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GENERAL STUDIES (TEST CODE : 849)

Name of Candidate	Paradheep Kumar Dwivedi		
Medium Hindi/Eng.	English	Registration Number	25483
Center	MN	Date	21/08/2016

INDEX TABLE

Q. No.	Maximum Marks	Marks Obtained
1	12.5	
2	12.5	
3	12.5	
4	12.5	
5	12.5	
6	12.5	
7	12.5	
8	12.5	
9	12.5	
10	12.5	
11	12.5	
12	12.5	
13	12.5	
14	12.5	
15	12.5	
16	12.5	
17	12.5	
18	12.5	
19	12.5	
20	12.5	

Total Marks Obtained:

Remarks:

INSTRUCTIONS

1. Do furnish the appropriate details in the answer sheet (viz. Name, Registration Number and Test Code).
उत्तर पुस्तिका में सूचनाएं भरना आवश्यक है (नाम, प्रश्न-पत्र कोड, विद्यार्थी क्रमांक आदि)।
2. There are TWENTY questions printed in HINDI and ENGLISH. इसमें बीस प्रश्न हैं तथा हिन्दी और अंग्रेजी दोनों में छपे हैं।
3. All questions are compulsory.
सभी प्रश्न अनिवार्य हैं।
4. The number of marks carried by a question/part is indicated against it.
प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।
5. Answers must be written in the medium authorized in the Admission Certificate, which must be stated clearly on the cover of this Question-Cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in medium other than the authorized one.
प्रश्नों के उत्तर उसी माध्यम में लिखे जाने चाहिए जिसका उल्लेख आपके प्रवेश पत्र में किया गया है और उस माध्यम का स्पष्ट उल्लेख प्रश्न-सह-उत्तर (क्यूसीए) पुस्तिका के मुख्य पृष्ठ पर अंकित निर्दिष्ट स्थान पर किया जाना चाहिए। उल्लिखित माध्यम के अतिरिक्त अन्य किसी माध्यम में लिए गए उत्तर पर कोई अंक नहीं मिलेंगे।
6. Word limit in questions, if specified, should be adhered to.
प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।
7. Any page or portion of the page left blank in the Question-Cum-Answer Booklet must be clearly struck off.
उत्तर पुस्तिका में खाली छोड़ा हुआ पृष्ठ या उसके अंश को स्पष्ट रूप से काटा जाना चाहिए।

75, 3rd Floor, Old Rajinder Nagar Market, Near Axis Bank, New Delhi – 110060

103, 1st Floor, B/1-2, Ansal Building, Behind UCO Bank, Dr. Mukherjee Nagar, Delhi – 110009

EVALUATION INDICATORS

1. Alignment Competence
2. Context Competence
3. Content Competence
4. Language Competence
5. Introduction Competence
6. Structure - Presentation Competence
7. Conclusion Competence

Overall Macro Comments / feedback / suggestions on Answer Booklet:

1.

2.

3.

4.

5.

6.

All the Best

Answer all the questions in NOT MORE THAN 200 WORDS each. Content of the answers is more important than its length. All questions carry equal marks.

12.5X20=250

1. What do you understand by the term Watershed Management? Discuss with examples the importance and challenges of watershed management in India.

जल-संभर प्रबंधन (वाटरशेड मैनेजमेंट) से आप क्या समझते हैं? भारत में जल-संभर प्रबंधन के महत्व और चुनौतियों की उदाहरण सहित चर्चा कीजिए।

integrated
Watershed management is the approach ~~the~~ to conserve all the associated factors that impact the health of valuable natural resource such as forest green cover, river basin management, ground water, Agriculture practices etc.

India is a country suffering from scarce water resources. our traditional water resources are polluted due to over-exploitation and leading to degraded quality and quantity of water and being a tropical country, to mitigate the impact of climate change the watershed management is intense necessity of India

Why it is important

(1) Watershed management will help to improve the quality of land, more fertile land enhances productivity, which will curb stress migration to urban areas and may help to curb the impact of over populated urban agglomerations

- (ii) Improved forest cover is a component of watershed management which will help to resist soil degradation and cascading effects
- (iii) Increase in rural household income:
An efficient watershed management leads to more productivity and more household income which brings rural prosperity
- (iv) food security issues will be tackled
- (v) Efficient watershed management will improve groundwater quality and quantity reducing health impacts and bringing down out of pocket health expenditures

Examples

- (*) Rajendra Singh of Bheriya Taluka Singh has successfully ~~adpted~~ lead his way to adoption of watershed management in Arakari village of Rajasthan and solving the water scarcity issues
- (i) Anna Hazare motivated. Ralegan Siddhi to adopt watershed management practices such as cropping of less water demanding crops and water harvesting etc. to bring the village prosperity

Challenges to watershed management

1. Equitable distribution of resources is the major challenge. As adopting such practices demands cooperative practices ~~are~~ and effective cooperation can work only if every member gets its due which demands equitable distribution of profits.

2. ~~to bring~~ Effective people participation:

Watershed management is an integrated process which requires participation at every level and needs a motivating force to bring them on equal terms.

3. Strong decentralisation of power and effective Panchayati Raj institutions are required, which needs participation of representatives without concentrating on vote bank politics.

2. Two important characteristic features of monsoon rainfall are variability and sudden breaks. Elaborate. Also bring out the critical role played by variability of rainfall in determining the cropping pattern in India.

मानसूनी वर्षा की दो महत्वपूर्ण अभिलाक्षणिक विशेषताएँ परिवर्तिता और आकस्मिक विच्छेद (विभंग) का पाया जाना है। विस्तारपूर्वक बताइए। साथ ही भारत में फसल प्रतिरूप के निर्धारण में वर्षा की परिवर्तिता द्वारा निभायी जाने वाली महत्वपूर्ण भूमिका को स्पष्ट कीजिए।

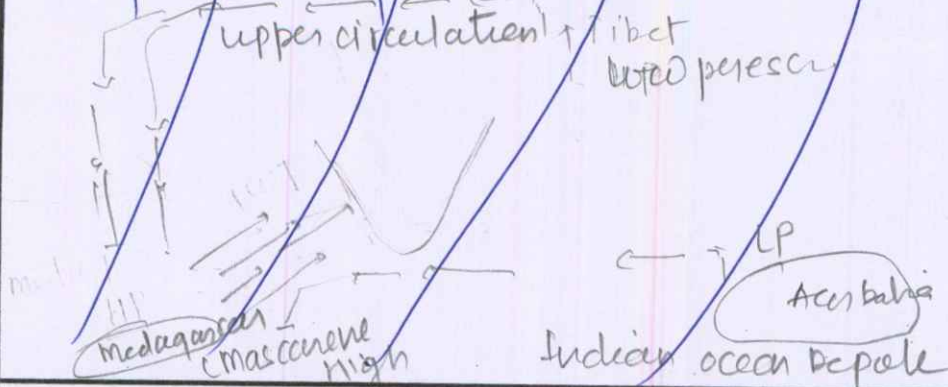
Monsoon rainfall is the characteristic feature of rainfall in India due to the reversal of trade winds and associated factors. Two important features of monsoon rainfall are variability both regional and seasonal and ~~breaks~~ sudden breaks.

Reasons of variability & breaks

- Tempo. Indian monsoon is affected by many factors

(i) ~~South~~ Sub tropical westerly jet streams:

↑ ^{strong} Sub tropical westerly jet streams helps in bringing max rainfall to India which are in turn affected by pressure conditions in Mascarene high and also on Indian ocean dipole conditions which may bring variability to Indian monsoon.



(i) Somali current: strong somali current brings good rainfall in India as it pushes rain bearing winds to India

(ii) Merging of 2nd equatorial trough with ITCZ: even though low pressure conditions has been built at Tibet yet if 2nd equatorial trough does not merge effectively with Tibet LP so than it brings low rainfall and after merging with ITCZ it may again demerge which may lead to breaks in the monsoon

(iii) Subtropical westerly jet streams: southern branch of STWJ maintain high pressure conditions and delay of building of LP at Tibet. and once shift of STWJ northward enhances LP condition in Tibet. if southern branch of STWJ again reestablishes breaks in monsoon happen and also to

(iv) Indian ocean dipole and pressure at Mascarene high also affect Indian monsoon ~~with~~

So variability ~~is~~ and breaks are phenomena of monsoon which makes it distinct and diverse cropping pattern of India into 3 phases

(I) Kharif: Kharif crops are mainly tropical crops such as rice, Jute etc which demands high water availability. So these are grown in wet season of India from July - September ~~etc~~

(II) Rabi season: Rabi crops are mainly grain crops such as Gram and wheat which require distinct dry period and less water than rice, etc. so they are ~~so~~ cropped in Nov - March time as higher temperature in March helps in ripening

(III) Zaid season: These are mainly vegetable crops and completely depend on irrigation

Hence monsoon is an ~~an~~ integrated ^{factor} ~~process~~ of Indian culture and cropping pattern, which ~~is~~

3. What is the difference between condensation and precipitation?
Elaborate upon the various forms of condensation.

संघनन और वर्षण के बीच क्या अन्तर है? संघनन के विभिन्न रूपों को विस्तारपूर्वक बताइए।

Condensation : Condensation is the process of conversion of vapour molecules into liquid molecules and this is brought by low temperature. ~~and~~

Precipitation : Precipitation is the phenomena which happens when moisture holding capacity of air is reached ~~and~~ either due to humidity or low temperature and water falls over land in either ice form or liquid form

Different forms of condensation

(1) Dew : Dew is the condensation when dew point is greater than freezing point. Water condenses in liquid form over stones, leaves and other surfaces this is ~~chara~~ conditioned by long winter nights, clear sky etc.

(ii) Fog : fog is formation of cloud at surface level. when condensation takes place in ~~as~~ dust particles present in air due to low surface temperature

and more high upper atmosphere temperature fog takes place. Mist is fog condition with high humidity.

(iii) snow: when the freezing point of ice is greater than dew point ^{temperature} ~~water~~ freezes before it converted to dew and phenomena of snow takes place

Condensation ~~can~~ is not necessarily conversion of ~~liquid form~~ ~~to~~ of vapour form into liquid, Direct conversion to solid form may also takes place which is called sublimation

4. What factors are responsible for the origin and modification of ocean currents? Explain with examples how ocean current currents affect the climate of surrounding regions.

महासागरीय धाराओं की उत्पत्ति एवं रूपांतरण के लिए कौन-से कारक उत्तरदायी हैं? उदाहरण सहित व्याख्या कीजिए कि महासागरीय धाराएँ निकटवर्ती क्षेत्र की जलवायु को किस प्रकार प्रभावित करती हैं।

ocean currents are movement of ocean water in bulk at surface and subsurface level which helps in distribution of heat
~~and~~ factors for origin

- (i) Gravity : Gravity is the primary force responsible behind movement of ocean currents
- (ii) ~~main~~ Coriolis forces : Direction of rotation of earth leads to coriolis forces which in turn affect the movement of water
- (iii) wind direction : Direction of winds are primary factor to decide the direction of ocean currents. Normally ocean currents follow the direction of Trade winds and westerlies
- (iv) Temperature : oceanic currents are generally movement ~~of~~ governed by temperature because temperature affects salinity, pressure conditions, and in turn wind conditions

Factors responsible for modification

(i) shore line: with the encounter of coast line with ocean currents. It leads to change of (modification of) direction of oceanic currents

(ii) monsoon winds: reversal in the direction of monsoon winds affect the direction of oceanic currents in Indian Ocean region. These are primarily due to shifting of ITCZ

Affect of ocean currents in local conditions

Oceanic currents are major factors affecting the climate of surrounding areas such as

(i) Warm currents: warm current such as Gulf stream bring up the temperature of western Europe during winter seasons that is the reason why ports of Norway are in operation ~~at~~ during even in winter season but of Russia are not despite being in same latitude

Examples: Murmansk port, Hammerfest port

(ii) Cold currents: Cold currents are the ~~to~~ ^{major} ~~regions~~ ^{season} where most of the deserts are located in western margin. For example Peru current gives desiccating effect to Atacama desert while cold Californian current affects Mohave desert. Canary current is major reason of less rainfall in western African area ~~and~~ which is why this area is less productive.

(iii) meeting zone of cold and warm current brings upwelling conditions which leads to high plankton growth due to more nutrient availability. And good fishing grounds in term. Also meeting zone is characterised by foggy conditions such as New foundland island is meeting zone of Gulf stream and Labrador current ~~which~~ and Bahia Blanca in ~~the~~ falkland islands are good fishing grounds. Also foggy condition affect ship navigation.

Examples: Bahia Blanca - (Brazil current and west wind drift)

New foundland - Labrador current (C) and Gulf stream

5. Elaborate on the characteristic features of vegetation in equatorial regions. Discuss the factors which affect the development of these regions.

विषुवतीय क्षेत्रों की वनस्पति की अभिलाक्षणिक विशेषताओं को विस्तारपूर्वक बताइए। इन क्षेत्रों के विकास को प्रभावित करने वाले कारकों की चर्चा कीजिए।

Equatorial regions are regions around equator and characterised by constant rainfall due to low pressure conditions, and hence high humidity & same climatic conditions throughout the year ~~happ~~ These are also called lungs of earth. Above conditions ~~he~~ brings out specific type of vegetation called Equatorial rain forest which have following character.

- (1) Dense canopy: Equatorial rain forest are characterised by dense canopy and hence they are difficult to access
- (2) Growth of Epiphytes: less availability of light at bottom leads to growth of epiphytes as so as to avail sunlight for their growth
- (3) High diversity: Equatorial vegetation is characterised by high diversity due to less anthropogenic disturbance and favourable conditions ~~throughout~~ throughout the year
- (4) shallow roots to tap nutrient in nutrient deficit soil

main examples of ~~tropical~~ equatorial vegetation are soft wood trees such as mahogany, Rosewood etc.

These conditions affect the development of these regions. major regions of this type are Amazon rainforests and rain forests of Indonesia

1. Equatorial climate is characterised by high temperature and humid conditions which makes it disease prone area & hence for the development of this region effective healthcare system is necessary
2. These areas are not easily accessible so = lumbering industries are difficult to develop here due to hindrance in vehicle movements & hence proper development of transport channels may lead to growth of lumbering and hence economic prosperity
3. Since soil of these areas does not promote agriculture hence forest resources are main livelihood factors so Biodiversity conservation and cooperation with nature may bring prosperity to this region

6. The National Commission on Agriculture (1976) has classified Social Forestry into Urban forestry, Rural Forestry and Farm Forestry. Briefly explain each. Discuss advantages of Social Forestry in our pursuit towards sustainable development. Why has it not been successful on a large scale?

राष्ट्रीय कृषि आयोग (1976) ने सामाजिक वानिकी को शहरी वानिकी, ग्रामीण वानिकी एवं कृषि वानिकी में वर्गीकृत किया है। संक्षेप में प्रत्येक की व्याख्या कीजिए। संधारणीय विकास की दिशा में किए जाने वाले हमारे प्रयासों में सामाजिक वानिकी के लाभों की चर्चा कीजिए। यह बृहत स्तर पर सफल क्यों नहीं हुई है?

Social forestry ~~was~~ is the term first used by National Commission on Agriculture with the purpose of reducing burden on ~~the~~ afforestation on forest areas and promote ~~for~~ plantation and development of forest on fallow and unused land and community land as well for more green cover.

Social forestry is mainly categorised into three parts

(i) Urban forestry: Urban forestry is using community spaces such as parks, roadsides etc for green cover. It ~~is~~ mainly centers with urban areas. Since less space is available in urban areas plantation is permitted in common spaces such as parks and individual spaces such as outside houses etc.

(ii) Rural forestry: Rural forestry is promotion and plantation in community spaces, common lands and other

fallow and unused land in rural areas. common grassland and canal sides etc may also be used for this purpose

(iii) farm forestry : Plantation of forest plants along with crops in Agriculture fields in farm forestry. This can be done either with economic or non economic ~~intention~~ intentions. Unused farm spaces can also be used for this purpose

Social forestry can bring advantage to the society in many ways

(1) Resistant towards climate change: increased forest cover may help to mitigate climate change effect and help us to keep temperature level within limits

(2) minor forest produce such as woods etc which are major source of fuel for rural population. social forestry may help in upbringing these resources

(3) may help in curbing displacement due to enhanced employment opportunities due to increased forest cover. Bihar has successfully increased its forest cover from 7% to 12% by social forestry and also reduced displacement

migration level

(F) Enhanced security to women and child

Challenges:

- (I) Community spaces are ~~least~~ most exploited spaces & hence proper protection mechanism is required
- (II) Rural Awareness & low literacy level is major hinderance to success of social forestry
- (III) Equitable distribution of profits

(IV)

Way forward

- (I) Social forestry may be integrated with MNRGA which may help in empowerment of disabled as they are not able to ^{take} stem jobs provided by MNRGA, also integrating it will lead to development of necessary forest resources and rural employment hence increased rural income
- (II) schemes may be provided to enhance the sense of ownership of plants in community to curb the exploitation of forest resources.

7. What is the difference between tropical and extra-tropical cyclones?
Why do tropical cyclones weaken over the land after landfall?

उष्णकटिबंधीय और बहिरुष्णकटिबंधीय चक्रवात में क्या अंतर है? उष्णकटिबंधीय चक्रवात लैंडफॉल के बाद स्थलीय भाग पर पहुंच कर क्यों कमजोर पड़ जाते हैं?

Tropical cyclones

1. originate over sea and require higher sea surface temperature
2. move from east to west
3. characteristic of tropical low latitude regions.
4. occur in specific period of year when suitable conditions ~~are~~ such as low pressure, high temperature are full filled
5. ~~are~~ due to movement of air upward (Convection of Air)

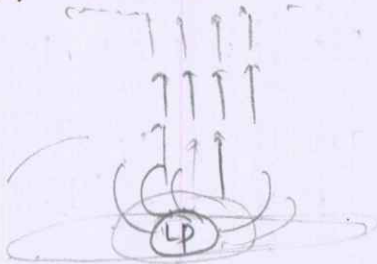
Extra tropical cyclones

1. originate over land and no such high SST condition is required
2. move from west to east (follow the direction of westerlies)
3. character of mid and high latitude regions. (temperate regions)
4. occur throughout the year and no such conditions are required
5. Due to meeting of cold and warm air masses

6. These are abrupt and difficult to predict and hence bring max damage to life and property

7. They are generally characterised by a specific name such as Hud Hud, Typhoon etc.

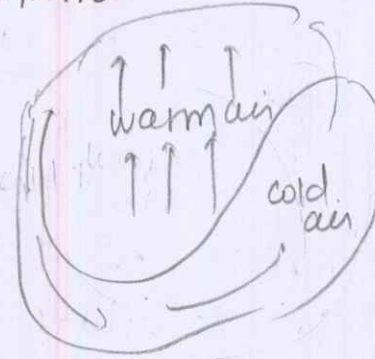
8.



9. Generally contains high pressure area in middle called eye of storm

6. These are gradual and max predictable and does not cause damage to life and property

7. They are not known by any name.



9. No such eye is formed

Tropical cyclones ~~fall~~ are fuelled by moisture from the sea. When they move toward land, the moisture supply is cut off and due to non availability of further moisture over land

Tropical cyclones weaken over land

8. What are air masses? How are they classified? Discuss their role in frontogenesis.

वायुराशियाँ क्या हैं? वे किस प्रकार वर्गीकृत किए जाते हैं? वाताग्रजनन (फ्रंटोजेनेसिस) में उनकी भूमिका की चर्चा कीजिए।

Air masses are homogenous horizontal mass of air characterised by similar moisture and temperature conditions

Air masses take their classification from the characteristics of area over which they originate. Mainly areas of earth are divided into 4 parts and hence

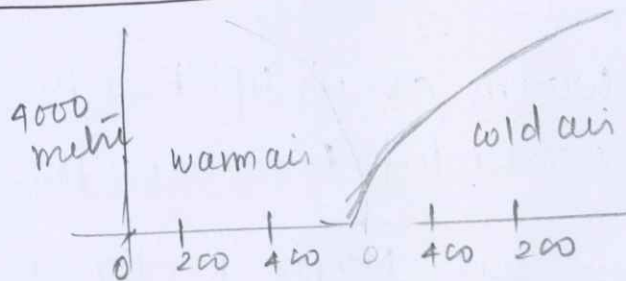
4 Airmass types

Area	Air mass
1. Tropical oceans	- maritime tropical
2. low latitude land	- continental tropical
3. temperate and polar regions	- Polar (continental)
4. Arctic ocean	- maritime Polar

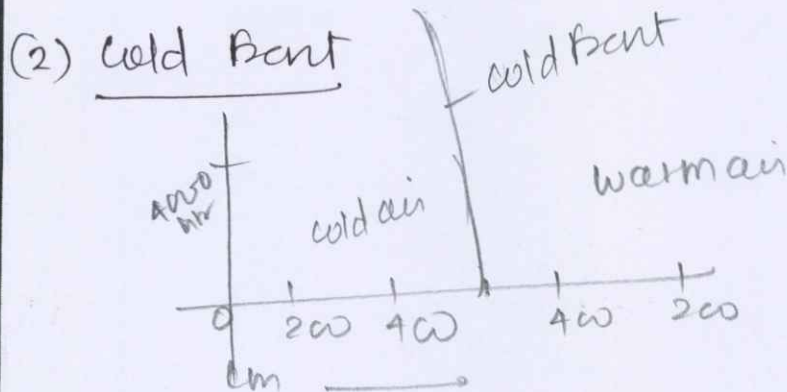
The front is the meeting point of two airmasses. generally polar Airmasses are characterised by low temperature and tropical airmasses are high temperature masses with high humidity

When two type of masses meet frontogenesis takes place

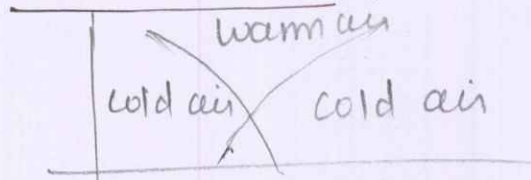
(1) Warm front



When warm airmass pushes cold airmass warm front forms which is characterised by gradual gradient, and upliftment of warm air takes place



When cold airmass pushes warm airmass sudden upliftment of warm air takes place ~~also~~ which is characterised by steep gradient and formation of cumulonimbus clouds.

(iii) occluded front

when all the warm air is uplifted the formation of occluded front takes place

Hence Airmasses are major factor of frontogenesis and brings frontal rain-fall into ~~areas~~ picture.

9. What are the factors responsible for location of a large number of Steel Industries in India's Chota Nagpur plateau region? What were reasons for the development of Bhadravati Steel Plant inspite of unavailability of coal in the vicinity of the region?

भारत के छोटा नागपुर पठार क्षेत्र में अत्यधिक संख्या में स्टील उद्योगों की अवस्थित लिए से कौन-से कारक उत्तरदायी हैं? क्षेत्र के आसपास कोयले की उपलब्धता न होने पर भी भद्रावती इस्पात संयंत्र के विकास के क्या कारण थे?

Chhota Nagpur plateau is a region which provides all the necessary resources for the development of steel industries. This area is rich in coal resources (Jharia, Raniganj) and also rich in iron ore. Areas around Jharkhand, Orissa are major iron rich areas other raw material such as manganese and are also available here in sufficient quantity hence Chhota Nagpur is characterised by location of large no. of steel industries.

Bhadravati steel plant is located near Kendermukh iron ore mine. This region is deficit in coal. Initially the coal was transported from many source regions but due to high transportation cost it was not economical. Hence development of Electric furnace at

Bhadrahati ~~steel~~ steel plant solved
this major issue as supply of electricity
is sufficed by hydroelectric power
plant in Bhadravati river and also
50g falls provide generation of
hydroelectricity which provide suffici-
ent energy to ~~power~~ ~~run~~ ~~the~~ ~~steel~~ ~~plant~~
steel plant at Bhadravati.

10. Himalayas are not only a physical barrier, they are also a climatic, drainage and cultural divide. Discuss.

हिमालय श्रृंखलाएँ न केवल भौतिक विभाजक हैं, बल्कि वे जलवायुजन्य, अपवाही और सांस्कृतिक विभाजक भी हैं। चर्चा कीजिए।

Himalayas have been characteristic feature of Indian culture, climate and drainage conditions. It has acted as physical barrier and provided ~~secur~~ security to Subcontinent from external attack from ages. It has also characterised the climatic, drainage and cultural conditions.

1. Climatic conditions : Himalaya plays a major role in climate of subcontinent. Cold winds moving from central Asia are blocked by Himalaya and this saves North India from severe cold conditions. Also Himalaya is obstruction to monsoon winds which makes monsoon winds dissipate all the moisture in India itself. Meghalaya is region with highest rainfall due to funnel effect provided by North eastern Himalayas.

(I) Drainage: Indian river system is typically divided into Himalayan rivers and Peninsular rivers. All north Indian rivers originate from Himalayas and get perennial water supply from melting glaciers. Ganga the major Himalayan river is the life line of plains of India.

(II) Cultural divide: Himalayan region provides unique climatic conditions and these climatic conditions lead to unique culture, more tribal population difficult surviving conditions which affects the local culture around Himalaya and makes it distinct from rest of sub world.

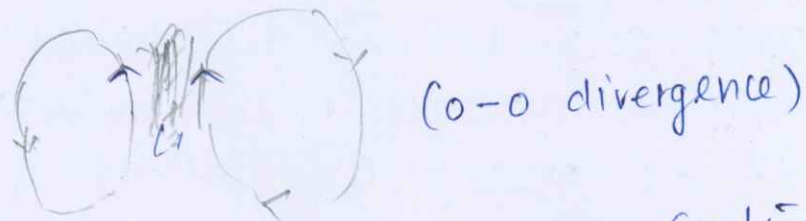
Hence Himalaya is not only a physical barrier it is also a climatic, drainage and cultural divide.

11. Ocean basins are in a way similar to the landforms. Explain all the relief features shown by the basins with illustrations.

महासागरीय बेसिन एक प्रकार से भू-आकृतियों के समान हैं। बेसिनों द्वारा प्रदर्शित सभी उच्चावच विशेषताओं का सचित्र वर्णन कीजिए।

ocean basins have diverse relief structures ~~are more even~~ and they are even more diverse than landforms
major ocean relief structures

(i) mid oceanic ridges (MOR): These are fundamental structures formed due to diversion of oceanic crust. Due to diversion the oceanic crust breaks apart and magma comes out. This magma accumulates and mid oceanic ridges are formed. ~~They are~~



(ii) mid oceanic ridge is major feature of oceanic crust and is most ~~abundant~~ abundantly placed.

(iii) Trenches: Trenches are formed when heavier oceanic crust subducts under lighter continental crust or any lighter oceanic crust. They

are most deepest parts of the earth and lead to destruction of oceanic crust which is formed at mid oceanic ridges

Examples: Mariana trench (Pacific ocean)

(iii) Abyssal plane: Plane consist of about 40% of oceanic crust. They consist of rich metal resources such as polymetallic nodules (PMN). Study and efforts for the economic extraction of PMN is undertaken by International sea bed Authority.

(iv) Island Arcs: ~~to~~ volcanic island arcs are formed by volcanic activity at ocean floor. These are formed at ~~ocean~~ o-o diverging or o-c diverging limbs and when accumulation of magma comes above ocean water beneath island arc is formed.

examples: ~~Philippine Island~~
↓ Andaman Island Group

12. Discuss the important facts revealed by the mapping of the ocean floor and palaeomagnetic studies for the development of hypothesis of Sea Floor Spreading. How is Plate Tectonics Theory an improvement over Sea Floor Spreading?

सागरीय अधस्तल विस्तार की अवधारणा के विकास के लिए, महासागरीय तल के मानचित्रण एवं पुरा चुंबकीय अध्ययनों द्वारा प्रकट किए गए महत्वपूर्ण तथ्यों की चर्चा कीजिए। प्लेट विवर्तिनिकी सिद्धांत को किस प्रकार सागरीय अधस्तल विस्तार की तुलना में एक सुधरा हुआ स्वरूप कहा जा सकता है?

Mapping of oceanic floor and palaeo magnetic studies revealed following facts.

- (i) Since earth change its magnetism ~~with~~ Alternatively, magma erupted takes the magnetic properties of that time and study of magnetism of MOR ~~etc~~ revealed the age of oceanic crust and their rate of formation
- (ii) As ~~the~~ we move away from the mid oceanic ridges age of rocks increases, and ~~most~~ youngest rocks found at the centre
- (iii) Pacific oceans ^{crust} spreads with highest rate and also submerges at highest rate whereas atlantic is spreading with ~~low~~ ~~conf~~ ~~rate~~ moderate rate

(iv) Diverging limbs lead to spreading of crust whereas converging limbs lead to destruction

(v) ocean floor mapping revealed that oceanic floor is much more diverse than continental floor

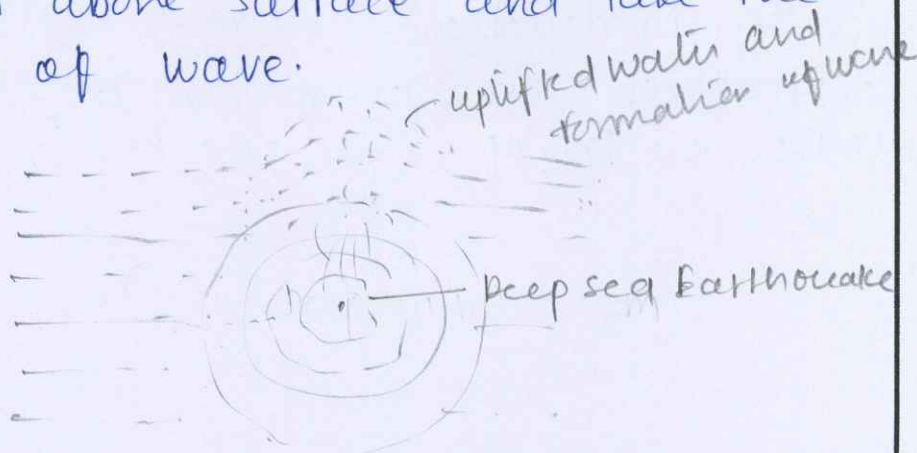
sea floor spreading theory did not answered many questions such as the force behind sea floor spreading, why some areas possess high volcanic activity while some are stable etc.

Plate tectonic theory addressed these issues and provided that earth is made up of plates (oceanic and continental) which are in constant movement and these plates interact with each other. These plate interactions are the major cause of formation of landforms, ocean floor and volcanic activity

13. How are tsunami waves formed? Explain why a tsunami is difficult to detect and its impact is less over oceans and more near the coasts.

सुनामी तरंगें किस प्रकार निर्मित होती हैं? व्याख्या कीजिए कि सुनामी का पता लगाना कठिन क्यों है और इसका प्रभाव महासागरों पर कम और तटों पर अधिक क्यों होता है?

Tsunami waves are formed due to marine ~~volcanic~~ earthquakes. ~~The~~ when an earthquake happens at deep sea level it leads to transmission of energy to water above surface and take the form of wave.



Tsunami waves are characterised by high speed of order of 700 km/hour and wavelength of the order of 150 km. Due to depth at origin point at deep sea levels ~~their~~ Amplitude of waves is very low and they are not detected over oceans and often went unnoticed by ~~the~~ ships.

But when these waves come to shallow water although their velocity

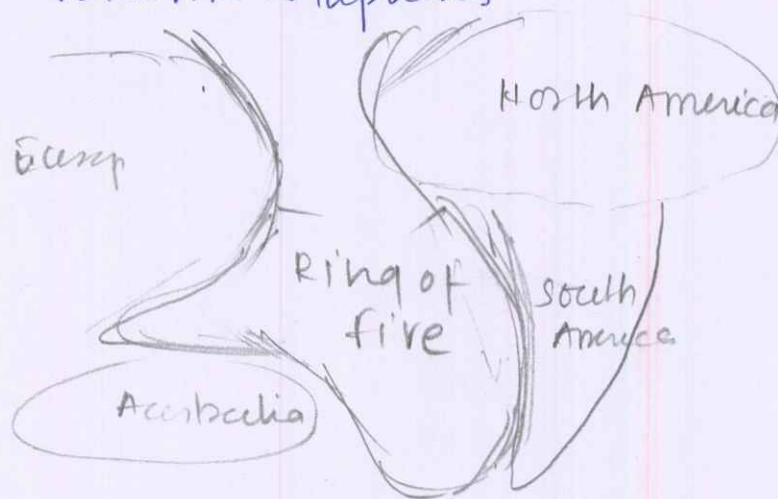
decreases ~~and~~ but since depth is not enough, wavelength of the wave decreases which leads to increases in Amplitude (wave height), when this wave with high Amplitude hits the coast it brings heavy damage to life and property at coast

Hence early detection system is necessary to adopt preventive ~~mea~~ measures to minimise the loss of life and property

14. What is the Pacific Ring of Fire and what is its significance? Why does the Atlantic Coast have very few active volcanoes in comparison to the Pacific ocean?

प्रशांत महासागरीय अग्नि वलय (पेसिफिक रिंग ऑफ फायर) क्या है और इसका क्या महत्व है? प्रशांत महासागर की तुलना में अटलांटिक महासागर के तट पर बहुत कम सक्रिय ज्वालामुखी क्यों पाए जाते हैं?

The coast lines around the Pacific plate compose the ring of fire, so named because of many volcanoes. Volcanic arcs and oceanic trenches partly encircling the Pacific Basin form the so called Pacific ring of fire, a zone of frequent earthquakes and volcanic eruptions.



Significance

- 1) Ring of fire is a zone of high seismic activity ~~and also~~ which makes it less habitable
- 2) low population density around ring of fire

Atlantic coast is east coast of North and South America and a much more stable zone. Pacific ocean is at the ^{meeting point} edge of North American plate, Pacific plate and Juan de Fuca plate. All these make it a zone of high volcanic activity whereas Atlantic has no such conditions hence less active volcanoes and volcanic activity.

15. What are the differences between the Himalayan and the peninsular river systems? Why are the major delta formations made by east flowing rivers and not the west flowing ones?

हिमालयी और प्रायद्वीपीय नदी प्रणालियों के बीच क्या अंतर हैं? प्रमुख डेल्टा संरचनाएँ पूर्व की ओर प्रवाहित होने वाली नदियों द्वारा निर्मित की जाती हैं, पश्चिम की ओर प्रवाहित होने वाली नदियों द्वारा नहीं, ऐसा क्यों है?

Himalayan

(i) Originate from Himalayan regions

(ii) They are perennial river systems due to constant supply of water from melting glaciers

(iii) They carry huge sediment load due to long lengths and form delta

(iv) Examples: Ganga, Brahmaputra

(v) They flow through plains and hence carry more alluvial load

Peninsular

(i) Originate from peninsular regions

(ii) They are ephemeral rivers due to dependence on monsoon

(iii) They have shorter routes and do not carry much sediment load and hence form estuaries

(iv) Examples: Krishna, Godavari

(v) They flow through hard terrain which is difficult to erode

major delta formations are made by east flowing rivers due to their long routes. since they travel long lengths they carry ~~sediments~~ more sediments and when reach at mouth, stratifies their sediments, major west flowing rivers such as Yamada, Tapi flow through Rift valley which is hard terrain and difficult to erode, other west flowing rivers have very short route and hence does not carry sediments and hence does not form delta.

16. Briefly discuss the various factors affecting the salinity of oceans. What are the reasons behind the high salinity of Red Sea, North Sea and Mediterranean Sea?

महासागरों की लवणता को प्रभावित करने वाले विभिन्न कारकों की संक्षेप में चर्चा कीजिए। लाल सागर, उत्तरी सागर और भूमध्य सागर की उच्च लवणता के पीछे विद्यमान कारण क्या हैं?

Salinity is the parts per thousand of salt present in ocean water. NaCl (74%)
MgCl₂ (3.4%) etc.
factors affecting the salinity

(i) Temperature : Higher temperature of water leads to evaporation and evaporation brings max salinity

(ii) Latitude : Salinity ~~increases~~ increases as we move from equator to tropics and again decreases as we move from tropics to poles. This is due to high rainfall at equator that salinity at equator is low. But due to less temperature as we move from tropics to poles evaporation decreases and salinity increases.

(iii) Wind Condition : Max frequent and speedy winds assist in evaporation and hence increase salinity. This is the region where oceans of southern hemisphere are max saline due to westerly winds such as

furious 40s, Roaring 50s etc. whereas Northern Hemisphere has ~~more~~ less wind velocity ~~also~~ hence less salinity

(iv) landlockedness: landlockedness in low latitudes increase sea surface temperature hence max salinity and ~~low~~ cooler temperature in high latitudes hence max salinity

(v) Poles At poles salinity increases when water converts into ice

(vi) Rivers and freshwater lakes termination

when more rivers terminate at a sea it brings max freshwater and less salinity that's why Bay of Bengal is less saline than Arabian sea

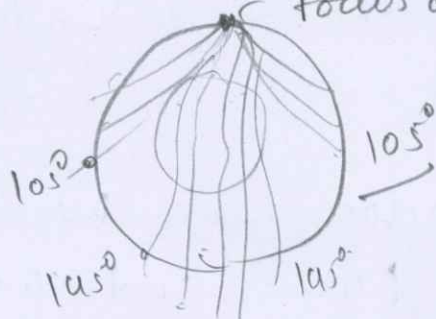
(vii) Max Asian which receive max rain have less saline water
→ Mediterranean sea, North sea and Red sea all are surrounded by lands and their connectivity to oceans ~~is~~ not and other water bodies is ~~very~~ negligible. Hence due to landlockedness of these seas they have high salinity

17. Explain the different types of earthquake waves and difference in method of their propagation? What do you mean by "shadow zones"?
विभिन्न प्रकार की भूकंपीय तरंगों और उनके संचरण की विधि में अंतर की व्याख्या कीजिए।
"छाया क्षेत्रों" से आप क्या समझते हैं?

There are three types of Earthquake waves

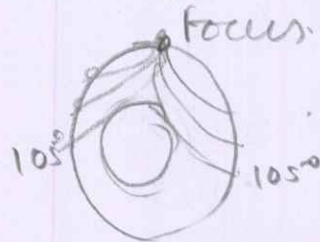
- (1) Primary waves (P waves)
- (2) Secondary waves (S waves)
- (3) Surface waves

Primary waves: Primary waves are waves which can propagate through solid, liquid and gas, their speed increases as they move from less dense material to more dense material. Due to these properties they focus of $E \& S$



were observed in region beyond 145° and also upto 105°

Secondary waves: These waves can travel through solid and gas but cannot travel through liquid medium.



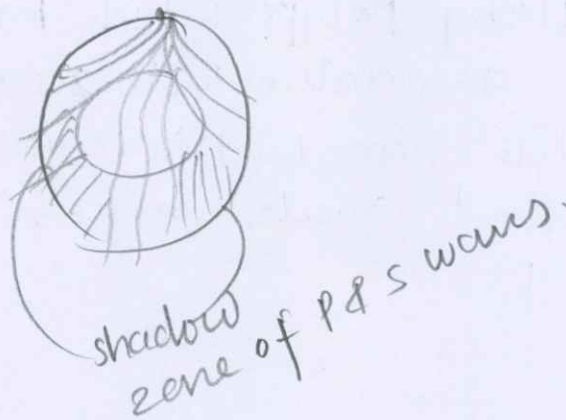
secondary waves

Surface waves: These are most destructive waves and are formed when P waves and S waves transmit their energy to earth surface. They bring about destruction in life and property in the surface when earth quake occur.

Shadow zones: Shadow zones were the areas where P waves and S waves are not detected.

Shadow zone of P waves is 105° to 145°
Shadow zone of S wave is all area beyond 145°

These are areas where no effect
of propagation of Earthquake
wave was detected.



18. List the favourable conditions for formation of corals. Discuss their distribution across the Indo-Pacific. Also analyse the impact of global warming on corals.

प्रवालों के निर्माण हेतु अनुकूल परिस्थितियों को सूचीबद्ध कीजिए। संपूर्ण हिन्द-प्रशांत (इंडो-पसिफिक) क्षेत्र में उनके वितरण पर चर्चा कीजिए। साथ ही प्रवालों पर ग्लोबल वार्मिंग (वैश्विक तापन) के प्रभाव का विश्लेषण कीजिए।

Corals are fleshy polyps which form symbiotic association with zooxanthellae which provide them food through photosynthesis and corals in turn provide them support.

Conditions

- (i) Moderate sea surface temperature of around 27°C
- (ii) Moderate sea salinity (35 ppt)
- ~~(iii) Less pollution~~
- (iv) Good, moderate pH level of sea water

~~(v)~~

Indo-Pacific regions provide most habitable conditions for coral formation. Major coral areas include Lakshadweep Island in India, Maldives Islands and the largest coral agglomeration is Great Barrier Reef of Australia.

Corals are very sensitive organisms. They are the indicators of sea water health. Global warming may impact the corals life negatively as they cannot bear a max temperature range. They survive in very narrow temperature range of $27^{\circ} \pm 0.5^{\circ} \text{C}$ any deviation from this lead to distress signals such as coral bleaching and death of corals.

Also global warming lead to enhancement of ~~soil salinity~~ ocean water salinity ($\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{CO}_3$) and since corals survive on narrow salinity range it can affect them negatively.

19. Differentiate between Geysers and Springs. Which areas are conducive for their development? Give examples.

उष्णोत्सों (गीजर) और स्रोतों (झरनों) के बीच अन्तर बताइए। कौन-से क्षेत्र उनके विकास के लिए अनुकूल हैं? उदाहरण प्रस्तुत कीजिए।

Geyser

1. Geyser is hot water fountain characterised by high pressure
2. they are very rare
3. Geysers get colour due to reaction of hot water with silica at surface
4. They have no medicinal value
5. volcanic activity (Presence of magma chamber) is necessary for their formation

Spring

1. spring is basically a hot water lake
2. They are abundant and are found in almost every part of world
3. springs get colour due to presence of heat loving cyanobacteria
4. Springs have medicinal value because of presence of cyanobacteria
5. No such volcanic activity is required they can even be formed at points of plate subduction or any other place.

examples:

old faithful geyser
Yellowstone National
Park USA

example:

Fatehpuri
(Chhatargarh)
in India

Geysers are mainly developed in areas of volcanic activity where presence of hot magma chamber heats up to water and ~~this heat~~ per and very narrow conduit is available for water to come to surface hence they seem like fountain

whereas for springs which are very common areas of plate interaction, or any other region which may provide heat is sufficient

Don't write
anything this
margin
(इस भाग में
कुछ ना लिखें)

20. What are the important characteristics of footloose industries? Explain the factors responsible for the location of footloose industries using suitable examples from India.

फुटलूस उद्योगों के महत्वपूर्ण अभिलक्षण क्या हैं? भारत से उपयुक्त उदाहरणों का प्रयोग करते हुए फुटलूस उद्योगों की अवस्थिति के लिए उत्तरदायी कारकों की व्याख्या कीजिए।

Foot loose industries are non polluting industries which does not require any specific characteristics for its location and can be located anywhere without compromising profitability. They generally depends upon light, non weight losing raw material which is easy to transport factors responsible

1. Conducive government policies: Since these industries does not get affected by Raw material presence, their profitability depends upon conducive atmosphere by government policies
 • for example Karnataka provides best environment for Electronics and IT Industries

2. Presence of skilled labour: These industries are generally skill oriented industries hence high skill standards of

labour are appreciated.

3. Less pollution and conducive working space for Human resource: Since these industries are mainly Human resource oriented industries, they require good condition for Human Habitation, clean Urban environment etc. Example: Bangalore in Karnataka

4. Best connectivity to major parts is appreciated by these industries ~~as~~ so as to attract skilled labour from different parts of country and world
example: Mumbai, Delhi & Bangalore

