Q.1) Which one of the following is the most appropriate reason for the higher yield of rice in the Punjab-Haryana region?

a) Rice is grown here as commercial crop with the use of high yielding variety (HYV) crops and well-developed irrigation.

b) The low-lying areas of Punjab Haryana does not get frequently flooded in rice growing seasons.

c) The acidic nature of sandy and clayey soil of the region is well suited for production of rice.

d) The region witness low temperatures during most part of the year which is suitable for rice cultivation.

Ans) a

Exp) Option a is correct.

In 2017-18, the all-India average yield for rice was 2,576 kg per hectare while it was 4,366 kg per hectare and 3,181 kg per hectare respectively in Punjab and Haryana.

Statement a is correct. In Punjab and Haryana, rice is **grown as commercial crop** with use of high yielding variety **(HYV) crops and well-developed irrigation** through canal irrigation and tube wells.

Statement b is *incorrect.* The low-lying areas of Punjab Haryana **though might get flooded in rice growing seasons but** flooded water is not harmful for rice cultivation.

Statement c is *incorrect.* Punjab and Haryana have sandy and clayey soil with pH value from 7.8 to 8.5 making **alkalinity and salinity** problematic for this place. This in fact is a challenge for development of rice.

Statement d is *incorrect.* Punjab and Haryana witness moderate temperatures during most part of the year which is suitable for rice. However, Rice **cultivation requires high temperature (not low) of 25-degree C**.

Source: https://ncert.nic.in/ncerts/l/jess104.pdf

https://timesofindia.indiatimes.com/city/chandigarh/punjab-haryana-way-ahead-of-other-states-in-rice-wheat-yields/articleshow/72378497.cms

Q.2) Which of the following factors influence fertilizer consumption/demand in the market?

1. Extent of available land
2. Actual area cultivated
3. Amount and distribution of rainfall
4. Cropping pattern
5. Soil characteristics and nutrient content

Select the correct answer using the code given below:

a) 1, 2, 3 and 5 only

b) 1, 3 and 4 only

c) 2, 4 and 5 only

d) 1, 2, 3, 4 and 5

Ans) d

Exp) Option d is correct.

All of the above are correct.

Following are the factors Influencing Fertilizer Demand in the market:

1) **extent of available land;**
2) **actual area cultivated;**
3) **amount, distribution and reliability of rainfall;**
4) area under irrigation, which determines the scope for multiple cropping;
5) availability and adoption of fertilizer-responsive seed varieties;
6) **cropping pattern which determines the quantity of nutrients needed;**
7) **soil characteristics and nutrient content;**
8) size of holdings - if holdings are small, a large portion of produce is retained for consumption and fertilizer demand tends to be more sensitive to price.

Knowledge Base:

Adequate **overall availability, good infrastructure and effective logistics management** are essential to ensure constant fertilizer demand.

Vulnerability to failure of rains increases the risk to the farmer of using fertilizer and may make him reluctant to use it even if cost-benefit calculations are positive.

Source: http://www.fao.org/3/T4240E/T4240E04.htm

Q.3) Which of the following statements is/are correct regarding UNESCO World Heritage sites:

1. A World Heritage site doesn't receive financial support from the World Heritage Committee.
2. Apart from World Heritage list, UNESCO also maintains a List of World Heritage in Danger.
3. Ahmedabad and Jaipur are the only Indian cities included in the World Heritage List.
4. Rudreswara Temple built during the Kakatiya dynasty was recently added to the World Heritage List.

Select the correct answer using the code below

a) 1, 2 and 3 only

b) 1, 2 and 4 only

c) 2, 3 and 4 only

d) 1, 2, 3 and 4.

Ans) c

Exp) option c is correct.

Statement 1 is *incorrect,* A country may also receive **financial assistance and expert advice from the World Heritage Committee** to support activities for the preservation of its sites. International Assistance under the World Heritage Convention is a financial assistance granted to the States Parties to the World Heritage Convention, in order to help them protect the cultural or natural heritage sites inscribed on the World Heritage List or on the List of World Heritage in Danger.

Statement 2 is correct, The **List of World Heritage in Danger** is designed to inform the international community of **conditions which threaten the very characteristics for which a property was inscribed on the World Heritage List,** and to encourage corrective action. It is compiled by the UNESCO through the World Heritage Committee according to Article 11.4 of the World Heritage Convention. Currently there are 52 properties on this list.

Statement 3 is correct, Jaipur city is the second Indian city after **Ahmedabad** to be added in WHL. It was added in 2020. The walled city of Jaipur in Rajasthan, was founded in 1727 AD under the patronage of Sawai Jai Singh II. It also serves as the capital city of the state of Rajasthan.

Statement 4 is correct, Dholavira and Ramappa Temple are the latest addition to the list under the **'Cultural' category. Rudreswara Temple also known as Ramappa temple**, located at Palampet, Mulugu district, near Warangal in the state of **Telangana.** The temple complex was built by **Racherla Rudra Reddy during the period of the Kakatiya ruler Ganapati Deva.** It was built using sandstone and its construction, which began in **1213 CE,** is believed to have continued for over four decades. The building features decorated beams and pillars of carved granite and dolerite with a distinctive and pyramidal Vimana (horizontally stepped tower) made of **lightweight porous bricks, so-called 'floating bricks'**, which reduced the weight of the roof structures. The temple's sculptures of high artistic quality illustrate regional dance customs and Kakatiyan culture.

Source: https://www.hindustantimes.com/world-news/unesco-adds-these-33-cultural-natural-sites-to-world-heritage-list-this-year-101627564288102.html

https://economictimes.indiatimes.com/magazines/panache/pink-city-jaipur-named-world-heritage-site-by-unesco-pm-modi-trilled/articleshow/70103901.cms

https://indianexpress.com/article/explained/how-telangana-ramappa-temples-made-it-to-unescos-world-heritage-list-7423075/

https://whc.unesco.org/en/158/

Q.4) Which one of the following changes in economy can majorly affect the land use pattern in the country?

a) Change in the cropping pattern in the given agricultural land.

b) Expansion of share service sector with respect to manufacturing sector.

c) Introduction of developmental projects like metro trains in urban metropolitan areas.

d) When large number of people shift from primary to tertiary sector.

Ans) d

Exp) Option d is correct.

Statement a is *incorrect.* Change in the cropping pattern in the given agricultural land does not affect the land use pattern of the land as the agricultural land remains constant and only the cropping pattern is changed.

Statement b is *incorrect.* Expansion of share **service sector with respect to manufacturing sector does not affect** the land use pattern of the land.

Statement c is *incorrect.* Introduction of metro **trains** in the urban areas **does not affect** the land use pattern of the land.

Statement d is correct. When the composition of the economy undergoes a change over time then the land use pattern of the country also changes. For example, the secondary and the **tertiary sectors usually grow much faster than the primary sector,** specifically the agricultural sector. This type of change is common in developing countries like India. This process would result in a gradual shift of land from agricultural uses to non-agricultural uses. Such changes are sharp around large urban areas. The agricultural land is being used for building purposes.

Source: https://ncert.nic.in/ncerts/l/legy205.pdf

Q.5) With reference to the 'Green revolution' in India, consider the following statements:

1. It helped in diffusion of rice and wheat cultivation to non-traditional areas.
2. It has caused the extinction of many indigenous varieties.
3. It changed the food consumption pattern of people.

Which of the statements given above is/are correct?

a) 1 and 2 only

b) 2 and 3 only

c) 1 and 3 only

d) 1, 2 and 3

Ans) d

Exp) Option d is correct.

Statement 1 is correct. Green revolution **helped in diffusion of rice and wheat cultivation to non-traditional areas**. Rice cultivation was spread over semi-arid areas of Punjab Haryana and western part of Uttar Pradesh. Similarly, wheat cultivation was spread to Rajasthan, Madhya Pradesh and Maharashtra.

Statement 2 is correct. Traditional knowledge and crops that were ideal for our environment were discarded during the times of the Green Revolution, and hybrids verities were introduced. This introduction **caused the extinction of indigenous varieties**.

Statement 3 is correct. Green revolution led to the **change in the consumption pattern** over the years and the shift in focus from the minor cereals and pulses to the major cereals, rice and wheat. The **consumption of pulses declined** in both urban and rural households.

Source: India a comprehensive geography by DR Khullar chapter 21 page 736-742

https://www.thehindu.com/life-and-style/food/thanals-save-our-rice-is-reviving-indigenous-rice-varieties/article22420554.ece

https://journalofethnicfoods.biomedcentral.com/articles/10.1186/s42779-019-0011-9

Q.6) Consider the following statements with respect to the Planetary Pressures-adjusted HDI:

1. It is annually published by the UNESCO.
2. It reflects the impact caused by each country's per-capita carbon emissions.
3. Ideally, where there are no pressures on the planet, the PHDI equals the HDI.

Which of the statements given above is/are correct?

a) 1 only

b) 2 and 3 only

c) 1 and 2 only

d) 1 and 3 only

Ans) b

Exp) option b is correct.

Statement 1 is ***incorrect.*** **United Nations Development Program (UNDP)** released the Human Development Report (HDR) 2020. The 2020 Report has also introduced planetary pressures-adjusted Human Development Index.

Statement 2 is correct. This new metric has been added to reflect the impact caused by each country's per-capita carbon emissions and its material footprint, which measures the amount of fossil fuels, metals and other resources used to make the goods and services it consumes. adjusts the standard Human Development Index (HDI) by a country's per capita carbon dioxide emissions and material footprint.

Statement 3 is correct. Ideally, where there are no pressures on the planet, the PHDI equals the HDI. However, all countries of the world have substantial pressure on their part. PHDI falls below the HDI as pressure rises. In this sense, the PHDI measures the level of human development when planetary pressures are considered.

Source: http://hdr.undp.org/en/content/planetary-pressures%E2%80%93adjusted-human-development-index-phdi

Q.7) In India, which among the following is seen as the possible hurdle in crop diversification?

a) Fragmentation of land holding and lack of mechanization of agriculture.

b) Low availability of mixed cropping options in India.

c) India has very less variety of cattle breeds.

d) Absence of government policy for crop diversification.

Ans) a

Exp) Option a is correct.

Statement a is correct. Fragmentation of land holding less favoring modernization and mechanization of agriculture is one of the most important reasons for lack of crop diversification in India.

Statement b is *incorrect*. India has h**igh potential of crop diversification in India with lots of options of mixed cropping** patterns to apply. For example, pulses and oilseeds can be grown with maize, sorghum and pearl millet.

Statement c is *incorrect*. India has **huge variety of cattle breeds** with around 204.6 million in number. Total Bovine population (Cattle, Buffalo, Mithun and Yak) is 302.79 million in 2019 which shows an increase of 1.0% over the previous census.

Statement d is *incorrect*. Considering the importance of crop diversification in the overall developmental strategy in Indian agriculture, the **government of India has taken several initiatives** for agricultural development in general and crop diversification in particular.

1) Launching a Technology Mission for the Integrated Development of Horticulture in the Northeastern Region
2) Implementing National Agriculture Insurance Scheme
3) Creation of Watershed Development Fund
4) Strengthening Agricultural Marketing
5) Seed Crop Insurance

Source: http://www.fao.org/3/x6906e/x6906e06.htm

https://vikaspedia.in/agriculture/agri-directory/reports-and-policy-briefs/20th-livestock-census

Q.8) With reference to paper industry in India, consider the following statements:

1. Bamboo, Sabai grass and bagasse are the important raw material for paper making.

2. India's paper industry is wood-positive means it plants more trees than it harvests.

Which of the statements given above is/are correct?

a) 1 only

b) 2 only

c) Both 1 and 2

d) Neither 1 nor 2

Ans) c

Exp) option c is correct.

Statement 1 is correct. Bamboo, Sabai grass and bagasse are the important raw materials for paper making. The traditional raw materials for pulping in India are bamboo and agricultural residues. More recently, increased attention has been given to use of one of the agricultural residues - bagasse - as pulping raw material.

Statement 2 is correct. India's paper industry is wood-positive. It plants more trees than it harvests. About 5,00,000 farmers are engaged in growing plantations of eucalyptus, subabul, casuarina, acacia, poplar to meet the sector demand. About 125,000 hectares are being brought under agro/farm forestry annually on an average, with around 1.2 million hectares on a cumulative basis across the country.

Source: http://www.fao.org/3/q7885e/q7885e09.htm

https://www.thehindubusinessline.com/markets/commodities/post-pandemic-paper-sector-on-the-path-to-recovery/article35093670.ece

Q.9) Which of the following statements is/are correct with reference to Pneumosil?

1. It is the first indigenously developed Vaccine against pneumonia in India.

2. It is a conjugate vaccine which makes it stable and more effective.

3. It is developed by the National Institute of Virology, Pune.

Select the correct answer using the code below

a) 1 and 2 only

b) 2 and 3 only

c) 1 and 3 only

d) 1, 2 and 3

Ans) a

Exp) Option a is correct.

Statement 1 is correct, Pneumosil is the first indigenously developed Pneumococcal Vaccine of India. Pneumosil was developed through collaboration with Bill and Melinda Gates Foundation and PATH organization. It has been approved by the Drugs Controller General of India.

Statement 2 is correct, Pneumosil is a conjugate vaccine. A conjugate vaccine is a substance that is composed of a polysaccharide antigen fused (conjugated) to a carrier molecule which enhances the stability and the effectiveness of the vaccine.

Statement 3 is *incorrect*, It has been developed by the Serum Institute of India Private Limited (SIIPL) in collaboration with various other partners like the Bill and Melinda Gates Foundation.

Source: https://indianexpress.com/article/explained/pneumosil-vaccine-pneumococcal-disease-7124129/

Q.10) These industries can be located in a wide variety of places and are not dependent on any specific raw material, weight losing or otherwise. They largely depend on component parts which can be obtained anywhere. These generally produce in small quantity and employ a small labour force. The important factor in their location is accessibility by road network.

Which one of the following industries is correctly described in the above paragraph?

a) Sunrise industry

b) Footloose industry

c) Chemical Industry

d) Sunset industry

Ans) b

Exp) Option b is correct.

Option a is *incorrect*. Sunrise industry is a business in its **infancy stage** showing promise of a rapid boom. Sunrise industries are typically characterized by **high growth rates, numerous start-ups**, and an abundance of venture capital funding.

Option b is correct. Foot loose industries **can be located in a wide variety of places**. They are not dependent on any specific raw material, weight losing or otherwise. They **largely depend on component parts** which can be obtained anywhere. They **produce in small quantity and also employ a small labour force**. These are **generally not polluting** industries. The important factor in their location is accessibility by road network.

Option c is *incorrect*. **Chemical industries** are **based on raw material** and use natural chemical minerals, e.g., mineral-oil (petroleum) is used in petrochemical industry. Salts, Sulphur and Potash industries also use natural minerals. Chemical industries are also based on raw materials obtained from wood and coal. Synthetic fiber, plastic, etc. are other examples of chemical based industries.

Option d is *incorrect*. A **sunset industry** is an **industry in decline**, one that has passed its peak or boom periods. As one example, analogue recording technologies for audio or video have been supplanted by digital equivalents; although analogue equipment is still offered, sales have declined dramatically and are not expected to recover.

Source: https://ncert.nic.in/ncerts/l/legy106.pdf
https://www.investopedia.com/terms/s/sunriseindustry.asp#:~:text=Sunrise%20industry%20is%20a%20colloquial,abundance%20of%20venture%20capital%20funding.

Q.11) With reference to distribution of mineral resources in India, consider the following statements:

1. Odisha is the largest producer of bauxite in India.

2. Bihar is among the leading coal producers in India.

3. Dalli and Rajhara are important iron mines in Chhattisgarh.

Which of the statements given above is/are correct?

a) 1 and 2 only

b) 2 and 3 only

c) 1 and 3 only

d) 1, 2 and 3

Ans) c

Exp) Option c is correct.

Statement 1 is correct. Odisha is the **largest producer of bauxite in India** and it produces **more than half of the country's bauxite resources.**

Statement 2 is *incorrect*. The coal deposits in India are primarily concentrated in the Gondwana sediments occurring mainly in the eastern and central parts of Peninsular India. **Bihar has poor coal reserves** and is not leading producer of coal in India.

Statement 3 is correct. **Dalli, and Rajhara in Durg of Chhattisgarh are the important mines of iron** ore in the country. About 95 per cent of total reserves of iron ore is located in the States of Odisha, Jharkhand, Chhattisgarh, Karnataka, Goa, Telangana, Andhra Pradesh and Tamil Nadu.

Source: https://www.nsenergybusiness.com/news/profiling-the-top-five-bauxite-producing-countries-in-the-world/#:~:text=This%20is%20due%20to%20a,of%20the%20country's%20bauxite%20resources.
https://www.bsmcl.in/coal.php#:~:text=As%20of%20now%20there%20is,to%20start%20the%20coal%20production.
https://ncert.nic.in/textbook/pdf/legy207.pdf

Q.12) Which of the following statements is/are correct with reference to a newly introduced concept of 'Learning poverty'?

1. It means being unable to read and understand a simple text by the age 10 years.

2. The concept is introduced by World Economic Forum.

Select the correct answer using the code below:

a) 1 only

b) 2 only

c) 1 and 2 both

d) Neither 1 nor 2

Ans) a

Exp) option a is correct.

Statement 1 is correct. Learning Poverty is defined as the percentage of 10-year-olds who cannot read and understand a simple story. Learning to read is an especially critical skill, which is the foundation on which other essential learning is built including numeracy and science.

Statement 2 is *incorrect*, The **World Bank (WB)** introduced a new Learning Target, which aims to cut by at least half the global rate of Learning Poverty by 2030. Cutting learning poverty in half by 2030 is only an intermediate goal, the ambition is to work with governments and development partners to bring that number to zero. The World Bank is also working with governments and development partners to improve entire education systems, so advancements in literacy can be sustained and scaled up.

Knowledge Base: It brings together schooling and learning indicators: it begins with the share of children who haven't achieved minimum reading proficiency (as measured in schools) and is adjusted by the proportion of children who are out of school (and are assumed not able to read proficiently).

Source: https://www.worldbank.org/en/topic/education/brief/learning-poverty

https://centralsquarefoundation.org/articles/learning-poverty-world-bank-new-kind-facing-india-children-reading-foundational-skills.html#:~:text=In%20a%20new%20and%20urgent,simple%20text%20by%20age%2010.

Q.13) With reference to manganese production in India, which one of the following statements is correct?

a) Jharkhand have the largest reserves of manganese in India.

b) It is always available in combination with iron and laterite.

c) India is one of the major exporters of manganese ore in the world.

d) Cubanite is the important ore of manganese.

Ans) b

Exp) Option b is correct.

Statement a is *incorrect*. Odisha tops the total reserves/resources with 44% share followed by Karnataka 22%, Madhya Pradesh 12%, Maharashtra & Goa 7% each, Andhra Pradesh 4% and Jharkhand 2%. Rajasthan, Gujarat, Telangana and West Bengal together shared the remaining 2% resources.

Statement b is correct. Manganese occurs as silvery grey in colour and is very hard and brittle in nature. It is always **available in combination with iron, laterite and other minerals**. Manganese in alloy form is an essential input in steel making.

Statement c is *incorrect*. In recent years, the trade volume of manganese ore has grown world over and also in India. However, India is still one of the **major importers of manganese ore in the world**.

Statement d is *incorrect*. Cubanite is the important ore of platinum. Manganese ores of major commercial importance are: pyrolusite, psilomelane, manganite and braunite.

Source: https://ibm.gov.in/writereaddata/files/01072021154458Manganeseore_2019.pdf

Q.14) With reference to the 'Malthusian Theory of Population Growth', which of the following statements is correct?

a) Societies develop along a predictable continuum from unindustrialized to post-industrial.

b) The population growth will always outstrip growth in production of subsistence resources.

c) The environment will decide the population trajectory of the planet.

d) Human ingenuity can resolve any environmental or social issues that develop.

Ans) b

Exp) Option b is correct.

Malthusian Theory of Population Growth: Thomas Robert Malthus (1766-1834). Malthus's theory of population growth – outlined in his Essay on Population (1798) argued that human populations tend to grow at a much faster rate than the rate at which the means of human subsistence (specially food, but also clothing and other agriculture-based products) can grow.

While population rises in geometric progression (i.e., like 2, 4, 8, 16, 32 etc.), agricultural production can only grow in arithmetic progression (i.e., like 2, 4, 6, 8, 10 etc.). Because population growth always outstrips growth in production of subsistence resources, the only way to increase prosperity is by controlling the growth of population. Unfortunately, humanity has only a limited ability to voluntarily reduce the growth of its population (through 'preventive checks' such as postponing marriage or practicing sexual abstinence or celibacy). Malthus believed therefore that 'positive checks' to population growth – in the form of famines and diseases – were inevitable because they were nature's way of dealing with the imbalance between food supply and increasing population.

Option a is *incorrect*. Demographic Transition Theory: The theory states that we are headed for environmental disaster and the end of human existence as we know it, or you think people will always adapt to changing circumstances, we can see clear patterns in population growth. **Societies develop along a predictable continuum as they evolve from unindustrialized to post-industrial. Demographic transition theory** (Caldwell and Caldwell 2006) suggests that future population growth will develop along a predictable model.

Option c is *incorrect*. Zero Population Growth Theory: A neo-Malthusian researcher named Paul Ehrlich brought Malthus's predictions into the twentieth century. However, according to Ehrlich, **it is the environment, not specifically the food supply, that will play a crucial role in the continued health of planet's population (Ehrlich 1968).** Ehrlich's ideas suggest that the human population is moving rapidly toward complete environmental collapse, as privileged people use up or pollute a number of environmental resources such as water and air. He advocated for a goal of zero population growth (ZPG), in which the number of people entering a population through birth or immigration is equal to the number of people leaving it via death or emigration.

Option d is *incorrect*. Cornucopian Theory of Population Growth: Cornucopian theory discards the idea of humans wiping themselves out; it **asserts that human ingenuity can resolve any environmental or social issues that develop.** As an example, it points to the issue of food supply. If we need more food, the theory contends, agricultural scientists will figure out how to grow it, as they have already been doing for centuries.

Source: Ncert 12th sociology Chapter 2, The Demographic Structure of the Indian Society pg no 12

Reading: Demographic Theories | Sociology (lumenlearning.com)

Q.15) Consider the following statements with respect to the Status of leopard in India report 2018:

1. The study has been conducted only in tiger- populated forests areas.
2. The population of leopard has decreased compared to 2014.
3. The largest number of leopards have been estimated in Madhya Pradesh.
4. International Union for Conservation of Nature has categorized leopard as a Vulnerable species.

a) 1 and 3 only

b) 1, 3 and 4 only

c) 1 and 2 only

d) 1,2,3 and 4

Ans) b

Exp) option b is correct.

Statement 1 is correct. The study has been conducted **only in tiger- populated forests areas under Project Tiger.**

Statement 2 is *incorrect*. The report says that there has been a "60% increase in the population count of leopards in India from 2014 estimates. The 2014 estimates which placed the population of leopards at nearly 8,000 has increased to 12,852.

Statement 3 is correct. The highest concentration of the leopard in India is estimated to be in **Madhya Pradesh (3,421)** followed by Karnataka (1,783) and Maharashtra (1,690).

Statement 4 is correct. International Union for Conservation of Nature (IUCN) has put leopards in **Vulnerable** category.

Source: https://static.pib.gov.in/WriteReadData/userfiles/Status_Leopard_India_2018web.pdf

Q.16) Consider the following statements:

1. Poor governance is one of the push factors for out-migration.
2. Limited scope for upward social mobility in villages is a 'pull factor' for migration in India.
3. The 2030 Agenda for Sustainable Development recognizes for the first time the contribution of migration to sustainable development.

Which of the statements given above are correct?

a) 1 and 2 only

b) 2 and 3 only

c) 1 and 3 only

d) 1, 2 and 3

Ans) c

Exp) Option c is correct.

Statement 1 is correct, Human migration involves the movement of people from one place to another with intentions of settling, permanently or temporarily, at a new location (geographic region). The reasons can be put into two broad categories: (i) **push factor, these cause people to leave their place of residence or origin and** (ii) pull factors, which attract the people from different places. The **push factors** of no job facilities, low salary, less income, drought, less medical, **poor governance** and education compel people towards cities.

Statement 2 is *incorrect.* Migration process is set in motion through push and pull factors. **The push factors, which exist in places of origin and propel people to move out, are mainly lack of employment opportunities in the villages, limited scope for upward economic and social mobility, poverty, conflict, and low agricultural productivity.** The pull factors, which attract migrants to an urban area are higher wages, better educational and medical facilities, and higher number of economic opportunities in urban areas.

Statement 3 is correct. The **2030 Agenda** (with core principle to **"leave no one behind,"** including migrants) for Sustainable Development recognizes for the first time the contribution of migration to **sustainable development.** The SDGs' central reference to migration is made in **target 10.7,** to facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies.

Source: Class 12th geography Chapter 2 MIGRATION Types, Causes and Consequences pg no 18

Decentralise development | The Indian Express

PowerPoint Presentation (un.org)

Q.17) Consider the following statements:

1. Hardy crops like sorghum and bajra require extensive tillage for fine seedbed.
2. A clayey soil is amenable to cultivation only within a narrow range of moisture.
3. Deep cultivation is generally beneficial in regions having very low rainfall.

Which of the statements given above is/are correct?

a) 1 and 2 only

b) 2 only

c) 1 and 3 only

d) 2 and 3 only

Ans) b

Exp) Option b is correct.

Statement 1 is *incorrect.* The crop to be grown decides the type & preparatory tillage given to the land. **Hardy crops like sorghum & other millets are not sensitive about tilth.** They do not require extensive tillage process. Production of fine tilth will increase the cost of cultivation which is not economic. **Small seeded or delicate crops like tobacco, chilli, coriander, sesamum, mustard etc. require a fine seedbed for which land is repeatedly cultivated to get required fine tilth.** Sugarcane & other root crops require deep cultivation of land to lose the soil to the required depth.

Statement 2 is correct. A clayey soil is amenable to cultivation only within a narrow range of moisture. Outside this range, the soil can't be worked satisfactorily & increases the draft required. Too wet or too dry soils are difficult to cultivate. **The lighter soils can be worked under a wide range of moisture** & the draught required for their manipulation is much less. **Loamy soils are easily brought to good tilt with little cultivation & expenditure of energy.**

Statement 3 is *incorrect*. Deep cultivation is beneficial in regions having better rainfall, particularly temperate regions for promoting aeration. Deep cultivation in low rainfall regions reduces soil moisture availability for plants.

Source: Tilth and Tillage - Factors Influencing Preparatory or Tillage Operations - agriinfo.in

Q.18) Consider the following statements with reference to the Climate Change Performance Index (CCPI) 2021:

1. The Climate Change Performance Index (CCPI) is published by Germanwatch.
2. It tracks the climate protection performance of all the member countries of United Nation.
3. The top three ranks remained empty as no country met the required criteria.
4. India has improved its CCPI ranking as compared to 2020 index.

Which of the statements given above is/are correct?

a) 1 and 3 only

b) 1, 2 and 3 only

c) 2 and 4 only

d) 1, 2, 3 and 4.

Ans) a

Exp) option a is correct.

Statement 1 is correct, The Climate Change Performance Index (CCPI) is an **annual publication by Germanwatch, New Climate Institute and Climate Action Network Europe.**

Its aim is to put political and social pressure on those countries that have, until now, failed to take ambitious action on climate protection, and to highlight those countries with best practice climate policies.

Statement 2 is *incorrect*, It is an **independent monitoring tool** for tracking the climate protection performance of **57 countries and the European Union**. The CCPI looks at four categories, with 14 indicators: **Greenhouse Gas Emissions (40% of the overall score), Renewable Energy (20%), Energy Use (20%), and Climate Policy (20%)**. It aims to enhance transparency in international climate politics and enables comparison of climate protection efforts and progress made by individual countries.

Statement 3 is correct, India, for the second time in a row, continued to remain in the top 10. India ranked 10th in CCPI 2021.The interesting thing about CCPI 2021 is that **top three ranks remained empty as no country had met the criteria** to get placed high enough on the index.

Statement 4 is *incorrect*. India rank came down in CCPI 2021. India is ranked at the tenth position in CCPI 2021 compared to ninth in CCPI 2020.

Source: https://germanwatch.org/en/19552

https://timesofindia.indiatimes.com/india/india-in-top-10-performers-on-climate-change-index/articleshow/79612075.cms

Q.19) In context of cropping pattern in India, which one of the following statements is ***incorrect*** regarding tea cultivation in India?

a) Tea plant is a tropical and sub-tropical plant and thrives well in hot and humid climate.

b) Tea bushes require moist frost-free climate for three months followed by cool weather.

c) Tea is a shade-loving plant and develops more vigorously when planted along with shady trees.

d) Virgin forest soils rich in humus and iron content are very beneficial for tea plantations.

Ans) b

Exp) Option b is *correct*.

Tea cultivation is an example of plantation agriculture. It is also an important beverage crop introduced in India initially by the British. **Tea bushes require warm and moist frost-free climate all through the year. Cool climate is not conducive for the growth of tree plantation.**

Statement a is correct. The tea plant grows well in tropical and sub-tropical climates endowed with deep and fertile well-drained soil, rich in humus and organic matter.

Statement c is correct. Tea plant requires 150-300 cm annual rainfall which should be well distributed throughout the year. While prolonged dry spell is harmful for tea, high humidity, heavy dew and morning fog favour rapid development of young leaves. **Tea is a shade-loving plant and develops more vigorously when planted along with shady trees.**

Statement d is correct. Tea bush grows well in well drained, deep, friable loams. However, **virgin forest soils rich in humus and iron content are considered to be the best soils for tea plantations.** Relatively large proportion of phosphorus and potash in the soil gives special flavour to tea as is the case in Darjeeling.

Source: Class 8 NCERT Chapter 4 Agriculture pg no 40,

Tea Cultivation in India: Growth, Method, Production and Distribution (yourarticlelibrary.com)

Q.20) In the context of farm irrigation in India, consider the following statements:

1. In 'productive irrigation', the water input per unit area of cultivated land is higher than 'protective irrigation'.

2. Wetland farming is largely confined to regions with annual rainfall less than 75 cm.

3. Trickle irrigation system applies water directly to the root zones of plants.

Which of the statements given above is/are correct?

a) 1 only

b) 1 and 2 only

c) 1 and 3 only

d) 2 and 3 only

Ans) c

Exp) Option c is correct.

Statement 1 is correct, Productive irrigation is meant to provide sufficient soil moisture in the cropping season to achieve high productivity. In such irrigation the water input per unit area of cultivated land is higher than protective irrigation. The objective of protective irrigation is to protect the crops from adverse effects of soil moisture deficiency which often means that irrigation acts as a supplementary source of water over and above the rainfall. The strategy of this kind of irrigation is to provide soil moisture to maximum possible area.

Statement 2 is *incorrect,* Rainfed farming is further classified on the basis of adequacy of soil moisture during cropping season into dryland and wetland farming. In wetland farming, the rainfall is in excess of soil moisture requirement of plants during rainy season. Such regions may face flood and soil erosion hazards. These areas grow various water intensive crops such as rice, jute and sugarcane and practise aquaculture in the fresh water bodies.

The dryland farming (not wetland farming) is largely confined to the regions having annual rainfall less than 75 cm. These regions grow hardy and drought resistant crops such as ragi, bajra, moong, gram and guar (fodder crops) and practise various measures of soil moisture conservation and rain water harvesting.

Statement 3 is correct, Drip irrigation system, also known as 'trickle irrigation system', (**not sprinkle irrigation**) is a method of applying the required amount of water directly to the root zones of plants through drippers or emitters at frequent intervals.

Sprinkler irrigation is a **method of applying water in a manner similar to rain**. It is suited for most row, field and tree crops. Water can be sprayed over or under the crop canopy.

Source: Chapter 5 Land resources and Agriculture pg 44 and 45

NCERT Micro irrigation Technician – Class XI Chapter 1 Introduction to Micro irrigation System pg 3 and 4

Q.21) Consider the following statements with respect to India's Tibetan policy:

1. India recognizes the Tibetan government in exile.

2. The official Indian policy is that the Dalai Lama is a spiritual leader.

3. All the Tibetan exiles born in India are given Indian Citizenship.

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

a) 1 and 2 only

b) 2 and 3 only

c) 1 and 3 only

d) 1, 2 and 3

Ans) c

Exp) Option c is correct.

Statement 1 is *incorrect*, **The Central Tibetan Authority** which is also referred to as the **Tibetan Government in Exile** is **not recognised as a sovereign government by any country**, but it receives financial aid from governments and international organisations for its welfare work among the Tibetan exile community in India.

Statement 2 is correct. In 1959, following the Tibetan uprising, the Dalai Lama (spiritual leader of Tibetan people) and many of his followers fled to India. Former Prime Minister Jawahar Lal Nehru gave him and Tibetan refugees shelter and helped in setting up the Tibetan government in exile. **The official Indian policy is that the Dalai Lama is a spiritual leader, and the Tibetan community in India**, with more than a lakh exiles, is not allowed to undertake any political activity.

Statement 3 is *incorrect*. The Indian government **doesn't give citizenship** to Tibetans **born in India after the cut-off year of 1987**.

Source: https://www.thehindu.com/news/national/worldview-with-suhasini-haidar-indias-tibet-policy/article35237198.ece

https://www.aninews.in/news/world/asia/indias-tibet-policy-time-to-return-to-status-quo-ante-on-the-cta20210627111229/

Q.22) Consider the following statements with reference to 'tank irrigation' practiced in India:

1. In this irrigation system, small reservoir is constructed to store rain water.

2. It is mostly practiced in northeastern region of India.

3.This irrigation system in India has increased consistently in the past few decades due to extreme weather events.

Which of the statements given above is/are correct?

a) 1 only

b) 1 and 2 only

c) 1 and 3 only

d) 1, 2 and 3

Ans) a

Exp) Option a is correct.

Statement 1 is correct. Tank Irrigation uses **small reservoir constructed the slop of a valley to catch and store water during rainy season and uses it for irrigation during dry season**. Tanks have many positive attributes such as • Less capital intensive to build and maintain • Provide ecological benefits • Recharging ground water • Control the floods • Provided livelihood options (farming, fishing, forestry, dug hearing).

Statement 2 is *incorrect,* Tank irrigation is practised mainly in peninsular India because of undulating relief and hard rocks make it difficult to dig canals and wells and rivers are rain-fed. Canal irrigation is practiced in Meghalaya and Assam region due to perennial river of Brahmaputra supplying water for irrigation. The tanks have always been important source of irrigation especially in southern India.

Statement 3 is *incorrect,* The main source of tank irrigation has **consistently declined since independence.** This decline can be seen equally in the shape of decrease in the relative importance of tanks and other modes of irrigation. The decline of tank irrigation due to particularly massive diffusion of private wells and pumps has spread to tank command area.

Knowledge Base: After the independence the significant source of tank irrigation drastically decreased due to several socio-economic and institutional factors, the most factors have been changes in land ownership pattern and changes in caste and class configuration.

Source: DECLINE OF TANK IRRIGATION INSTITUTIONS IN SOUTH INDIA - A CASE OF TAMIL NADU (indiawaterportal.org)

Q.23) In the context of recent trends in land use pattern in India, consider the following statements:

1. In India, the rate of increase in land use is highest in case of area under non-agricultural uses.
2. In recent years, there has been an increase in net sown area for agriculture due to use of culturable waste land.
3. Expansion in agricultural cultivation has resulted in decline of pasture lands in India.

Which of the statements given above are correct?

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

Ans) d

Exp) Option d is correct.

Statement 1 is correct. In India, the rate of increase in land use is highest in case of area under non-agricultural uses. This is due to the changing structure of Indian economy, which is increasingly depending on the contribution from industrial and services sectors and expansion of related infrastructural facilities. Also, an

expansion of area under both urban and rural settlements has added to the increase. Thus, the area under non-agricultural uses is increasing at the expense of wastelands and agricultural land.

Statement 2 is correct. Usage of cultural wasteland has resulted into increase in net sown area for agricultural purposes in the country. This is a recent phenomenon, before which it was registering a slow decrease. There are indications that most of the decline had occurred due to the increases in area under non-agricultural use.

Statement 3 is correct. The decline in land under pastures and grazing lands can be explained by pressure from agricultural land. **Illegal encroachment due to expansion of cultivation on common pasture lands is largely responsible for this decline**.

Source: NCERT 12th chapter 5 Land Resources and Agriculture pg no 42, 43

Land use trends in farm sector - The Hindu BusinessLine

Q.24) With reference to the PM WANI scheme, consider the following statements:

1. It aims to transform selected villages into digitally active and cashless model villages.
2. It will create a network of public Wi-Fi hotspots.
3. Under this, the Public Data Offices (PDOs) have to pay a nominal licence fee to the state government.

Which of the statement given above is/are ***incorrect***?

a) 1 and 2 only

b) 1 and 3 only

c) 3 only

d) 1, 2 and 3

Ans) b

Exp) Option b is correct.

Statement 1 is *incorrect*. PM WANI (Wi-Fi Access Network Interface) is a scheme meant to increase Wi-Fi access throughout the country (both urban and rural areas). It is envisaged as the **last mile broadband connectivity**, where the consumer will access broadband services through a network of public Wi-Fi access points.

Objectives of the PM WANI scheme

1) Increase internet access at cheap prices.
2) Increased Wi-Fi access will bring with an improved quality of life, especially in an increasingly digital economy.
3) The deregulated operating requirement is meant to help improve the ease of doing business, and thus potentially provide both employment opportunities and increased disposable income.

Statement 2 is correct, PM-WANI will create a nationwide network of public Wife hotspots, termed public data offices (PDOs) after the public call office (PCO) concept rolled out by the Indian government to set up a nationwide network of landline public pay-phones.

Public Data Office (PDO) will establish, maintain, and operate only WANI compliant Wi-Fi Access Points and deliver broadband services to subscribers.

Statement 3 is *incorrect*. The Public Data Offices (PDOs) will not have to pay any fee for licence or registration.

Knowledge Base: The WANI framework contains the following components:

Public Data Office (PDO): It will establish, maintain, and operate only WANI compliant Wi-Fi Access Points and deliver broadband services to subscribers.

Public Data Office Aggregator (PDOA): It will be an aggregator of PDOs and perform the functions relating to Authorization and Accounting.

App Provider: It will develop an App to register users and discover WANI compliant Wi-Fi hotspots in the nearby area and display the same within the App for accessing the internet service.

Central Registry will maintain the details of App Providers, PDOAs, and PDOs. The Central Registry will be maintained by The Centre for Development of Telematics (C-DoT).

C-DoT has launched following PDO access point devices:

1) WAYU (WANI Accessibility Unit) - Indoor Use.

2) WAP (Wireless Access Point) – outdoor use.

The Centre for Development of Telematics (C-DOT) is an Indian Government owned telecommunications technology development centre. It was established in 1984 with initial mandate of designing and developing digital exchanges. C-DOT has expanded to develop intelligent computer software applications.

Under the **"Digital Village" scheme,** certain villages will be transformed into digitally active, cashless villages, allowing rural residents to conduct most of their daily activities entirely online.

Source:

https://dot.gov.in/sites/default/files/2020_12_11%20WANI%20Framework%20Guidelines.pdf?download=1

https://internetfreedom.in/pm-wani-explainer/

https://www.cdot.in/cdotweb/web/product_category.php?lang=en&catId=7

Q.25) With reference to the process of desertification, which one of the following statements is ***incorrect***?

a) It is a persistent degradation of dryland ecosystems due to climatic variations and human activities.

b) It can create increasingly larger empty spaces over a large strip of land.

c) It is being witnessed in large scale on all continents in the world including Antarctica.

d) It is a result of a long-term failure to balance demand for and supply of ecosystem services.

Ans) c

Exp) Option c is correct.

Option a is correct. Desertification is defined by the U.N. Convention to Combat Desertification as "land degradation in arid, semiarid and dry subhumid areas resulting from various factors, including climatic variations and human activities. **Persistent, substantial reduction in the provision of ecosystem services as a result of water scarcity, intensive use of services, and climate change is a much greater threat in drylands than in non-dryland systems.**

Option b is correct. On gradually sloped terrain, **desertification can create increasingly larger empty spaces over a large strip of land, a phenomenon known as "Brousse tigrée". Tiger bush**, or **brousse tigrée** in the French language, is a patterned vegetation community and ground consisting of alternating bands of trees, shrubs, or grass separated by bare ground or low herb cover, that run roughly parallel to contour lines of equal elevation.

Option c is *incorrect*. Desertification occurs on all continents, except Antarctica, and affects the livelihoods of millions of people, including a large proportion of the poor in drylands. Desertification takes place worldwide in drylands, and its effects are experienced locally, nationally, regionally, and globally. Drylands include all terrestrial regions where water scarcity limits the production of crops, forage, wood, and other ecosystem provisioning services.

Option d is correct. Desertification is a result of a long-term failure to balance demand for and supply of ecosystem services in drylands. The pressure is increasing on dryland ecosystems for providing services such as food, forage, fuel, building materials, and water for humans and livestock, for irrigation, and for sanitation.

Source: Land Degradation and Desertification: 1) Introduction – Land use (greenfacts.org)

2) What is desertification? (greenfacts.org)

Desertification | Earth Science (lumenlearning.com)

Q.26) Consider the following statements:

1. Groundnut cultivation requires year-round continuous rainfall within the range of 100-150 cm.

2. Soya oil accounted for largest share in India's edible oils import basket during 2019-2020.

3. Gujarat is the largest sesamum producing state in India.

Which of the statements given above is/are correct?

a) 1 and 2 only

b) 2 and 3 only

c) 3 only

d) 1, 2 and 3

Ans) c

Exp) Option c is correct.

Statement 1 is *incorrect*. Groundnut thrives best in the tropical climate and **requires 20°-30°C temperature and 50-75 cm rainfall.** Isohyet of 100 cm marks the upper limit of groundnut cultivation. **It is highly susceptible to frost, prolonged drought, continuous rain and stagnant water.** Dry winter is needed at the time of ripening. It can be grown both as a kharif and as a rabi crop but 91 per cent of the total area under groundnut is devoted to kharif crop. Well drained light sandy loams, loams, red, yellow and black cotton soils are well suited for its cultivation.

Statement 2 is *incorrect*. In 2019, India imported around 15 million tons of edible oils worth approximately ₹7,300 crore, which accounted for 40 per cent of the agricultural imports bill and three per cent of the overall import bill of the country. **Palm oil accounted for the lion's share of the total imports (62 per cent), followed by soya oil and sunflower oil (21 per cent and 16 per cent, respectively).** There is a considerable increase in the share of soya oil and sunflower oil in the import basket.

Statement 3 is correct. Sesamum is produced in almost all parts of the country but **Gujarat is the largest producing state.** Gujarat produced around 23 per cent of the total sesamum production of India. The other major producers are West Bengal, Maharashtra, Tamil Nadu, Karnataka, Madhya Pradesh, Andhra Pradesh, Uttar Pradesh and Rajasthan.

Source: How India can be 'atmanirbhar' for edible oil production (downtoearth.org.in)

https://pib.gov.in/PressReleasePage.aspx?PRID=1720267

Oilseeds Scenario in India | agropedia (iitk.ac.in)

Oilseeds Cultivation in India: Groundnuts, Rapeseed, Mustard and Castor Seeds (yourarticlelibrary.com)

Q.27) SHINE Trial, recently seen in the news is related to the treatment of which one of the following diseases?

a) COVID-19

b) Dengue fever

c) Tuberculosis

d) Avian Influenza

Ans) c

Exp) Option c is correct.

The SHINE (Shorter Treatment for Minimal Tuberculosis in Children) Trial aimed to **shorten the treatment for drug-susceptible tuberculosis (TB) in children.**

The SHINE trial is a phase 3 randomised open-label trials in children with smear-negative, non-severe TB.

The key finding was that four months of treatment was non-inferior to the standard six-month treatment.

It was **conducted in** five study sites in South Africa, Uganda, Zambia and **India**. 1204 children aged less than 16 years participated in the trial, including 127 children living with HIV infection.

Minimal TB is defined as TB which is both sputum smear negative and non-severe, including extra-thoracic lymph node TB and non-severe respiratory TB (as determined on chest x-ray).

Knowledge Base: The study was sponsored by University College London (UCL) and funded by the Joint Global Health Trials Scheme of the UK Department of Health and Social Care, the Wellcome Trust, and the Medical Research Council, with additional support from the TB Alliance.

Source: https://www.who.int/news/item/26-10-2020-shine-trial-on-shorter-treatment-for-children-with-minimal-tb

Q.28) Consider the following pairs of renewable energies and their top producing states in India:

Renewable Energy	*State*
1. Solar power	Karnataka
2. Wind power	Gujarat
3. Bio power	Maharashtra
4. Small hydro power	Uttarakhand

Which of the pairs given above are correctly matched?

a) 1 and 3 only

b) 2 and 4 only

c) 1, 2 and 3 only

d) 2, 3 and 4 only

Ans) a

Exp) Option a is correct.

Pair 1 is correctly matched. The south-western state of **Karnataka tops India's list of states producing solar energy** with a total installed solar power capacity of about 7,100MW. Karnataka's 13,000-acre Pavagada Solar Park (or Shakti Sthala) in Tumakuru district is the second-largest solar power plant in India. Out of Gujarat's current total renewable energy production of 9,670MW, about 2,654MW is solar energy.

Pair 2 is *incorrectly* matched. India currently has the fourth highest wind installed capacity in the world with total installed capacity of 39.25 GW. The southern state of Tamil Nadu tops the list with ~9.3 GW of cumulative wind installations, representing a 25% share of the total installed capacity in India as of Q1 2020.

Pair 3 is correctly matched. Bio-energy is the umbrella term for biomass power, Bagasse Cogeneration and Waste to Energy. **Maharashtra leads the state with 2528.69 MW of energy production of the total of 9918.54 MW from bio energy in India.**

Pair 4 is *incorrectly* matched. In India, hydro power plants of 25MW or below capacity are classified as small hydro, which have further been classified into micro (100kW or below), mini (101kW-2MW) and small hydro (2-25MW) segments. **Karnataka is the top Small Hydro energy producing state with 1230.73 MW of electricity production.**

Source: Top five states for solar power production across India profiled (nsenergybusiness.com)

Installed Capacity of Various Renewable Modes of Energy (pib.gov.in)

Top Five States for Wind Energy Generation - Mercom India

Overview | Ministry of New and Renewable Energy, Government of India (mnre.gov.in)

Current Status | Ministry of New and Renewable Energy, Government of India (mnre.gov.in)

Q.29) Consider the following statements with reference to tobacco plantations in India:

1. Tobacco plantation requires more than 100 cm of rainfall for its ideal growth.
2. High relative humidity suits the conditioning of tobacco plantations.
3. Cigarette tobacco is grown in India as a dry crop on heavy black soils with poor drainage.

Which of the statements given above is/are correct?

a) 1 and 3 only

b) 2 only

c) 2 and 3 only

d) 1, 2 and 3

Ans) c

Exp) Option c is correct.

Statement 1 is *incorrect*. For tobacco cultivation 50-100cm annual rainfall and 15-20° C temperature during growth period is ideal. Tobacco cannot stand if rainfall is more than 100cm. After harvesting to dry the leaves it requires bright sunshine & dry weather but not less than containing 8% moisture. Too dry weather is not suitable as leaves break into small pieces.

Statement 2 is correct. Ideal conditions required for successful production of high-quality tobacco leaf are - 1) a liberal and well-distributed rainfall during active vegetative growth stage; 2) long day lengths; 3) a mean temperature of 26° C during growing season and 4) a **high relative humidity of 70-80%.**

Statement 3 is correct. Cigarette tobacco is grown in India as a dry crop on heavy black soils which normally have poor drainage. In spite of unfavourable soil conditions, it has been possible to raise cigarette tobacco fairly successfully. The reasons for this seem to be, first, that the crop is raised as a dry crop and as such the soils are not liable to get water-logged during the growing period, secondly, that because of very high clay contents, these soils are able to hold enough moisture to sustain a fair crop and, thirdly, that the humidity during the curing period is quite high and this makes the handling of crop easy.

Source: Soil and Climate for Tobacco - Kisan Suvidha

Agriculture Information | Crop information | Tobacco (indiaagronet.com)

Soil and Climate for Tobacco - Kisan Suvidha

Q.30) The Reform, Recovery and Reconstruction Framework (3RF) is launched by the United Nations in response to:

a) European Debt crisis

b) Beirut explosion

c) Syrian refugee crisis

d) Israel - Palestine conflict

Ans) b

Exp) Option b is correct, The Lebanon Reform, Recovery and Reconstruction Framework (3RF) is part of a comprehensive **response to the massive explosion on the Port of Beirut on August 4, 2020.**

The Reform, Recovery and Reconstruction Framework (3RF) was launched by the European Union (EU), the United Nations (UN) and the World Bank Group (WBG) in December 2020.

It is a people-centered recovery and reconstruction framework focusing on a period of 18 months that will bridge the **immediate humanitarian response and the medium-term recovery and reconstruction** efforts to put Lebanon on a path of sustainable development.

Goals of 3RF:

1) a people-centered recovery that returns sustainable livelihoods to the affected population;
2) the reconstruction of critical assets, services, and infrastructure that enables sustainable economic recovery.
3) the implementation of reform to support reconstruction and to help restore people's trust in governmental institutions by improving governance.

The framework was prepared by United Nations, World Bank and European Union.

Source: https://www.worldbank.org/en/country/lebanon/publication/lebanon-reform-recovery-reconstruction-framework-3rf

Q.31) Consider the following statements:

1. Most sugarcane growing countries of the world lay between tropical and sub-tropical zones.

2. Brazil is the largest sugarcane producer in the world.

3. Tropical region accounts for nearly 90 percent of the sugarcane production in India.

Which of the statements given above are correct?

a) 1 and 2 only

b) 2 and 3 only

c) 1 and 3 only

d) 1, 2 and 3

Ans) a

Exp) Option a is correct.

Statement 1 is correct, Sugarcane growing countries of the world are **lying between the latitude 36.70 north and 31.00 south of the equator extending from tropical to sub-tropical zones.** In India sugarcane is cultivated all over the country from latitude 80 N to 330 N, except cold hilly areas like Kashmir valley, Himachal Pradesh and Arunachal Pradesh.

Statement 2 is correct, Brazil tops the list of sugarcane producers, with an annual production of 739,300 thousand metric tons. The South-Central region of Brazil is accountable for more than 90 percent of this national production output.

Statement 3 is *incorrect,* In India, **tropical region shared about 45% and 55% of the total sugarcane area and production in the country,** respectively along with the average productivity of 77 t/ha (2011-12). Sub-tropical region accounted for about 55% and 45% of total area and production of sugarcane with an average productivity about 63 t/ha.

Source: https://farmer.gov.in/cropstaticssugarcane.aspx

Top Sugarcane Producing Countries - WorldAtlas

Q.32) Consider the following pairs:

Precious mineral	*Mines situated in region/State*
1. Diamond	Region lying between Mahanadi and Godavari valleys
2. Gold	Ramgiri in Andhra Pradesh
3. Silver	Kolar mines in Karnataka

Which of the pairs given above is/are correctly matched?

a) 1 and 2 only

b) 2 only

c) 3 only

d) 1, 2 and 3

Ans) a

Exp) Option a is correct.

Pair 1 is correctly matched, Presently, diamond fields of India are grouped into four regions:

1) South Indian tract of Andhra Pradesh, comprising parts of Anantapur, Kadapa, Guntur, Krishna, Mahabubnagar and Kurnool districts;

2) Central Indian tract of Madhya Pradesh, comprising Panna belt;

3) Behradin-Kodawali area in Raipur district and Tokapal, Dugapal, etc. areas in Bastar district of Chhattisgarh;

4) **Eastern Indian tract mostly of Odisha, lying between Mahanadi and Godavari valleys**.

Pair 2 is correctly matched, The total in situ reserves of gold ore are estimated at 22.4 million tonnes, with 116.5 tonnes of metal. India's contribution to world gold production is an insignificant 0.75 per cent. **There are three gold fields in the country, namely Kolar Gold Field, Kolar district, Hutti Gold Field in Raichur district (both in Karnataka) and Ramgiri Gold Field in Anantpur district (Andhra Pradesh).**

Karnataka is the largest producer of gold in India. The state has recoverable reserves of 17.5 million tonnes of gold ore containing 42,023 kg of metal, mainly in Kolar, Dharwad, Hassan and Raichur districts.

Pair 3 is *incorrectly* matched, The total resources of silver in India in terms of metal were estimated at 27,628.25 tonnes, of which 8,039.57 tonnes are under reserves and 19,588.68 tonnes are under the 'remaining resources'. By States, **Rajasthan accounted for about 87% resources** in terms of ore, Jharkhand 5%, Andhra Pradesh 4% and Karnataka 2%.

In India, there are no native silver deposits except the small and unique Bharak deposit of silver in Rajasthan.

Source: Diamond 2017.pmd (ibm.gov.in)

Silver_2013.pmd (ibm.gov.in)

Production and Distribution of Gold in India (yourarticlelibrary.com)

Q.33) Consider the following statements regarding the 'Positive Pay System':

1. It is introduced to eliminate frauds in cheque transactions.

2. Positive Pay System is mandatory for all transactions of bank customers.

3. The facility of Positive Pay will be developed by National Payments Corporation of India.

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

Ans) b

Exp) Option b is correct.

Statement 1 is correct. Reserve Bank of India (RBI) will introduce the 'Positive Pay System' for cheque transactions above ₹50,000 in a bid to **enhance safety and eliminate frauds. The concept of Positive Pay involves a process of reconfirming** key details of large-value cheques. **Banks will enable the new system for all account holders issuing cheques** for amounts of **₹50,000 and above.**

Statement 2 is *incorrect.* The RBI said that availing of this facility would be at the discretion of the account holder. However, banks may consider making it mandatory in case of cheques for amounts of ₹5 lakh and above.

Statement 3 is correct. The **National Payments Corporation of India (NPCI) will develop the facility of Positive Pay in CTS**, and make it available to participant banks.

Knowledge Base: The concept of Positive Pay involves a process of reconfirming key details of large-value cheques. Under this process, the issuer of the cheque submits electronically, through channels like SMS, mobile app, Internet banking and ATM, certain minimum details of that cheque (like date, name of the beneficiary, or payee and amount) to the drawee bank, details of which are cross-checked with the presented cheque by Cheque Truncation System (CTS).

Any discrepancy is flagged by CTS to the drawee bank and presenting bank, who then take redressal measures.

Source: https://indianexpress.com/article/explained/positive-pay-system-bank-cheque-rs-50000-7111239/

https://www.investopedia.com/terms/p/positive-pay.asp

https://www.personalfn.com/dwl/all-you-need-to-know-about-the-positive-pay-system-to-make-secure-cheque-payments-in-2021

Q.34) Consider the following statements with reference to silk Industry of India:

1. Silk textile industry of India is the second largest producer of silk in the world.

2. The climate of southern states in India allows year around cocoon production.

3. Eri silk is produced only in southern states of India.

Which of the statements given above is/are correct?

a) 1 and 2 only

b) 2 only

c) 3 only

d) 1 and 3 only

Ans) a

Exp) Option a is correct.

Statement 1 is correct. Silk textile industry of India is the second largest producer of silk in the world after China. The states traditionally interested in sericulture development are Karnataka, Andhra Pradesh, West Bengal, Tamil Nadu, Assam, Manipur and Meghalaya. Karnataka accounts for 55.65 per cent of the silk yarn production of the country followed by Madhya Pradesh (40.48%), Tamil Nadu (2.42%) and Punjab (1.45%)

Statement 2 is correct. India has more arable land than China and has a comparative advantage **of favourable climate (in major silk producing southern States) that allows year around cocoon production.** Thus, India has a better prospect for stepping up its production, holds substantial potential for increase of exports and establishing its own brand identity in the global market.

Statement 3 is *incorrect*. Eri silk is the product of the domesticated silkworm, Philosamia ricini that feeds mainly on castor leaves. Eri yarn is produced in **Assam, Bihar, Manipur, Meghalaya, Nagaland and West Bengal.** Unlike other kind of silk, this cannot be reeled and hence it is only spun. It has natural copperish colour.

Knowledge Base: Muga Silk is produced only in Assam from cocoons of silkworms belonging to saturniidae family, which are fed on Som and Soalu leaves. It has a rich golden colour.

Source: India will be fully Atmanirbhar in Silk production in the next two years, says Union Textiles Minister Smriti Zubin Irani (pib.gov.in)

Indian Silk Industry, Silk Industry in India, Silk Industry, Silk Industries (indianmirror.com)

Complete information on silk textiles in India (preservearticles.com)

Microsoft Word - Sericulture write-up (mospi.nic.in)

Q.35) Consider the following statements regarding rare earth elements in India:

1. Monazite is the principal source of rare earth elements in India.

2. India has about 33 percent of global rare earth elements reserves.

3. Bhutan and UAE are the major destination of rare earth elements export from India.

Which of the statements given above are correct?

a) 1 and 2 only

b) 2 and 3 only

c) 1 and 3 only

d) 1, 2 and 3

Ans) c

Exp) Option c is correct.

Statement 1 is correct. The principal sources of rare earth elements are bastnaesite, xenotime, loparite and monazite. The rare earths occur in many other minerals and are recoverable as by-products from phosphate rock and from spent uranium leaching. In India, **monazite is the principal source of rare earths and thorium**. The mineral monazite is a prescribed substance as per the notification under the Atomic Energy Act, 1962. **It occurs in association with other heavy minerals such as ilmenite, rutile, zircon, etc. in concentrations of 0.4 – 4.3% of total heavies in the beach and inland placer deposits of the country.**

Statement 2 is *incorrect.* According to a US Geological Survey report China has about 37 percent of known global REE reserves but produces about 60 per cent of global REE. **India has about 6 percent of global REE reserves and produces a miniscule 1 percent of global supply**. India however, has an extremely high possibility of discovery of new deposits along its coastline and hard rock carbonatites that exist all over the peninsula.

Statement 3 is correct. Bhutan (91%) and UAE (8%) are the main buyers of rare earth metals (Scandium & Yttrium) **from India**. Imports of Rare Earth Metals (Scandium & Yttrium) in 2018-19 increased to 643.41 tonnes as compared to 492.41 tonnes in 2017-18. China (97%), USA (2%) were the main suppliers to India.

Source: Rare Earths-2019.pmd (ibm.gov.in)

Rare Earths-2017.pmd (ibm.gov.in)

Rare Earth Elements (REE) and strategic metals security: How the best way forward for India diverges from Chinese model? - The Financial Express

Q.36) With reference to the Saguna rice technique (SRT), consider the following statements:

1. It was evolved in Western Maharashtra.

2. It advocates rice cultivation without ploughing and transplanting process.

3. It results in increase of seed requirement per unit of land.

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

Ans) a

Exp) Option a is correct.

Statement 1 is correct. Saguna Rice Technique is a unique **new method of cultivation of rice. Chanrdashekhar H Bhadsavle** is the person who is largely responsible for the success story of Saguna baug and development of SRT. SRT evolved at **Saguna Baug, Neral, Dist. Raigad, Maharashtra.**

Statement 2 is correct. Saguna Rice Technique involves **cultivation of rice** and related rotation crops **without ploughing, puddling and transplanting (rice) on permanent raised beds. This is a zero till, Conservation Agriculture (CA) type of cultivation.**

Method of cultivation via SRT:

1) **SRT insists that all roots and small portion of stem should be left in the beds for slow rotting (Zero till method).**
2) Weeds are to be controlled with weedicides and manual labor. No ploughing, puddling and hoeing is to be done to control weeds.
3) This system will get the crop ready for harvesting 8 to 10 days earlier. Such a variety is chosen so as to avoid getting harvesting caught in receding rain.

Statement 3 is *incorrect*. Advantages of SRT:

1) Not dependent on erratic behaviour of rain
2) **Farmers have confirmed that only 8 kg of seed was required for cultivating 1 acre of land using SRT as compared to 35 kg required in the traditional method.**
3) Stops emission of greenhouse gases (SRT being aerobic method. Avoiding of puddling will drastically reduce diesel consumption)
4) Groundwater level increases (No tilling in field will prevent formation of hard pan of lower strata of soil enabling better percolation of water)
5) Prevent fertility loss during puddling
6) Reduction in cost of production by 40%
7) Reduces treacherous labour by 50% (As there is no puddling, transplanting and hand hoeing)

8) Optimum moisture condition

9) Ample oxygen supply to root zone.

10) Rice crop gets ready 8–10 days earlier. Also, it saves time required for soil tilling between two crops.

11) Leaves of rice plants on SRT beds seem to be broader and head more upwards to sunlight than their counterparts in conventional method. They are likely to produce more biomass, means higher yield.

Source: http://jalshakti-dowr.gov.in/sites/default/files/SRT_Success_Story_2018.pdf

https://srt-zerotill.com/srt/advantages/

https://www.jsw.in/foundation/jsw-foundation-propagating-saguna-technique

Q.37) With reference to coal deposits in India, consider the following statements:

1. No coal is found in the tertiary rock formations.

2. Gondwana coal occurs only in the north-eastern region of India.

3. Anthracite, which is the best quality of coal, is not found anywhere in India.

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

a) 1 and 2 only

b) 1 and 3 only

c) 3 only

d) 1, 2 and 3

Ans) d

Exp) Option d is correct.

Statement 1 is *incorrect.* Coal occurs in rock sequences mainly of two geological ages, namely **Gondwana and tertiary deposits**. Coal is a one of the important minerals which is mainly used in the generation of thermal power and smelting of iron ore.

Statement 2 is *incorrect.* Gondwana coal mainly occurs in **eastern and central part of Peninsular India.** The most important Gondwana coal fields of India are located in Damodar Valley. Gondwana coal mainly occurs in Jharkhand, Odisha, West Bengal, Madhya Pradesh and Andhra Pradesh. **Tertiary coal** predominantly occurs in the **North eastern region of India.** Tertiary coals occur in Assam, Arunachal Pradesh, Meghalaya and Nagaland.

Statement 3 is *incorrect*. Anthracite is **found in small quantity in Jammu and Kashmir.**

It is the best quality of coal which carries 80 to 95 per cent carbon content. It ignites slowly with a blue flame. It has the highest calorific value.

Source: India -People and Economy-Class-XII Ch-7 Mineral and Energy Resources

Q.38) Which of the following statements is correct with reference to 'Integrated Nutrient Management'?

a) Its focus is not on increasing productivity but sustaining and improving soil fertility.

b) No inorganic fertilizers are used in this agricultural technique.

c) The nutrient demand of the crop is fulfilled from both applied as well as native soil nutrients.

d) It can result in an increase in nutrient losses to ground and atmosphere.

Ans) c

Exp) Option c is correct.

Option a is *incorrect*. Integrated Nutrient Management refers to the **maintenance of soil fertility** and of **plant nutrient supply** at an optimum level for sustaining the desired **productivity** through optimization of the benefits from **all possible sources of organic, inorganic and biological components** in an integrated manner. **Focus** is **both** on increasing **productivity** and improving **soil fertility**.

Option b is *incorrect*. Both organic and inorganic fertilizers as well as biological fertilizers are **used** in the technique.

Option c is correct. This technique helps to synchronize the nutrient demand of the crop with **nutrient supply from native and applied sources**. It also helps to enhance the availability of applied as well as native soil nutrients

Option d is *incorrect*. This technique helps to minimize the deterioration of soil, water and ecosystem by promoting carbon sequestration, **reducing nutrient losses to ground** and surface water bodies and **to atmosphere.**

Knowledge Base:

Concepts

1) Regulated nutrient supply for optimum crop growth and higher productivity.
2) Improvement and maintenance of soil fertility.
3) Zero adverse impact on agro – ecosystem quality by balanced fertilization of organic manures, inorganic fertilizers and bio- inoculant.

Determinants

1) Nutrient requirement of cropping system as a whole.
2) Soil fertility status and special management needs to overcome soil problems, if any
3) Local availability of nutrients resources (organic, inorganic and biological sources)
4) Economic conditions of farmers and profitability of proposed INM option.
5) Social acceptability.
6) Ecological considerations.
7) Impact on the environment.

Other Advantages

1) Provides balanced nutrition to crops and minimizes the antagonistic effects resulting from hidden deficiencies and nutrient imbalance.
2) Improves and sustains the physical, chemical and biological functioning of soil.

Source:
https://agritech.tnau.ac.in/agriculture/agri_nutrientmgt_integrntrientmgt.html#:~:text=Integrated%20Nutrient%20Management%20refers%20to,components%20in%20an%20integrated%20manner.

Q.39) Consider the following statements regarding the Experimental Advanced Superconducting Tokamak (EAST):

1. It is designed to replicate the nuclear fusion process to provide almost infinite clean energy.
2. China is the only country to achieve high plasma temperatures using Tokamak advanced research.
3. The EAST project is part of the International Thermonuclear Experimental Reactor (ITER) project.

Which of the statements give above is/are correct?

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

Ans) a

Exp) Option a is correct.

Statement 1 is correct. Experimental Advanced Superconducting Tokamak (EAST) reactor is an advanced nuclear fusion experimental research device. EAST is located at the Institute of Plasma Physics of the Chinese Academy of Sciences (ASIPP) in Hefei, China.

It is designed to replicate the nuclear fusion process that occurs naturally in the sun and stars to provide almost infinite clean energy through controlled nuclear fusion, which is often **dubbed the "artificial sun."**

The nuclei of **deuterium and tritium both found in hydrogen are made to fuse together to create a helium nucleus,** a neutron along with a whole lot of energy.

Statement 2 is *incorrect*. China set a record of achieving a plasma temperature at 120 million degrees Celsius for more than 100 seconds. And also in 2020, **South Korea's KSTAR reactor set a new record** by **maintaining a plasma temperature of over 100 million degrees Celsius for 20 seconds. Thus, China is not the only country to achieve the feat.**

Statement 3 is correct. The EAST project is part of the International Thermonuclear Experimental Reactor (ITER) facility, which will become the world's largest nuclear fusion reactor when it becomes operational in 2035.

The project includes the contributions of several countries, including India, South Korea, Japan, Russia, China, the EU and the United States.

Knowledge Base: Apart from the EAST, China is currently operating the HL-2A reactor as well as J-TEXT. In December 2020, HL-2M Tokamak, China's largest and most advanced nuclear fusion experimental research device, was successfully powered up for the first time — a key milestone in the growth of China's nuclear power research capabilities.

The Experimental Advanced Superconducting Tokamak (EAST) reactor is an advanced nuclear fusion experimental research device located at the Institute of Plasma Physics of the Chinese Academy of Sciences (ASIPP) **in Hefei, China**. The purpose of the artificial sun is to **replicate the process of nuclear fusion**, which is the same reaction that powers the sun.

Advantages of the Nuclear fusion

- Does not generate large quantities of waste.
- Does not emit greenhouse gases
- Considered a safer process with lower risk of accidents.
- Once mastered, nuclear fusion could potentially provide unlimited clean energy and very low costs.

Source: https://indianexpress.com/article/explained/explained-what-is-chinas-artificial-sun-experimental-fusion-reactor-that-has-set-a-new-record-7341397/

Q.40) Which of the following statements is correct with reference to groundwater usage in India?

a) Agriculture sector is the largest user of groundwater in India.

b) The level of groundwater extraction in India is among the lowest in the World.

c) The dependence on groundwater for domestic purposes is more in urban areas than rural areas.

d) The level of groundwater utilisation is lowest in the north-western region of India.

Ans) a

Exp) Option a is correct.

About **90% of ground water** extracted is used in the agriculture (irrigation) sector**,** making it the highest category user in the country.

In India, the availability of surface water is greater than ground water. However, owing to the decentralised availability of groundwater, it is easily accessible and forms the largest share of India's agriculture and drinking water supply.

Option b is *incorrect*. India is the largest extractor of groundwater in the World. It extracts nearly 25% of the world's groundwater, according to UNESCO.

Countries having largest estimated annual groundwater extractions:

Country	Population 2010 (in thousands)	Groundwater extraction			
		Estimated groundwater extraction 2010 (km^3/yr)	Breakdown by sector		
			Groundwater extraction for irrigation (%)	Groundwater extraction for domestic use (%)	Groundwater extraction for industry (%)
India	1224614	251.00	89	9	2
China	1341335	111.95	54	20	26
United States	310384	111.70	71	23	6
Pakistan	173593	64.82	94	6	0
Iran	73974	63.40	87	11	2

Option c is *incorrect*. **50% of urban** domestic water requirements and **85% of rural** domestic water requirements are fulfilled by **ground water.**

Option d is *incorrect*. The level of groundwater utilisation is **relatively high in the river basins lying in north-western region and** parts of south India. The groundwater utilisation is very high in the states of Punjab, Haryana, Rajasthan, and Tamil Nadu. However, there are States like Chhattisgarh, Odisha, Kerala, etc., which utilise only a small proportion of their groundwater potentials.

Knowledge Base: Water falls under the State List of the Constitution.

Source:

https://www.prsindia.org/administrator/uploads/general/1455682937~~Overview%20of%20Ground%20Water%20in%20India.pdf

https://www.indiawaterportal.org/articles/key-successfully-managing-groundwater-india

Q.41) Consider the following statements with reference to the location of petroleum refineries in India:

1. Petroleum refineries must be located near oil producing centres due to high transportation cost of raw material involved.

2. Petroleum refineries cannot be located near coastal areas due to associated operational challenges.

Which of the statements given above is/are correct?

a) 1 only

b) 2 only

c) Both 1 and 2

d) Neither 1 nor 2

Ans) d

Exp) Option d is correct.

Statement 1 is *incorrect.* Petroleum refineries can be located near oil producing centres **or near markets away from oil producing fields. Thus, petroleum refiners can be Field based or Market based.** Oil refining close to production site represents a weight loss of 10-11 % only so not much cost saving in transport even if located near raw material site.

Filed based oil refinery is one which is located near the source of oil extractions so that the process of refining oil becomes economical. Eg- **Digboi** in Assam. **Market based oil refinery** is one which is located closer to the market for selling or export of the refined oil. Eg – **Barauni** refinery in **Assam, Jamnagar refinery** in Gujarat.

Statement 2 is *incorrect.* Petrochemical refineries can be located in coastal regions. They are located on the coast to **facilitate export. For ex: Haldia Refinery** is a coastal refinery.

Source: India -People and Economy-Class-XII Ch-7 Mineral and Energy Resources

Q.42) The term 'Nanomicelles' was in the news recently. It refers to

a) Hydrogen Fuel Cells developed by Council of Scientific and Industrial Research.

b) Low-cost nanometer-scale carbon monoxide (CO) sensor by ISRO.

c) Targeted drug delivery system to treat cancer.

d) Manufacturing of lighter and efficient spacecraft by SpaceX.

Ans) c

Exp) Option c is correct.

Nanomicelles are nanomolecular structures used in the treatment of disease. They have a **hydrophilic outer shell and a hydrophobic exterior**, making them capable of **delivering poorly water-soluble drugs and protecting drug molecules**.

Features:

1) Small size (10 – 100 nm)
2) Capability to solubilize lipophilic drugs in various levels of drug loading, low toxicity
3) Ability to conjugate with target ligand and stimuli-sensitive regions.

A prime application of nanomicelles for **sustained drug delivery in ophthalmology** is the use of topical formulations that enable drug delivery to the posterior and anterior segments of the eye.

Anti-cancer drug therapy

Nanomicelles are also hypothesized to improve cancer treatment through overcoming drug resistance, improving anti-cancer drug efficacy, and reducing drug toxicity.

Anti-cancer drug nanomicelles formed by the self-assembly of the amphiphilic dendrimer are believed to alleviate drug resistance among cancer cells. Near-infrared (NIR) light-triggered polymeric nanomicelles have been found

useful in photoactive delivery and imaging in the early diagnosis of cancer management. Under NIR light irradiation, nanomicelles could be spatially and temporally released.

Source: https://www.thehindu.com/sci-tech/science/nanomicelles-using-nanoparticles-for-cancer-treatment/article33426073.ece

https://www.news-medical.net/health/Applications-of-Nanomicelles.aspx

Q.43) As per the definition given by Census 2011, which of the following is/are the criteria for recognition as a Census Town?

1. A minimum population of 10,000.
2. At least 75 per cent of the male main working population engaged in non-agricultural pursuits.
3. A density of population of at least 500 persons per sq. km.

Select the correct answer using the code given below:

a) 2 only

b) 1 and 2 only

c) 2 and 3 only

d) 1, 2 and 3

Ans) a

Exp) Option a is correct.

As per 2011 Census, all places which satisfy the following criteria are called as **Census Towns:**

1) A minimum population of 5,000;
2) At least 75 per cent of the male main working population engaged in non-agricultural pursuits; and
3) A density of population of at least 400 persons per sq. km.

Source: Page No. 92 from Fundamentals of Human Geography NCERT Class XII

https://censusindia.gov.in/2011-prov-results/paper2/data_files/India2/1.%20Data%20Highlight.pdf

Q.44) With reference to Uranium, consider the following statements:

1. Uranium deposits in India occur in the Dharwar rock system.
2. Australia, Kazakhstan, and Canada are major uranium producers in the world.
3. Aravalli hills has one of the major uranium reserves in India.

Which of the statements given above is/are correct?

a) 1 and 2 only

b) 2 and 3 only

c) 1 and 3 only

d) 1, 2 and 3

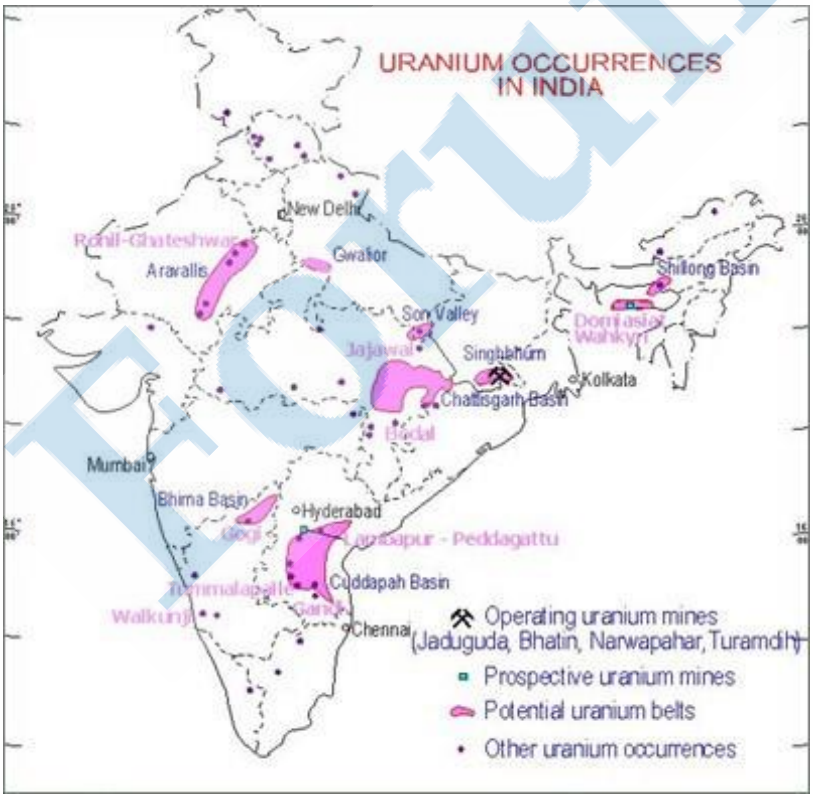
Ans) d

Exp) Option d is correct.

Statement 1 is correct. Important minerals used for the generation of nuclear energy are uranium and thorium. **Uranium deposits** occur in the **Dharwar** rocks.

Statement 2 is correct. Over two-thirds of the **world's production of uranium** from mines is from **Kazakhstan, Canada and Australia**. An increasing amount of uranium, now over 50%, is produced by in situ leaching. **Kazakhstan** produces the largest share of uranium from mines (**42% of world supply** from mines in 2019), followed by Canada (13%) and Australia (12%).

Statement 3 is correct. Aravalli hills in Rajasthan has some of the major reserves of Uranium in India. Geographically, uranium ores are known to occur in several locations along the **Singbhum Copper** belt (**Jaduguda mines**). It is also found in **Udaipur, Alwar and Jhunjhunu** districts of **Rajasthan**, Durg district of **Chhattisgarh**, Bhandara district of **Maharashtra** and **Kullu** district of **Himachal** Pradesh. Significant quantity of reserves was recently discovered in parts of **Andhra Pradesh and Telangana** between **Seshachalam forest and Sresailam** (Southern edge of Andhra to Southern edge of Telangana).



Knowledge Base: India has **the largest deposits of Thorium** in the world which is a fertile material. Thorium is mainly obtained from monazite and ilmenite in the beach sands along the coast of Kerala and Tamil Nadu. World's richest monazite deposits occur in Palakkad and Kollam districts of Kerala, near Vishakhapatnam in Andhra Pradesh and Mahanadi River delta in Odisha.

Source: https://www.downtoearth.org.in/news/energy/authorities-move-a-step-closer-to-mining-the-aravallis-for-uranium-62599

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https://www.world-nuclear.org/information-library/nuclear-fuel-cycle/mining-of-uranium/world-uranium-mining-production.aspx

Q.45) Consider the following pairs:

Defence system	*Description*
1. IMSAS	All-weather electronic surveillance system
2. ASTRA	Beyond Visual Range (BVR) Air-to-Air Missile
3. BOSS	Intelligent software system

Which of the pair/pairs given above is/are correctly matched?

a) 1 and 2 only

b) 2 only

c) 2 and 3 only

d) 1, 2 and 3

Ans) b

Exp) Option b is correct.

Pair 1 is *incorrectly* matched. Indian **Maritime Situational Awareness System (IMSAS)** is a fully indigenous, high performance **intelligent software system** that provides **Global Maritime situational picture**, marine planning tools and Analytical capabilities.

Pair 2 is correctly matched. Astra is the indigenously developed Beyond Visual Range Air-to-Air Missile (BVRAAM). The missile has a range of over 70 km. It can fly towards the target at a speed of over 5,555 km per hour.

Pair 3 is *incorrect*ly matched. The Border Surveillance System (BOSS) is an "all-weather" electronic surveillance system successfully designed and developed by Instruments Research & Development Establishment (IRDE), Dehradun and has been **deployed at Ladakh border area for day and night surveillance.** It facilitates monitoring and surveillance by **automatically detecting the intrusions in harsh high-altitude sub-zero temperature areas with remote operation capability.**

All three defence systems are developed by the DRDO.

Source: https://indianexpress.com/article/india/rajnath-hands-three-new-systems-built-by-drdo-to-armed-forces/

https://blog.forumias.com/astra-missile/

Q.46) This cash crop is a crop of tropical areas. Under rainfed conditions, it is cultivated in sub-humid and humid climates. But it is largely an irrigated crop in India. In southern India, it is cultivated in irrigated tracts of Karnataka, Tamil Nadu, Telangana and Andhra Pradesh. Its yield is low in northern India.

Identify the crop based on the information given in above paragraph:

a) Sugarcane

b) Groundnut

c) Tea

d) Cotton

Ans) a

Exp) Option a is correct.

Sugarcane is a crop of **tropical areas**. Under rainfed conditions, it is cultivated in **sub-humid** and **humid climates**. But it is **largely an irrigated crop in India**. In Indo-Gangetic plain, its cultivation is largely **concentrated in Uttar Pradesh**. Sugarcane growing area in western India is spread over Maharashtra and Gujarat. In southern India, it is cultivated in irrigated tracts of Karnataka, Tamil Nadu, Telangana and Andhra Pradesh. It occupies only 2.4 per cent of total cropped area in the country. Uttar Pradesh produces about two-fifth of sugarcane of the country. Maharashtra, Karnataka, Tamil Nadu, Telangana and Andhra Pradesh are other leading producers of this crop where yield level of sugarcane is high. Its **yield is low in northern India.**

Option b is *incorrect*. Groundnut is largely a **rainfed kharif crop of drylands**. But in southern India, it is **cultivated during rabi season as well**. It covers about 3.6 per cent of total cropped area in the country. Gujarat, Tamil Nadu,

Telangana, Andhra Pradesh, Karnataka and Maharashtra are the leading producers. **Yield of groundnut** is comparatively **high in Tamil Nadu** where it is partly **irrigated**. But its yield is low in Telangana, Andhra Pradesh and Karnataka.

Option c is *incorrect*. **Tea** is a **plantation crop** used as beverage. Black tea leaves are fermented whereas green tea leaves are unfermented. Tea leaves have rich content of **caffeine and tannin**. It is an indigenous crop of hills in **northern China**. It is grown over undulating **topography of hilly areas** and **well drained soils in humid and sub-humid tropics and sub-tropics**. In India, tea plantation started in 1840s in Brahmaputra valley of Assam which still is a major tea growing area in the country. Later on, its plantation was introduced in the sub-Himalayan region of West Bengal (Darjiling, Jalpaiguri and Cooch Bihar districts). Tea is also cultivated on the lower slopes of Nilgiri and Cardamom hills in Western Ghats. **Assam accounts for about 53.2 per cent of the total cropped area and contributes more than half of total production of tea in the country. West Bengal and Tamil Nadu** are the other leading producers of tea.

Option d is *incorrect*. **Cotton** is a **tropical crop grown in kharif season** in semi-arid areas of the country. India grows both **short staple (Indian) cotton as well as long staple (American) cotton called 'narma'** in north-western parts of the country. **Cotton requires clear sky** during **flowering** stage. There are **three cotton growing areas**, i.e. parts of Punjab, Haryana and northern Rajasthan in north-west, Gujarat and Maharashtra in the west and plateaus of Andhra Pradesh, Karnataka and Tamil Nadu in south. Leading producers of this crop are Maharashtra, Gujarat, Andhra Pradesh, Punjab and Haryana. Per hectare output of cotton is high under irrigated conditions in north-western region of the country. Its **yield is very low in Maharashtra** where it is grown under **rainfed** conditions.

Knowledge Base: A **cash crop** or profit crop is an agricultural crop which is grown to sell for profit and not for the farmer's family consumption.

Source: India -People And Economy-Class-XII Ch-5 Land Resources and Agriculture

Q.47) With reference to India's crude oil production, consider the following statements:

1. India's crude oil production has shown a declining trend during 2011 to 2020.
2. Ageing wells becoming less productive over time has led to the decline in production.
3. Lack of private sector participation in oil exploration and extraction is a reason for the decline in production.

Which of the statements given above is/are correct?

a) 1 and 2 only

b) 2 and 3 only

c) 1 and 3 only

d) 1, 2 and 3

Ans) d

Exp) Option d is correct.

Statement 1 is correct. India's crude oil production fell by 5.2 per cent in the FY21. India's crude oil and natural gas production have been **falling consistently since 2011-12.**

Fig. Data on X-axis is for number of thousand barrels per day

Statement 2 is correct. Most of India's crude oil and natural gas production comes from **ageing wells** that have **become less productive over time**. There was no more easy oil and gas available in India and that producers need to invest in extracting oil and gas using technologically intensive means from more difficult fields such as ultradeep water fields.

Statement 3 is correct. Key reasons for **low private participation** in India's upstream oil and gas sector are delays in the operationalisation of hydrocarbon blocks due to delays in major clearances including **environmental clearances** and **approval** by the regulator of field development plans. Industry players have been calling for a **reduction in the cess** on domestically produced crude oil to 10 per cent from the current 20 per cent. **Internal maximum production levels** set by oil and gas majors to address climate change had also lowered interest by oil majors to expand operations in India.

Knowledge Base: **Crude petroleum occurs** in sedimentary rocks of the tertiary period. In Assam, Digboi, Naharkatiya and Moran are important oil producing areas. The major oil fields of Gujarat are Ankaleshwar, Kalol, Mehsana, Nawagam, Kosamba and Lunej. Mumbai High which lies 160 km off Mumbai was discovered in 1973 and production commenced in 1976. Oil and natural gas have been found in exploratory wells in Krishna-Godavari and Kaveri basin on the east coast.

Source: https://tradingeconomics.com/india/crude-oil-production

https://indianexpress.com/article/explained/why-indias-oil-and-gas-production-is-falling-7282906/

Q.48) Which of the following could be the reasons for Bangladesh overtaking India in textile exports?

1. Lower labour wages in Bangladesh

2. Free trade agreements of Bangladesh with different countries

3. Greater competitiveness and larger size in factories of Bangladesh

4. Expensive imports of raw material for India

Select the correct answer using the code given below:

a) 1, 2 and 3 only

b) 1, 2 and 4 only

c) 3 and 4 only

d) 1, 2, 3 and 4

Ans) d

Exp) Option d is correct.

India's textile exports declined marginally last year to $36.26 billion from $37.14 billion recorded in the year 2014-'15. In apparel, **Bangladesh's exports to the US grew** by a whopping 12% in 2015 while Vietnam did even better as its exports rose by 14%. India, on the other hand, saw its exports grow just by 8%.

An **analysis by CRISIL** points out that **India has lost market share in cotton yarn** over the past decade to countries such as Vietnam and Bangladesh due to **high cost and lack of FTAs** (Free Trade Agreements) amid intensifying competition.

Factors –

1) **Small factory size in India** - India's garment factories are too small; they typically have 150 people and about 80 machines while the average factory in Bangladesh has 600 people.
2) Bangladesh has signed many **FTA** with various countries which are lacking for India and hence reduced the competitiveness of our exports
3) Lower wages in Bangladesh due to **relaxed labour laws**
4) **Reducing cotton production and expensive imports** due to lack of FTAs

Knowledge Base: The share of the textile sector in the total Indian merchandise exports declined from 24 per cent in 2001 to 11 per cent in 2020. Cotton yarn contribution in Indian export basket declined during the same period from 2 per cent to approximately 1 per cent, and Ready-Made Garments (RMG) share of exports declined from 11 per cent to 4 per cent.

Source: https://www.business-standard.com/article/economy-policy/why-india-is-losing-out-to-neighbouring-bangladesh-in-textile-exports-119011600778_1.html

https://www.theweek.in/news/biz-tech/2021/07/20/indias-share-in-global-exports-of-textile-shrinks-due-to-high-cost-lack-of-ftas.html

Q.49) With reference to the types of multi-cropping systems, consider the following statements:

1. Intercropping refers to growing two or more crops simultaneously in a definite cropping pattern.

2. Relay cropping involves growing more than one crop simultaneously without any distinct row arrangements.

3. Mixed intercropping involves growing two or more crops on the same field with planting of second crop before harvesting the first crop.

Which of the statements given above is/are correct?

a) 1 only

b) 2 and 3 only

c) 1 and 3 only

d) 1, 2 and 3

Ans) a

Exp) Option a is correct.

In multi cropping system, farmers grow two or more crops on farmland in one calendar year (unlike mono-cropping that involves planting only one crop on a field). It includes inter-cropping, mixed-cropping and relay cropping. Multi cropping system is common in tropical regions having more rainfall, higher temperatures, and a longer growing season.

Statement 1 is correct. Intercropping refers to growing two or more crops simultaneously in a definite cropping pattern in proximity. The most common goal of intercropping is to produce a greater yield on a given piece of land by making use of resources that would otherwise not be utilized by a single crop.

Statement 2 is incorrect. Relay cropping involves growing of two or more crops on the same field with the planting of the second crop after the first one has reached its reproductive stage but well before harvesting of second crop.

Statement 3 is incorrect. Mixed intercropping involves growing more than one crop simultaneously without any distinct row arrangement.

Source: https://www.vedantu.com/biology/difference-between-mixed-cropping-and-intercropping

https://www.gktoday.in/topic/relay-cropping/

Q.50) In the context of population pyramid, consider the following statements:

1. It can be used to compare differences between male and female population of an area.

2. A stationary trend in the graph is represented by square or pillar shape rather than a pyramid.

3. India's population pyramid is bottom heavy.

Which of the statements given below are correct?

a) 1 and 3 only

b) 2 and 3 only

c) 1 and 2 only

d) 1, 2 and 3

Ans) d

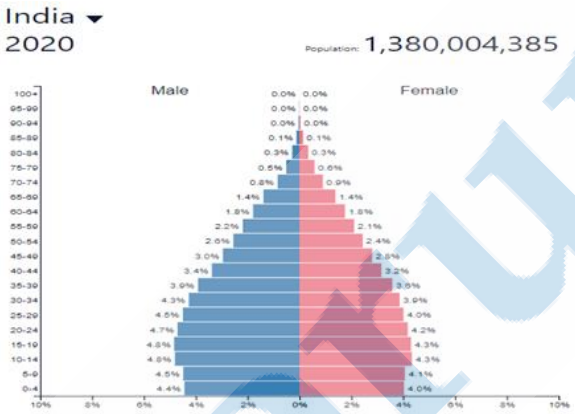
Exp) Option d is correct.

Statement 1 is correct. A population pyramid is a way to visualize two variables: age and sex. They are used by demographers, who study populations. A population pyramid is a graph that shows the distribution of ages across a population divided down the center between male and female members of the population.

A population pyramid can be used to compare differences between male and female populations of an area.

Statement 2 is correct. The "stationary" trend which is a population with low mortality and low fertility rates. **These graphs have a square or "pillar" shape rather than a pyramid one**. These population pyramids represent a stable population that will not change significantly barring any sudden changes to fertility or mortality rates.

Statement 3 is correct. As shown in the below figure, India's population pyramid is bottom heavy.



Source) https://www.nationalgeographic.org/encyclopedia/population-pyramid/

https://www.populationpyramid.net/world/2019/