



An Institute for Civil Services

IAS TOPPER'S

TEST COPY

AMRITPAL KAUR

Rank - 11

GS Mains

Geography, Disaster Management & Agriculture



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GEOGRAPHY, DISASTER MANAGEMENT AND AGRICULTURE

Time Allowed: 3 hrs.

Max. Marks: 250

Q.	Marks	Instructions to Candidate
1.		<ul style="list-style-type: none">• There are 20 questions.• All questions are compulsory.• The number of marks carried by a question is indicated against it.• Answers to questions no. 1 to 10 should be in 150 words, whereas answers to questions no. 11 to 20 should be in 250 words.• Keep the word limit indicated in the questions in mind.• Answers must be written within the space provided.• Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off.
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Name Amritpal Kaur

Roll No. _____

Mobile No. _____

Date _____

Signature Amritpal Kaur

REMARKS

GS SCORE

GS MAINS TEST SERIES 2018

Section - A

Q1. Discuss the major features of Tropical Rainforest Biomes. How Human activities are impacting these biomes? (10 Marks)

Tropical rainforest biomes are found between $23\frac{1}{2}^{\circ}\text{N}$ and $23\frac{1}{2}^{\circ}\text{S}$.

The major features of these biomes are:

- 1) No clear seasons such as summer of winter
- 2) Annual mean temperature variation is very small.
- 3) Precipitation in the form of rainfall is a daily phenomenon.
- 4) A large diversity in plants, insects and animals.
- 5) The soil is not very rich in organic matter because of fast ~~to~~ microbial action.
- 6) Thick canopy of trees due to variety of trees of different heights; at places sunlight does not even reach forest floor.

Remarks

Human activities are affecting these biomes as :

- 1) Deforestation is leading to loss of forest cover and affecting species diversity eg. Amazon forests.
- 2) Increasing vulnerability to disasters such as floods due to loss of mitigating impact of vegetation cover.
- 3) Anthropologically caused climate change is raising temperatures increasing pressure on carbon cycle in rainforests.
- 4) Construction activities and human encroachment is altering the landscape and eg. Wetland Ghats.

Remarks

Q2. India is slowly cleaving into two countries- a richer, older South and a poorer, younger North. Critically analyze.

(10 Marks)

The economic growth of India has regional variations with pockets of extreme backwardness simultaneously existing with modernity elsewhere.

The southern states such as Kerala, Karnataka, Telangana, Tamil Nadu are:

- 1) more literate
- 2) have better human development indices
- 3) contribute much more to exports (Economic survey data)
- 4) succeeded in family planning with total fertility rate almost at 2.1.

On the other hand, the northern states such as :

- 1) Bihar have higher incidence of maternal and child mortality.
- 2) Uttar Pradesh has highest population

Remarks

3) ~~Haryana~~ Odisha has widespread poverty and malnutrition.

However, states such as Haryana have done well on ease of doing business. Punjab has come close to replacement fertility rate.

Similarly, Rajasthan has taken lead in family planning issues through Saas Bahu Sammelans.

The disparity between north and south is slowly getting bridged especially with the holistic focus on unique problems of areas through programmes such as Aspirational districts. It is hoped that inclusive growth is, thus, not a pipe dream anymore.

Remarks

Q3. Critically examine the Malthus theory of population growth and discuss its relevance in context of India? (10 Marks)

Malthus theory of population holds that the rate at which population increases is much higher than the rate of growth of food production, thereby increasing the likelihood of hunger.

In the context of India the following can be noted :

- 1) The rate of growth of population has decreased consistently since 1970s; it's at about 17% according to 2011 census
- 2) On the other hand, food production has been record high in 2017-18.
- 3) Schemes such as Poshan Abhiyan and National Food Security Act, 2013 ensure ~~that~~ not only sufficient food but nutritional security too.

Remarks

- 4) According to minister of state for food processing, 40% of food is wasted every year.
- 5) According to FAO, India will have to increase production by 75% to meet needs of population by 2050.
- 6) According to United Nations Development Programme, climate change is reducing yields, especially in arid and rainfed regions. India's 54% area is non-irrigated.

In light of these circumstances, India is at a safe position at present. But we have to reduce wastage, increase saving processing and mitigate the impacts of climate change to stay safe and avoid the Malthusian prediction.

Remarks

Q4. Critics argue that organic farming is inefficient and requires more land than conventional agriculture to yield the same amount of food. Do you agree? Critically analyze the potential of organic farming in solving hunger problem and its economic viability for farmers.

(10 Marks)

Organic farming is said to be inefficient because it takes a few years to yield adequate returns. It takes time to rid the soil of residual chemicals for organic cultivation.

Secondly, if suitable seeds, manure, irrigation and caretaking is used, organic farming can give similar yield eventually. So, the critics' statement is not agreeable.

Organic farming at a large scale as conventional farming cannot solve the hunger problem because:

- 1) The inputs are costlier
- 2) A lot of care and manpower is required which raises cost of production
- 3) It is prone to ~~climatic variation~~ damage

Remarks

by extreme weather events.

However, it can be economically viable for farmers if done on consolidated packets of land where economies of scale help. Also, the high premium that urban markets place on organic products can fetch handsome returns.

It is in this context that schemes such as Paramparagat Kishi Vikas Yojana support cluster based organic production. Similarly, this year's budget has also proposed to help women's SHGs to take up organic farming in clusters under NRLM.

Remarks

Q5. 'Animal rearing is a key livelihood and risk mitigation strategy for tribals and small and marginal farmers, particularly across the rainfed regions of India'. Substantiate; also discuss some strategies to realize the potential of this sector? (10 Marks)

Animal rearing includes cattle rearing, piggery, poultry and sale of the products such as milk, meat, eggs and animal fibre.

It aids livelihood for tribals and small farmers by :

- 1) providing a source of income
- 2) helping set up shops and small enterprises such as dhabas

It mitigates risk by :

- 1) ensuring income in case crops fail due to deficient monsoon or floods.
- 2) providing food and nutrition in case of cash crunch.
- 3) can serve as collateral or be sold to pay off emergency expenses.

Remarks

Some strategies to realize the potential of the sector are :

- 1) Insuring processing and storage facilities in case of oversupply to prevent distress ~~sell~~ sale. eg. Mega food parks ,
- 2) Providing logistics and connectivity for evacuation to urban areas as well as exports eg. Kadhan Mantri Gram Sadak Yojana , Sagarmala ,
- 3) Provision of productive breeds eg. Rashtriya Gokul Mission
- 4) Utilization of byproducts for production of power and organic manure eg. Gobar Dhan .

Remarks

Q6. What is mass movement? Discuss its various types?

(10 Marks)

Mass movement is the movement of a mass of earth, rocks, soil or boulders under the effect of gravity. ~~over~~ It can be gradual or sudden.

Its various types are :

- 1) landslide in which a large layer of land comes down a slope due to earthquake or flood caused loosening of soil.
- 2) Avalanche is the falling of rocks and boulders which lie loosely over a slope.

Remarks

Remarks

- Q7. Recently, India's Prime Minister has appealed for a "three-pillared" approach to farming, which included crop farming, agro-forestry and animal husbandry. Discuss what needs to be done to successfully implement this approach to bring about farmer's welfare.

(10 Marks)

The three pillared approach can help double farmer's income by 2022. A few steps which can be taken to implement this approach are discussed below;

For Crop farming:

- 1) liberalisation of trade in agricultural commodities for export earnings for farmers.
- 2) Provision of irrigation facilities to prevent crop failure as 54% area under cultivation is still rainfed.
PM Kisan Sinchayi Yojana can be expedited.
- 3) strengthening the marketing infrastructure and food processing clusters to promote competitive pricing and value addition, respectively. National Agricultural market and Sampada Yojana are right steps.

Remarks

Agro forestry

- 1) Provision of quality seeds and saplings
- 2) Scientific assistance in survival of trees as well as trees according to the climate of the area should be grown

The National policy on agro forestry has key provisions to promote agro forestry.

Animal husbandry

- 1) Value addition infrastructure in the form of processing industries close to villages.
- 2) Cold chain and logistics facilities for transport to far off markets
- 3) Productivity enhancement measures for animals as well as good quality, disease resistant breeds.
- 4) Adequate utilization of by products.

Remarks

- Q8. India need significant focus in agriculture research through projects like TIGR2ESS using multi-partner approach to deliver a second, more sustainable Green Revolution. In this context, discuss TIGR2ESS project funded by Global Challenges Research Fund (GCRF) by Research Councils UK in India.

(10 Marks)

The Green revolution of 1960's ushered India into era of self sufficiency in food. It came with certain negative externalities such as overuse of fertilizers causing soil degradation, irrigation channels causing salinization of land and over emphasis on wheat and rice.

To turn towards a more sustainable and inclusive Green Revolution TIGR2ESS is envisaged for :

- 1) Promoting equitable focus on other, less resource intensive yet nutritious crops such as coarse cereals.
- 2) Aiding areas in eastern India such as Bihar, Odisha, West Bengal which were left behind earlier.

Remarks

- 3) Utilizing scientific and technical assistance from ~~across~~ UK to apply best practices from regions across the globe to Indian agriculture.
- 4) Inclusive growth of small ~~far~~ and marginal farmers who could not benefit from green revolution. These farmers constitute ~~85~~ 85% of agricultural ~~households~~ households as per 5th Agricultural Census.
- 5) Provision of inputs such as seeds, fertilizers and irrigation depending upon the moisture content and soil fertility by scientifically evaluating the field's conditions.

TIGR 2ESS can go a long way in fostering and mainstreaming sustainable agricultural practices.

Remarks

- Q9. Why fishing industry is well developed on the western coast of India than eastern coast? Discuss the recent steps taken by the Indian government for the growth of this sector. Also discuss why commercial fishing is less developed in southern hemisphere?

(10 Marks)

Fishing industry is well developed on the western coast of India than eastern coast due to following reasons:

- 1) vicinity to ports such as TNPT, Marmagao, Mumbai, Cochin and others from which container ships can take them to markets in West Asia and beyond.
- 2) The nature of the coast is emergent, providing more depth and greater catch at closer distances than eastern coast.
- 3) The Arabian sea is open to the Indian ocean and the mixing of waters enables better fishing grounds unlike Bay of Bengal.

Remarks

Indian government has taken steps such as :

- 1) Sagarmala for coastal community development and promoting exports ~~from trade~~ from ports of fishing industry products.
- 2) Multi modal logistics parks to connect to hinterland for supply to domestic market.

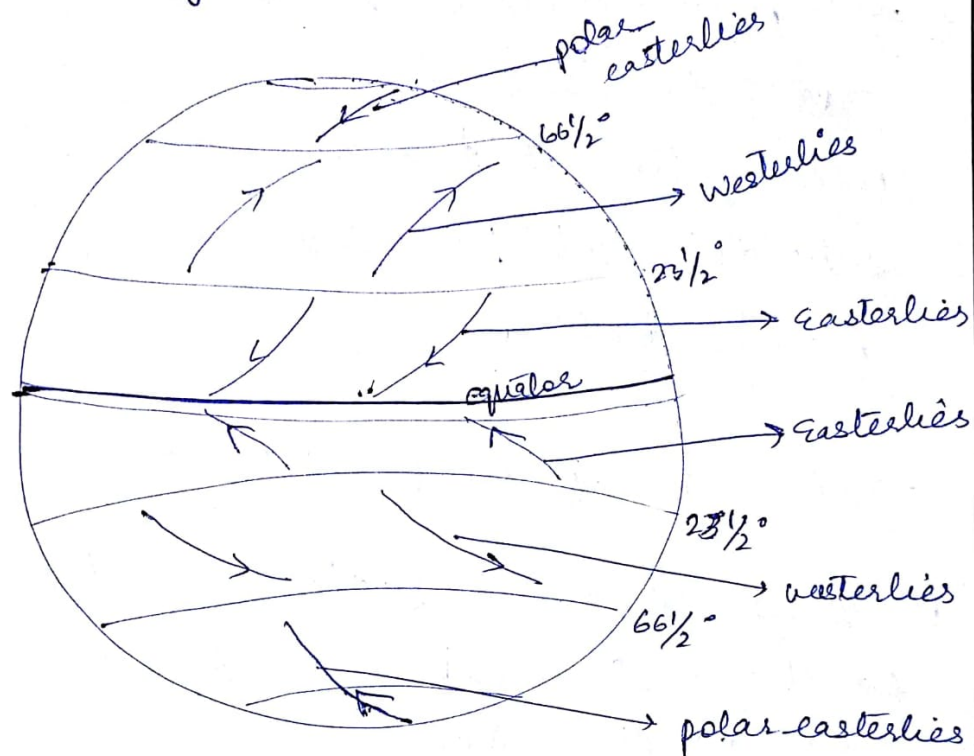
Commercial fishing is less developed in southern hemisphere because :

- 1) population is less and hence demand is less.
- 2) it does not lie on major trade routes, so exports are not as easy as in northern hemisphere.
- 3) Fishing is not very easy due to fast prevailing winds eg. Roaring forties.

Remarks

Q10. While discussing the causes of formation of planetary winds elaborate on their major characteristics. (10 Marks)

The planetary winds are shown below.



The causes of formation of planetary winds are:

- 1) The rotation of the earth and coriolis force
- 2) The unequal heating of the earth's surface due to axial tilt and geoid shape causes temperature variations and pressure gradients

Remarks

- 3) This pressure gradient causes air from equator to rise and move towards poles, getting cold on the way. and subsiding at the tropical high pressure belts.

their major characteristics are:

- 1) they are much faster in the southern hemisphere due to absence of land mass-
- 2) they carry moisture and cause precipitation.
- 3) the westerlies have a ^{cold} mitigating effect on the colder boundaries of continents in the mid latitudes.

Remarks

Section - B

- Q11. Gulf Dust storm is considered as one of the contributing factor (apart from stubble burning) behind the smog that had smothered Delhi and its neighborhood, as per Scientific Assessment of Delhi Winter Air Quality Crisis Report by SAFAR. Elaborate on the factors that increase dust storm and analyze its impact on Indian weather? (15 Marks)



Dust storms from the gulf countries bring dust to Indian subcontinent

The dust from the Gulf areas had smothered Delhi recently. A number of other factors increase dust such as:

- 1) Deforestation and land degradation loosens soil particles which are easily lifted by wind.

Remarks

- 2) The neighbouring states of Haryana and Rajasthan are dry. Thar Desert dust also ends up adding dust to storms.
- 3) Construction activity releases dust too.
- 4) Cyclonic depressions due to overheating of landmass get intensified over dry and hot areas causing dust storms.
- 5) Western disturbances bring rainfall

Dust storms have the following effect on Indian weather besides disrupting daily life, causing accidents and deaths:

- 1) Lead to poor visibility and increase

Remarks

in particulate matter in air.

2) May cause rainfall if moisture laden winds come in, as happened in recent times when easterly moisture laden winds came in from Bay of Bengal.

3) They cause fast winds.

The impact of dust storms can be mitigated by planting trees and reducing availability of dust from man made causes such as construction or unsustainable land use which causes land degradation.

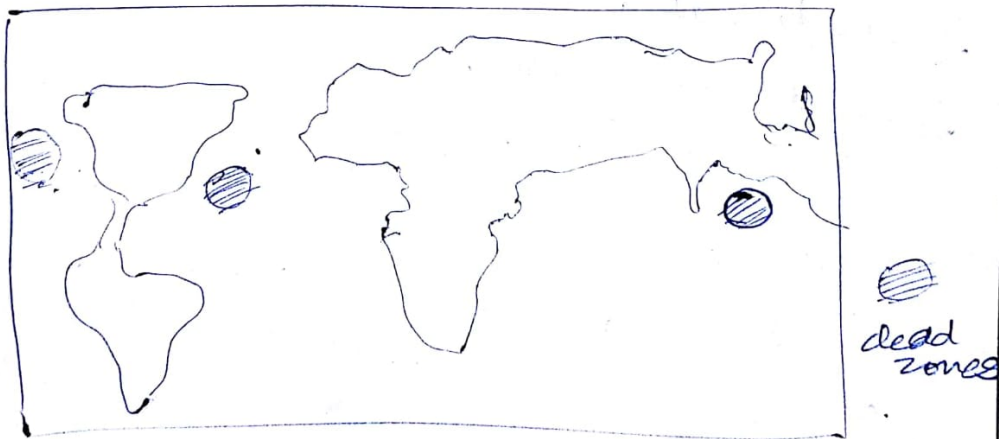
Remarks

Q12. Oceans are suffocating, as dead zones have quadrupled in size since 1950s. In this context, discuss the causes and effects of Ocean Dead Zones on marine ecosystem.

(15 Marks)

Ocean dead zones have been observed all over the world from Pacific and the Caribbean to the Bay of Bengal.

A dead zone in the ocean is a region where dissolved oxygen concentration is too low for marine vegetation or organisms to survive.



Remarks

The causes of dead zones are :

- 1) They occur naturally in certain areas due to the chemical conditions of ocean water therein.
- 2) Vigorous microbial action on pollutants from land and ships in the ocean consumes all the dissolved oxygen.
- 3) As oceans heat up due to global warming, certain areas of ocean are more prone to a reduced capacity to absorb and retain oxygen.
- 4) Climatic change induced stress on oceanic plants reduces their ability to photosynthesize and release oxygen.

Remarks

effects on marine ecosystem are:

- 1) Fall in ~~divers~~ diversity of species which reduces the prey population for those organisms higher up in the food chain.
- 2) Disruption of migration patterns of marine organisms whose routes pass through the dead zone.
- 3) Upsetting of nutrient balance of the ecosystem.
- 4) Reduction in the ability to degrade waste and ultimate total loss of life form from the zone.

To slow down and reverse the formation of dead zones, a concerted reduction in oceanic pollution from all fronts is the way forward.

Remarks

Q13. The United Nations Convention on the Law of the Sea (UNCLOS) not only protect the jurisdiction and economic rights of its member states overseas, but also the marine life and environment. Examine. (15 Marks)

The United Nations Convention on the Law of the Sea (UNCLOS) is the international treaty that sets norms, principles and rules of conduct on the seas.

UNCLOS delimits the Exclusive Economic Zones of maritime states upto 200 nautical miles (nm) or beyond depending on the extent of continental shelf. It also resolves any disputes over EEZ eg. in case of India and Bangladesh, the international tribunal ruling based on UNCLOS was mutually accepted by both parties.

Economic rights are directly enmeshed with the seas :

1) Fishing, oil and gas resources on the

Remarks

Continental shelves have high economic potential for maritime nations.

- 2) On the high seas, trade via container traffic and ships has to be secured and regulated as economies of countries depend on the commodities.

Both these facets are regulated according to the UNCLOS charter, thus securing the economic interests of nations.

UNCLOS is complementary to the MARPOL (marine pollution) convention which controls the commercial shipping industry's pollution potential. This helps to preserve marine life and protect environment.

Remarks

Remarks

Q14. Why are the west coast beaches receive more tourists and are more famous than east coast beaches in India? Also shed some light on India's Port led development initiatives.

(15 Marks)

India's 7500 km long coast has many beautiful beaches. The west coast beaches receive more tourists and are more famous than east coast beaches due to following reasons :

- 1) Western states have airports international airports much closer to the coast eg. Cochin, Mumbai, Goa, Mangalore unlike Hyderabad in eastern part.
- 2) The states such as Kerala and Goa have dedicated tourism campaigns such as Kerala's God's own country and Goa's music festivals which popularise these states.
- 3) a. Western coast's beaches are more beautiful due to the submergent coast which means ~~lesser~~ little

Remarks

continental shelf and more visible
trides and waves

- 4) West coast is closer to the tourists
from the Western hemisphere.

India's port led development initiatives
are :

i) Sagarmala

- connectivity to hinterland
- faster evacuation
- easy container traffic
- industrial clusters close to coast
for reducing coast cost due to
bulk raw material transport cost
- modernisation of ports
- new port development
- coastal community development

This will create jobs, modern
infrastructure, better logistics and
promote trade.

Remarks

2) Bharatmala to build and enhance efficiency of highways will be integrated with Sagarmala in a way to create reinforcement of the outcomes from each

These measures can boost private investment due to ease of doing business and exports, both of which are the two engines of long term growth as per the Economic Survey.

Remarks

Q15. Migration is a physical and social transformation and is also an instrument of cultural diffusion and social integration. Elaborate. Also, explain the nature of gendered mobility in India.

(15 Marks)

~~Migration in India~~

Migration is the movement of people from their place of usual residence or birth elsewhere for economic, political or other reasons such as disaster or war.

~~It is thus~~

It brings people of various races, languages, ethnicities, cultures and tastes to new places, transforming the physical appearance of the place as well as the social setup.

For instance, Mumbai is now more like a cosmopolitan city rather than the capital of Maharashtra or a representative of solely Maratha identity.

Remarks

Migration results in cultural diffusion
 eg: South Indian cuisine in a
Malayali software engineers working
 in IT Park Chandigarh

OR

celebration of Durga Pooja in Delhi

OR

Bhangra festival in Times Square

It is migration aids social integration
 eg: Common localities for people from
 different countries in Canada

OR

participation of migrants in
local elections and even winning
 eg: At American elections.

Mobility in India is gendered in nature,
 as has been pointed out by the Economic
 Survey through the feminisation of
 agriculture in rural areas as

Remarks

men of the households migrate to cities in the same or other states for better livelihood opportunities.

~~Other~~ The migration of women is mainly on account of marriage rather than jobs. This gendered mobility points towards the still largely entrenched notion of dependence of women on familial ties or the protective care of a male figure aka the husband which decides where the women are accepted to be geographically based.

Remarks

Q16. Population growth and urbanization rates will have dramatic impact on food security across the world by 2050. In light of this, discuss the role of Big-data and upcoming startups in bringing next green revolution in the Indian agriculture? Examine. (15 Marks)

Population growth will increase the demand for food and rising incomes will fuel demand for diversity in food products such as vegetables, fruits.

Urbanization will increasingly take up more land, leaving less for cultivation. Both these factors have consequences for food security.

Food and Agriculture Organization estimates that global production of food will have to rise by 75% to meet the demands by 2050.

In light of these developments, Big data and upcoming startups can aid in bringing next green revolution in Indian agriculture?

Remarks

- i) Prediction of weather with more precision for more localized conditions based on data collected and statistically analysed through advanced computing techniques developed by startups in technology sector.
- ii) Big data on crop yields from various experiments can provide insights into the exact type of soil conditions that aid best yield.
- iii) Startups can work with scientists in agriculture universities to develop innovative models on commercialization of climate-oriented crops eg. under the Unnat Bharat scheme.
- iv) Small startups in villages such as those under SVEP scheme can launch small projects in their villages to gradually build capacity in climate

Remarks

resilient and sustainable agriculture encompassing multicropping, organic farming, usage of technology such as weather alerts derived from big data, microirrigation and link ups with processing facilities through logistics portal for handsome returns as well as food security.

It is with such a combination of entrepreneurship and innovation riding on technological support that next green revolution can be ushered.

Remarks

Q17. Every hazard is unique in terms of local socio-environment factors that control it, social response it generates and the way each social group deals with it. Citing specific examples, examine the importance of the role of local government and community in dealing with disasters. (15 Marks)

The environment determines the type of hazard that exists in an area. The social response varies depending on the seriousness of the hazard as well as awareness among people. Each social group deals with hazard according to stakes involved.

In dealing with disasters, the local government plays a critical role as has been acceded by Sendai Framework also. The local government:

- 1) Is responsible for maintenance of mitigating factors before disaster occurs eg. Chennai floods were worsened by local bodies' failure to keep storm water drains unclogged.

Remarks

- 2) It guides the development of land in the area eg. the Uttarakhand floods and landslides caused heavy life loss because local bodies had not stopped encroachment on weak slopes.
- 3) It is the most immediate responder eg. During Phailin cyclone, Odisha was successful in limiting damage because local authorities effectively communicated early warnings and effected timely evacuation.

the community is equally important in dealing with disasters:

- 1) It contributes to the manpower in building back efforts eg. in Kerala, people have voluntarily turned up to clean heritage sites.

Remarks

- 2) It can limit loss of life by engaging in rescue efforts
eg. Kerala fishermen used their boats to evacuate people.
- 3) It is the best social adhesive to deal with the stress of a disaster eg. people bonded in cyclone shelters and mitigated the trauma during Phailin cyclone.
- Therefore, both local bodies and community have a responsibility in getting over and handling disasters.

Remarks

Q18. Drought is a broader concept than just deficiency of rainfall. Discuss, how drought is more of a man-made disaster than a mere deficiency of rainfall. Elaborate on the consequences of desertification that drought prone regions face. Also, bring out the preventive steps need to be taken in light of targets to curb desertification as mentioned under the SDGs. (15 Marks)

~~for~~ Drought is the lack of necessary amount of water required for meeting daily needs of people, livestock and agriculture.

Drought is, however, not a mere deficiency of rainfall because:

- 1) Rainfall is not the sole source of water.
- 2) Groundwater meets majority of the needs.

It is a man made disaster because:

- 1) Overuse of groundwater causes water table to get lowered resulting in dry regions.
- 2) encroachment of wetlands removes the points of recharge of natural

Remarks

aquifers, so if rainfall is deficient, people cannot even turn to natural sources.

- 3) Deforestation and uninhibited vegetation removal for urbanization also ~~drives~~ reduces soil moisture retention capacity.

Desertification prone regions face the following consequences:

- 1) Loss of agriculture based livelihood opportunities
- 2) Death of cattle and livestock due to non availability of fodder or water
- 3) Diseases due to lack of access to safe drinking water.
- 4) Widespread migration and de population

SDG 6 and SDG 15 cater to conservation of water and landscapes. Preventive

Remarks

steps can be :

- 1) building of ~~bad~~ tanks and rain harvesting structures
- 2) revival of traditional kunds and kuhl
- 3) Afforestation in degraded forests.
- 4) Growing drought resistant plants and involving community (eg. Kumbhari desert experiment) To reverse desertification
- 5) Awareness generation on water conservation.

Remarks

Q19. Cooperativization was seen as an important element in the agenda for institutional changes sought to be achieved through land reforms. Discuss. Also explain why the progress made by the cooperative movement in India largely fell far short of the goals set by its early proponents. (15 Marks)

Cooperativization was thought to be capable of achieving rural growth by enabling pooling of resources.

It was a key component of the land reform agenda post independence because :

- 1) Small land holdings could not yield adequate returns for small farmers.
- 2) Land was increasingly fragmented due to division among heirs
- 3) farmers were poor and could not individually afford all inputs required for cropping.

However, cooperative movement ~~felt~~ fell far short of the goals because :

Remarks

- 1) Illiterate farmers were unable to understand the concept of co-operatives.
- 2) State governments did not take a lead in developing co-operatives as it was not a popular subject.
- 3) The bureaucracy was not enthusiastic to develop a co-operative movement among farmers.
- 4) Land reforms narrative was overshadowed by tenancy reforms and land ceiling issues, sidelining any possible interest or investment of resources in co-operative movement.

Remarks

This was sought to be corrected by the 97th Amendment to the Constitution. Co-operatives such as Amul have set a brilliant example.

Remarks

Q20. What are the various types of rural tourism? What will be the impact of promoting rural tourism in India? Elaborate the steps taken by the government so far? (15 Marks)

Various types of rural tourism are :

- └→ ecotourism
- └→ adventure tourism
- └→ spiritual tourism
- └→ cuisine tourism
- └→ heritage tourism
- └→ cultural tourism.

Promotion of rural tourism in India will have the following impacts :

- 1) generation of jobs for rural people, especially youth such as guides, translators, cooks,

Remarks

- 2) Development of rural enterprises and crafts industry
- 3) Negative impact on natural environment, possibly due to vehicular pollution, destruction of vegetation, waste generated by tourists
- 4) Development of rural infrastructure and connectivity with cities and airports aiding agricultural trade in the process.
- 5) Transport facilities can grow.

Remarks

The government has taken steps such as :

- Aajeevika Grameen express for SHGs to operate transport
- Swadesh Darshan scheme to develop circuit based infrastructure
- Pradhan Mantri Gram Sadak Yojana for connectivity
- Skill India to skill youth.

Remarks