congress was held every four years until 1991, with a 14-year hiatus in between 1937 and 1951 because of World War II. After 1991, it was held every three years until the year 2000. There was a move to have it hosted every two years after the 2000 edition, with Rio de Janeiro hosting one in 2002, but the cycle returned to every three years after that. In order to host a congress, there is a bidding process by interested cities for one in a particular year.

22<sup>nd</sup> WPC (2017) – Istanbul

23<sup>rd</sup> WPC (2018) – Houston

Source: <http://pib.nic.in/newsite/PrintRelease.aspx?relid=167253>

**Q.24) Consider the following statements about 'Saola'**

1. It is native to CLMV countries
2. World's first centre for breeding Saola is being constructed in Vietnam

**Select the correct statements**

- a) 1 Only
- b) 2 Only
- c) Both 1 and 2
- d) Neither 1 nor 2

**Q.24) Solution (b)**

The world's first centre for breeding Saola, a critically endangered hoofed mammal, is being constructed in Vietnam's central region.

Saola is recognised by two parallel horns with sharp ends, which can reach 51 centimetres in length and are found on both males and females.

Meaning "spindle horns" in Vietnamese, Saola is a cousin of cattle but resembles an antelope.

This species occurs only in the Annamite Mountains region of Laos and Vietnam.

Source: [http://www.business-standard.com/article/news-ians/world-s-1st-saola-breeding-centre-in-vietnam-117071100340\\_1.html](http://www.business-standard.com/article/news-ians/world-s-1st-saola-breeding-centre-in-vietnam-117071100340_1.html)

**Q.25) 'Technology and Innovation Support Centres' is often seen in news. It is associated with which of the following?**

- a) World Intellectual Property Organization
- b) World Trade Organization
- c) World Economic Forum
- d) World Bank

**Q.25) Solution (a)**

WIPO's TISC programme provides innovators in developing countries with access to locally based, high-quality technology information and related services, helping them to exploit their innovative potential and to create, protect and manage their IPRs.

Services offered by TISCs include access to online patent and non-patent (scientific and technical) resources and IP-related publications, assistance in searching and retrieving technology information, training in database search, on-demand searches (novelty, state of the art and infringement), monitoring technology and competitors, basic information on industrial property laws, management and strategy and technology commercialisation and marketing.

The Cell for IPR Promotion and Management (CIPAM) is designated as the National Focal Point for the TISC national network. As the national focal point, CIPAM shall identify potential host institutions, assess their capacities and support them in joining the TISC programme.

Source: [http://www.business-standard.com/article/news-ians/dipp-to-set-up-india-s-first-innovation-support-centre-in-punjab-117071300872\\_1.html](http://www.business-standard.com/article/news-ians/dipp-to-set-up-india-s-first-innovation-support-centre-in-punjab-117071300872_1.html)

