All India Civil Services Coaching Centre

(Under the aegis of Government of Tamil Nadu)

Answer Key Explanation

Geography

Maximum Questions: 100 **Maximum Marks: 200**

1. Ans. D

Exp: Foliation in geology refers to repetitive layering in metamorphic rocks. Each layer may be as thin as a sheet of paper, or over a meter in thickness. The word comes from the Latin folium, meaning "leaf", and refers the sheet-like planar structure.

2. Ans. C

Exp: Mass Movements do not require geomorphic agents and hence does not come under erosion (though there is a shift of materials from one place to another aided under gravity).

Materials over the slopes have their own resistance to disturbing forces and will yield only when force is greater than the shearing resistance of Materials.

3. Ans. D

Exp: In dry climates, because of high temperature evaporation exceeds precipitation and hence ground water is brought upto the surface by capillary action and in the process the water evaporates leaving behind salts in the soil.

Such salts form into a crust in the soil known as hardpans. In tropical climates and in areas with intermediate precipitation conditions calcium carbonate nodules (Kanker) are formed.

4. Ans. D

Exp: Intense bacterial activity leads to rapid oxidation of soils in the equatorial and tropical regions leaving very low humus content in the soil. Low level of bacterial activity in polar regions results in accumulation of humus in these soils. Thus layers of peat develop in sub-arctic and tundra climates.

5. Ans. B

Exp: Release of energy locked up between the plate boundaries take place at the focus / hypocenter. The shadow zone of S-waves are larger in extent and cover over 40% of the earth's surface.

6. Ans. D

Exp: The point on the surface is called epicenter. Velocity is high in denser medium, P-wave shadow zone is from 105 degrees to 15 degrees. S-wave is not present beyond 105 degrees.

7. Ans. A

Exp: Among all the south American cities Quito is located nearest to the equator.

8. Ans. D

Exp: Zambezi 'river forms Delta in Mozambique, Congo river forms Delta in Congo, Mekong river forms Delta in Vietnam.

9. Ans. C

Exp: Among the given four coasts if you arrange it from West to East slave coast

located in the eastern most point and Niger forms Delta in the slave coast.

10. Ans. A

Exp: Indian and Eurasian plate is example for convergence plate boundary.

11. Ans. A

Exp: Fold mountains are formed due to either

(i) Convergence of two continental plates

(ii) Convergence of one side continental plate and another side oceanic plates

12. Ans. B

Exp: Igneous rocks are formed even below the surface of the earth, the process of deposition of transported rock fragments under compaction is called lithification, marble is a metamorphic rock.

13. Ans. C

Exp: A large number of hypotheses were put forth by different philosophers and scientists regarding the origin of the earth. One of the earlier and popular arguments was by German Philosopher Immanuel Kant. Mathematician Laplace revised it in 1796. It is known as Nebular Hypothesis.

The Nebular Hypothesis considered that the planets were formed out of a cloud of material associated with a youthful sun, which was slowly rotating. Later in 1900, Chamberlain and Moulton considered that a wandering star approached the sun. As a result, a cigar-shaped extension of material was separated from the solar surface.

14. Ans. A

Exp: Crust is the outermost solid part of the earth. It is brittle in nature. The thickness of the crust varies under the oceanic and continental areas. Oceanic crust is thinner as compared to the continental crust.

The mean thickness of oceanic crust is 5 km whereas that of the continental is around 30 km. The continental crust is thicker in the areas of major mountain systems. The portion of the interior beyond the crust is called the mantle.

The upper portion of the mantle is called asthenosphere. The word astheno means tweak. It is considered to be extending upto 400 km. It is the main source of magma that finds its way to the surface during volcanic eruptions. The crust and the uppermost part of the mantle are called lithosphere. Its thickness ranges from 10-200 km. The lower mantle extends beyond the asthenosphere. It is in solid state.

15. Ans. D

Exp: The concept termed Plate Tectonics. A tectonic plate also called lithospheric plate) is a massive, irregularly-shaped slab of solid rock, generally composed of both continental and oceanic lithosphere. Plates move horizontally over the asthenosphere as rigid units.

(i) Cocos plate : Between Central America and Pacific plate

(ii) Nazca plate : Between South America and Pacific plate

(iii) Arabian plate : Mostly the Saudi Arabian landmass .

(iv) Philippine plate : Between the Asiatic and Pacific plate

(v) Caroline plate : Between the Philippine and Indian plate (North of New Guinea)

(vi) Fuji plate : North east of Australia.

16. Ans. D

Exp: Camels live in deserts that are hot and

dry during the day, but cold at night. They are well adapted for survival in the desert. Camels have: Large, flat feet to spread their weight on the sand. Thick fur on the top of the body for shade, and thin fur elsewhere to allow easy heat loss.

- A large surface area to volume ratio to maximise heat loss.
- The ability to go for a long time without water (they don't store water in their humps, but they lose very little through urination and sweating).
- The ability to tolerate body temperatures up to 42°C.
- Slit-like nostrils and two rows of eyelashes to help keep the sand out.

17. Ans. B

Exp: A gorge is almost equal in width at its top as well as its bottom. In contrast, a canyon is wider at its top than at its bottom. Gorges form in hard rocks

18. Ans. A

Exp: Alluvial fans in humid areas develop low cones with gentle slopes.

Alluvial fans in Arid and Semi-arid areas develop high cones with steep slopes.

19. Ans. A

Exp: The slopes axes of drumlins are parallel to the direction of ice movement.

20. Ans. D

Exp: Atmosphere is transparent to short wave radiations. Equator receives comparatively less insolation than the tropics.

Maximum insolation is received over the sub-tropical deserts where the cloudiness is the least.

21. Ans. B

Exp: The four factors that cause ocean currents are Planet rotation, wind, density of the water (depends on temperature & salinity) and gravitation of the moon & earth. Direction & Strength depends on the shape of the shoreline, depth and shape of the bottom and other currents.

22. Ans. A

Exp: The shoreline of Africa and South America facing each other have a remarkable match. The rocks of Brazil coast matches with those from western Africa. Identical Plants and animals species are found on either side of the marine barrier. Presence of mid-oceanic ridges were discovered in Post-Drift studies during Mapping of Ocean Floor.

23. Ans. B

Exp: Industries are also classified on the basis of the use of their products such as: (i) basic goods industries, (ii) capital goods industries, (iii) intermediate goods industries, and (iv) consumer goods industries.

Industries using weight-losing raw materials are located in the regions where raw materials are located. The sugar mills in India located in sugarcane growing areas. Similarly, the locations of pulp industry, copper smelting and pig iron industries are located near their raw materials. In iron and steel industries, iron ore and coal both are weight-losing raw materials.

The reasons for emerging Mumbai, Kolkata and Chennai as industrial nodes is that these locations were greatly influenced by our colonial past.

24. Ans. C

Exp: Forest land is land declared by govt. as forest irrespective of tree cover.

Land which cannot be cultivated with current technology is Barren and wastelands.

Fallow other than current fallow is land left out of cultivation for 1 year to 5 years.

25. Ans. D

Exp: The Density of the atmosphere is highest near the surface of the earth and decreases with increasing altitude. The column of atmosphere is divided into five different layers depending upon the temperature condition. They are: troposphere, Stratosphere, mesosphere, ionosphere and exosphere.

The troposphere is the lower most layer of the atmosphere. Its average height is 13 km and extends roughly to a height of 8 km near the poles and about 18 km at the equator. Thickness of the troposphere is greatest at the equator because heat is transported to great heights by strong convectional currents.

This layer contains dust particles and water vapour. All changes in climate and weather take place in this layer. The temperature in this layer decreases at the rate of 1°C for every 165m of height. This is the most important layer for all biological activity.

26. Ans. D

Exp: Tropical cyclones originate and intensify over warm tropical oceans. The conditions favourable for the formation and intensification of tropical storms are:

1. Large sea surface with temperature higher than 27° C;
2. Presence of the Coriolis force.
3. Small variations in the vertical wind speed;
4. A pre-existing weak low-pressure area or low-level cyclonic circulation;
5. Upper divergence above the sea level system.

27. Ans. C

Exp: As the clouds are formed at some height over the surface of the earth, they take various shapes. According to their height, expanse, density and transparency or opaqueness clouds are grouped under four types :
(i) Cirrus;
(ii) cumulus;
(iii) stratus;
(iv) nimbus.

Cirrus clouds are formed at high altitudes (8,000 - 12,000m). They are thin and detatched clouds having a feathery appearance. They are always white in colour.

Cumulus clouds look like cotton wool. They are generally formed at a height of 4,000-7,000 m. They exist in patches and can be seen scattered here and there. They have a flat base.

Stratus are layered clouds covering large portions of the sky. These clouds are generally formed either due to loss of heat or the mixing of air masses with different temperatures.

Nimbus clouds are black or dark gray. They form at middle levels or very near to the surface of the earth. These are extremely dense and opaque to the rays of the sun. Sometimes, the clouds are so low that they seem to touch the ground. Nimbus clouds are shapeless masses of thick vapour.

28. Ans. C

Exp: A sudden contact between dry and moist air masses gives rise to local storms of great intensity. These local storms are

associated with violent winds, torrential rains and even hailstorms.

Mango Shower : Towards the end of summer, there are pre-monsoon showers which are a common phenomena in Kerala and coastal areas of Karnataka.

Locally, they are known as mango showers since they help in the early ripening of mangoes.

Nor Westers: These are dreaded evening thunderstorms in Bengal and Assam. Their notorious nature can be understood from the local nomenclature of "Kalbaisakhi", a calamity of the month of Baisakh. These showers are useful for tea, jute and rice cultivation. In Assam these storms are known as "Bardoli Chheerha".

29. Ans. D

Exp: The easterlies from either side of the equator converge in the Inter Tropical Convergence Zone (ITCZ), Such circulations from the surface upwards and vice-versa are called cells.

Such a cell in the tropics is called Hadley Cell. In the middle latitudes the circulation is that of sinking cold air that comes from the poles and the rising warm air that blows from the subtropical high. At the surface these winds are called westerlies and the cell is known as the Ferrel cell.

At polar latitudes the cold dense air subsides near the poles and blows towards middle latitudes as the polar easterlies. This cell is called the polar cell. These three cells set the pattern for the general circulation of the atmosphere. The transfer of heat energy from lower latitudes to higher latitudes maintains the general circulation.

30. Ans. D

Exp:

1. Commercial airliners typically cruise at altitudes of 9-12 km (30,000 - 39,000 ft) in temperate latitudes (in the lower reaches of the stratosphere).This optimizes fuel burn, mostly due to the low temperatures encountered near the tropopause and low air density, reducing parasitic drag on the airframe. It also allows them to stay above hard weather (extreme turbulence) .
2. On October 24, 2014, Alan Eustace became the record holder for reaching the altitude record for a manned balloon at 135,890 feet.
3. Some bird species like Ruppell's vulture have been reported to fly at the lower levels of the stratosphere.

31. Ans. C

Exp: Tornadoes are nature's most violent storms. Spawned from powerful thunderstorms, tornadoes can cause fatalities and devastate a neighbourhood in seconds. A tornado appears as a rotating, funnel-shaped cloud that extends from a thunderstorm to the ground with whirling winds that can reach 300 miles per hour.

32. Ans. C

Exp: Maharashtra has more number of minor ports (53) followed by Gujarat (40). Tamil Nadu has 4 Major Parts, including new port Enayam (recently approved by the Government).

33. Ans. D

Exp: The magnitude and character of tide motion

reflects the changing positions of the Moon and Sun relative to the Earth, the effects of Earth's rotation, and local geography of the sea floor and coastlines.

Radiant energy is the energy of electromagnetic and gravitational radiation. The SI unit of radiant energy is the joule (J). The quantity of radiant energy may be calculated by integrating radiant flux (or power) with respect to time.

Geothermal energy is heat that is generated within the Earth. Magma heats nearby rocks and underground aquifers. Hot water can be released through geysers, hot springs, steam vents, underwater hydrothermal vents, and mud pots. Magma exists in the mantle and lower crust.

34. Ans. D

Exp: Nano capsules are released into fields to directly reach the crop for pesticide and fertilisers delivery. It reduces nutrient and pesticide leaching to underground water. Nano sensors are being implanted on the fields which will give on time reports of soil conditions and plant growth too. In food processing industry for gelation and viscosifying the nano particles are used.

35.Ans. B

Exp: Net sown area is the physical extent of the land sown once in a year. Gross cropped area is the total gross area brought under cultivation in a year. Cropping intensity is equal to %age of grossed cropped area/net sown area. Hence it is more than or equal to 1 in any situation. Net sown area in India is always below 50% of the reporting area. But it is more than 50 % of total cultivable area.

36. Ans. A

Exp: Land-man ratio is defined as the ratio between the habitable area and the total population of a country. In terms of area, India ranks seventh in the world, while in terms of population it ranks second. Arable land includes net sown area, current fallow, other fallow and land under tree crops.

Arable land covers a total area of 167 million hectares which is 51 % of the total area of the country. However, the arable land-man ratio is' not as favourable as in many other countries like Australia, Canada, Argentina, the USA, Chile, Denmark and Mexico. Conversely, the landman ratio is more favourable in India than Japan, the Netherlands, Egypt, United Kingdom, Israel and China.

37. Ans. C

Exp: Temperature contrast increases during night as the structural landforms in urban areas take more time to cool down. Wind while regularly blowing will drive the heated air from one place to another and hence decrease the effect of urban island. Concrete and asphalt are generally used in pavements, roofs, roads construction. These are having high heat capacity which raises the temperature of its region. It increases the occurrence of heat waves in summer.

38. Ans. A

Exp: Conurbation is a region comprising a number of cities which have merged through population growth and physical expansion. It is well connected through transport. It has a single labour market which is considered as travel to work area. It is an extensive urban area resulting from the expansion of several cities or towns so that they coalesce but usually retain their separate identities. In India

examples of conurbation are Delhi NCR, Mumbai Metropolitan Region, etc.

39. Ans. A

Exp: Rural urban migration is mainly male dominating and rural society is left with many households without any male members, so it leads to feminization of agriculture. Due to migration many people send their earned money to their homes. But due to rural urban migration a large number of children are getting into the cities where labour is in high demand at low prices, hence it gives birth to child labour. Cities are mostly having high rates of crime because of rich poor divide, jobless youth, uneducated youth, etc.

40. Ans. A

Exp: Union Ministry of Mines and Steel has proposed to create a District Mineral Foundation (DMF) in every district affected by mining, which will be funded by an additional levy related to royalty. The funds will be used for the benefit of persons affected by mining as also for the rebuilding of infrastructure in mining affected areas. Its manner of operation comes under the jurisdiction of the relevant State Government.

41. Ans. D

Exp: Watershed management emphasises scientific soil and water conservation in order to increase the biomass production. The aim is to develop primary resources of land and water, to produce secondary resources of plants and animals for use in a manner which will not cause ecological imbalance. Watershed management not only increases the production and income of the watershed community, but also mitigates droughts and floods and increases the life of the downstream dam and reservoirs.

Water harvesting is an age-old concept in India. Khadins, tanks and nadis in Rajasthan, bandharas and tals in Maharashtra, bundhis in Madhya Pradesh and Uttar Pradesh, ahars and pynes in Bihar, kulhs in Himachal Pradesh, ponds in the Kandi belt of Jammu region, and eris (tanks) in Tamil Nadu, surangams in Kerala, and kattas in Karnataka are some of the ancient water harvesting, including water conveyance, structures still in use today.

Water harvesting techniques are highly locale specific and the benefits are also localised. Giving people control over their local water resources ensures that mismanagement and over-exploitation of these resources is reduced or removed. Their main purpose is not to hold surface water but to recharge the ground water beneath. The advantages of water stored in the ground are many.

42. Ans. D

Exp: The Project is to improve reliability and accuracy of Hydrology and Ground Water data throughout India and to improve access to this information. The NHP will help in gathering Hydro-meteorological data which will be stored and analysed on a real time basis and can be seamlessly accessed by any user at the State/District/village level.

The NHP will result in the improvement of:

- Data storage, exchange, analysis and dissemination through National Water Informatics Centre.
- Lead time in flood forecast from 1 day to at least 3 days.
- Mapping of flood inundation areas for use by the disaster management authorities.
- Assessment of surface and ground water

resources in a river basin for better planning & allocation for PMKSY and other schemes of Govt. of India.

- Reservoir operations through seasonal yield forecast, drought management, SCADA systems, etc.
- Design of SW & GW structures, hydropower units, interlinking of rivers, Smart Cities.
- Fulfilling the objectives of Digital India.
- People Centric approach.

43. Ans. A

Exp: The Diamond Quadrilateral is a project of the Indian railways to establish high speed rail network in India. This quadrilateral will connect the four metro cities in India, i.e. Delhi, Mumbai, Kolkata and Chennai. Highspeed train on Mumbai-Ahmedabad section will be the first bullet train corridor to be implemented in the country. It will be operated by Indian railways.

44. Ans. C

Exp: The main problems of cotton textile industries are shortages of raw material, erratic power supply, strikes and lockouts, competition with synthetic fibres and competition in internal market.

45. Ans. B

Exp: Agglomeration may also lead to traffic congestion, pollution and other negative externalities caused by the clustering of a population of firms and people and that this may lead to diseconomies of scale. Another source of agglomeration diseconomies-higher crowding and increased waiting time-can be observed in disciplines or industries that are characterized by constrained access to relevant production facilities or resources. It increases competition and lead to shortage of supply of labour.

46. Ans. D

Exp: The methods are: By the ocean-floor magnetic striping records the flip-flops in the Earth's magnetic field, scientists, knowing the approximate duration of the reversal, can calculate the average rate of plate movement during a given time span. Evidence of past rates of plate movement also can be obtained from geologic mapping studies.

If a rock formation of known age -- with distinctive composition, structure, or fossils – mapped on one side of a plate boundary can be matched with the same formation on the other side of the boundary, then measuring the distance that the formation has been offset can give an estimate of the average rate of plate motion. Current plate movement can be tracked directly by means of ground-based or space-based geodetic measurements.

47. Ans. C

Exp: In the land locked Red Sea, it is as high as 41%. Thus Red sea has higher salinity. The North Sea, in spite of its location in higher latitudes, records higher salinity due to more saline water brought by the North Atlantic Drift. Baltic Sea records low salinity due to influx of river waters in large quantity. The Mediterranean Sea records higher salinity due to high evaporation. Salinity is, however, very low in Black Sea due to enormous fresh water influx by rivers.

48. Ans. A

Exp: Continental Margins include continental shelf, continental slope, continental rise and deep-oceanic trenches. It too contains deep oceanic trenches. The abyssal plains are the areas where the continental sediments that move beyond the margins get deposited.

Mid-oceanic ridges forms an interconnected chain of mountain system within the ocean. It is the longest mountain-chain on the surface of earth. Its rift system at crest is of intense volcanic activity.

49. Ans. B

Exp: Sargasso sea formed in Atlantic ocean which is a motionless ocean region around which ocean currents circulate. Ocean currents too get influenced by Coriolis force.

50. Ans. B

Exp: (2. The national coral reef research centre has been established at Port Blair, Andaman & Nicobar Islands.)

51. Ans. A

Exp: (3. The centre for biodiversity polity and law (CEBPOL) is in Delhi.)

52. Ans. D

Exp: It is a well known climatological fact that during pre-monsoon and post-monsoon seasons in the North Indian Ocean, more cyclones form in the Bay of Bengal compared with the-Arabian Sea. Scientists have now discovered why in some years more cyclones form in the Arabian Sea than usual. This is due to a newly discovered Phenomenon (2007) El Nino Modoki - which causes warm moist conditions in the Central Pacific and dry cold conditions in Eastern and western pacific. A more familiar phenomenon, El Nino, was found to suppress cyclone formation in the Arabian Sea.

The findings are results of a study undertaken by a team led by Dr. M.R. Ramesh Kumar, Senior Scientist, National Institute of Oceanography, Goa. The study has been published in the Natural Hazards journal. The reason why El Nino Modoki brings only fewer number of cyclones in the Bay of Bengal is because one of the two descending limbs of the Walker Cell is over the western Pacific and Bay of Bengal.

The descending limb causes dry conditions not conducive for cyclone formation. The ascending limb of the Walker Cell, on the other hand, brings rain. Also, an El Nino Modoki creates stronger divergence over the western Pacific and Bay of Bengal compared to El Nino Divergence (opposite of convergence) means surface winds move away from each other and result in low relative vorticity (rotational flow of winds). These conditions are not conducive for cyclones. This explains why Bay of Bengal region (close to western Pacific) has fewer cyclones during an El Nino Modoki.
On the other hand, there is large convergence over the Arabian Sea during an El Nino Modoki explaining the large number of cyclones in that region. A statistical analysis of the El Nino and El Nino Modoki years between 1979-2004 was conducted. It was found that there were four El Nino years and seven El Nino Modoki years during this period.

The number of cyclones per year show significant differences indicating that El Nino Modoki years are conducive for cyclone formation over Arabian Sea while El Nino is conducive for cyclones over the Bay of Bengal.

Only post-monsoon and pre-monsoon periods were chosen for the study. “Cyclones usually do not form during monsoon season,” Dr. Ramesh Kumar (Expert, Atmospheric Studies). There are a few reasons for this.

"Atmospheric parameters - low – level relative vorticity, mid-tropospheric relative humidity, vertical wind shear – are not at values conducive for cyclone formation during monsoon," Dr. Ramesh Kumar says. Second, during monsoon there is strong zonal (latitudinal) wind in the form of a jet at lower levels and this is not conducive for cyclone formation as the vertical shear between lower and upper troposphere will not be minimum. Finally, the sea surface temperatures are too low for cyclogenesis.

53. Ans. A

Exp: East flowing rivers are flowing in gentle slope, whereas west flowing rivers are flowing in deep trough.

54. Ans. D

Exp: Assam Himalayas, eastern section of the Great Himalayas, extending eastward across Sikkim state (India) and Bhutan, into northern Assam and Arunachal Pradesh states (India), and along the border with the Tibet Autonomous Region (China). The mountains run eastward for 450 miles (720 km) from the upper Tista River in the west to the great southward bend of the Brahmaputra River (there called the Tsangpo River) in the east. important peaks include Kula, Chomo, and Kangto; the highest is Namjagbarwa (Namcha Barwa; 25,445 feet [7,756 metres]) in Tibet.

The Subansiri, Manas, Sankosh, Raidak, and Jaldhaka rivers rise in the mountains and flow southward to join the Brahmaputra. Main settlements in the region include Gangtok and Kalimpang in India and Punakha and Paro in Bhutan. Important mountain passes include Natu, Jelep, and Tang.

Kumaun Himalayas, west-central section of the Himalayas in northern India, extending 200 miles (320 km) from the Sutlej River east to the Kali River. The range, comprising part of the Siwalik Range in the south and part of the Great Himalayas in the north, lies largely within the state of Uttarakhand, northwest of Nepal. It rises to 25,646 feet (7,817metres) at Nanda Devi, the ranges highest peak, and to 25,446 feet (7,756 metres) at Kamet, near the Chinese border.

At elevations above 14,000 feet (4,300 metres), snow covers the mountains throughout the year. Glaciers and snowmelt feed the head streams of the Ganges River in torrents that rush through gorges and steep-sided ravines.

Below the permanent snow line between 9,000 and 14,000-feet (2,750 and 4,300 metres)--is a cold windswept zone where herders take sheep and goats to graze during the short summers. At lower elevations, between 3,500 and 8,000 feet (1,100 and 2,400 metres), a temperate climate encourages year round settlement; farmers raise livestock and cultivate terraced, irrigated slopes.

Deodar cedar forests supply timber that is sold on the plains to the south, but in recent years deforestation has diminished timber yields and caused land degradation and erosion. Commerce centres on Dehra Dun, the capital of Uttarakhand, in the southern, foothills. Indians from the lowlands use Mussoorie as a summer resort and educational centre, and Hindu pilgrims travel into the high mountains farther north to visit shrines at Badrinath, Kedarnath, and Gangotri.

Punjab Himalayas, western most section of the Himalayas, lying in the Kashmir region of northern India and Pakistan and extending

east southeast for 350 miles (560 km) from the bend of the Indus River to the Sutlej River.

The upper Indus separates them from the Karakoram Range to the north. Included within the Punjab Himalayas are the Zaskar Range, the Pir Panjal Range, and part of the Siwalik Range. The Jhelum River rises in these mountains before flowing westward through the Valley of Kashmir. The highest point is Nanga Parbat (26,660 feet [8,126 metres]), at the northwest end of the range. Dalhousie, in the foothills of the range, is a noted mountain resort.

55. Ans. D

Exp:

1. Only Barren Island is active volcano in Andaman and Nicobar group of Islands.
2. India's southern most point Indira point is situated on the southern tip of the great Nicobar Island.

56. Ans. B

Exp: In India, Coromandel Coast receives rainfall during winter season, due to northeast monsoon, but north-western part of India also receive winter rainfall due to western disturbance.

57. Ans. D

Exp: Fog and mist are both created by water droplets, differing only in their overall locations and density. Fog is a cloud that reaches ground level, even if that "ground" is a hill or mountaintop. Mist forms wherever water droplets are suspended in the air by temperature inversion, volcanic activity, or changes in humidity.

Fog is denser than mist and tends to last longer. In terms of visibility, fog reduces it to less than one kilometre (0.6 miles), while mist can reduce visibility to between 1 and 2 kilometres (0.6 - 1.2 miles)

58. Ans. C

Exp: The process of wearing down of relief variation of the surface of the earth through erosion is called gradation.

59. Ans. A

Exp: Heat is transported to a great height by strong conventional current.

60. Ans. A

Exp: Here question is about the factors responsible for amount of incoming solar radiation. So type of the earth surface will not determine the amount of incoming solar radiation. Other factors which affects insolation are

(i) Distance between sun and earth,

(ii) Sunspot.

61. Ans. B

Exp: Pressure belt are more regular in southern hemisphere.

62. Ans. B

Exp: In the question, we were asked for major determinants of climate of a particular location. Above all the determinants, local weather condition is not a major determinant for determining climate of a particular location.

63. Ans. B

Exp: Vegetation in the mountain is not the major deciding factor. Mountain should be near to the coast, then only the mountain will give triggering effect for the winds.

64. Ans. C

Exp: Movement of the sun causes shifting of both thermally induced and dynamically produced pressure belts.

65. Ans. D

Exp: The 4th statement explains about absolute humidity.

66. Ans. A

Exp: No possibilities for thunderstorms and torrential rains in the north western India during winter, because during winter, north western part of India will experience low temperature and high pressure.

67. Ans. C

(3. The elevation of the Purvanchal hills decreases as we move from North-South).

68. Ans. C

(2. The Bhangar forms the alluvial terrace above the flood levels.

Note: Khadar forms the alluvial terrace along the river banks).

69. Ans. B

(1. The Vindhyan range act as a watershed.
3. The Eastern ghats exhibit its true mountain character between the Mahanadi and Godavari river)

70. Ans. C

(2. The Great Nicobar Island is the southern most island in the Nicobar group of islands.
3. Saddle peak is located in North Andaman).

71. Ans. B

(1. Padmaja Naidu Himalayan Zoological Park - Red Panda.
2. Nandankanan - White Tigers)

72. Ans. D

Exp: Among these four options, Kutch Region receives less rainfall.

73. Ans. D

Exp: Most of males moved from Rural to Urban

74. Ans. A

Exp: In Indian ocean both divergent and convergent plate boundaries can be found. Example for divergent plate boundary, African plate and Arabian plate.

75. Ans. A

Exp: Abyssal hills or mid oceanic ridges are formed due to divergence of two plates.

76. Ans. D

Exp: Ocean trenches are produced by the subduction of oceanic crust under other oceanic crust whereas ocean ridges are formed by divergence of two oceanic plates.

Dogger bank and Grand bank are important fishing grounds located in Northern part of Atlantic ocean, where cold and warm ocean currents are meeting.

77. Ans. A

Exp: Rain replenishes freshwater in rivers and streams, so they don't taste salty. However, the water in the ocean collects all of the salt and minerals from all of the rivers that flow into it. Salt in the ocean comes from two sources: runoff from the land and openings in the seafloor.

Rocks on land are the major source of salts dissolved in seawater. Rainwater that falls on land is slightly acidic, so it erodes rocks. The two ions that are present most often in seawater are chloride and sodium. These two make up over 90% of all dissolved ions in seawater. The sodium chloride, is often just called as salt. Most seawater has about 35 g

(7 teaspoons) of salt in every 1,000 g (about a litre) of water.

Most **Chlorine** is commercially produced and is most widely known for being used within compounds to purify water and create cleaning products. **Chloride**: The negatively charged ionic form of **Chlorine**. ... **Chloride** is what is created when **Chlorine** gains an electron and combines with other elements.

78. Ans. D

Exp: Exclusive Economic zone: extends upto a distance of 200 nautical miles from the base line. If we reduced the distance of territorial sea and contiguous zone the exact width of exclusive economic zone is only 176 nautical miles.

The concerned coastal state has the exclusive right of the survey, exploitation, conservation and management of mineral resources of ocean deposits, ocean floor (crust), marine water energy, water and marine organisms within the exclusive economic zone (EEZ).

No other country can venture in any economic activity in this zone without the permission of the concerned coastal state but this zone is open for laying down submarine cables, navigation of ships flying of aeroplanes for other states. It may be pointed out that such rights are enjoyed by other states only outsides the seaward limit of the territorial sea.

79. Ans. A

Exp: Revolution of the earth is reason for seasonal variation and rotation of the earth is reason for day and night.

80. Ans. B

Exp: Mid ocean ridges are formed due to divergence of two oceanic plates. Rift valley is formed due to divergence of two continental plates.

81. Ans. D

Exp: It was established by Gaspard de Coriolis in 1844 that to an earth-bound observer, any object moving freely across the globe appears to curve slightly from its initial path. In the Northern Hemisphere, this curve to the right (or clockwise) from the expected path; in the Southern Hemisphere, to the left (anti-clockwise).
Coriolis force is not in itself a force rather is an effect of rotational movement of the earth.

Coriolis force becomes effective on any object which is in motion.

Coriolis force affects wind direction and not the wind speed as it deflects the wind (and other moving objects) direction from expected path.

The magnitude of Coriolis force is determined by wind speed. The higher the wind speed, the greater is the deflection of wind direction due to resultant greater deflective (Coriolis) force.

It becomes maximum at the poles due to minimum rotational speed of the earth While it becomes zero at the equator.

It always acts at right angles to the horizontally moving air and other moving objects.

82. Ans. D

Exp: Agulhas current is flowing in Indian Ocean

83. Ans. A

Exp:

Conditions for the growth of Coral polyps:

- Corals are found mainly in the tropical oceans and seas because they require high mean -annual temperature ranging between 68°F and 70°F (20°C-21°C) for their survival. It may be pointed out that they cannot survive in the water having either very low temperature or very high temperature.
- Corals do not live in deeper water i.e., not more than 200-250 feet (60-70m) below several because they die in waters deeper than 77m due to lack of sufficient amount of sunlight and oxygen which are very much required for the growth of coral polyps.
- They should be clean sediment-free water because muddy water turbid water clogs the mouths of coral polyps resulting into their death.
- It may be pointed out that though coral polyps require sediment-free water but fresh water is also injurious for the growth of corals. This is why corals avoid coastal lands and live away from the areas of river mouths.
- Very high proportion of oceanic salinity is injurious for the growth of coral polyps because such waters contain little amount of calcium carbonates whereas lime is important food of coral polyps. The oceanic salinity ranging between 27°/00 and 30°/00 is most ideal for the growth and development of coral polyps.
- Ocean currents and waves are favourable for corals because they bring necessary food supply for the polyps. It is obvious that corals grow in open seas and oceans but they die in langoons and small enclosed seas because of lack of supply of food. Currents and waves also determine the shapes of coral reefs.
- There should be extensive submarine platforms for the formation of colonies by the coral polyps.

84. Ans. C

Exp : Java Trench is located in Indian ocean and Tizard trench is located in Atlantic ocean.

85. Ans. C

Exp: Low evaporation resulted in low salinity.

86. Ans. C

Exp: In Australia there is no active volcano.

87. Ans. A

Exp: Main workers: People working for more than 183 days in a year.

Marginal Worker: people working for less than 183 days in a year.

Natural growth rate = BR – DR
Induced growth rate = BR- DR + Migration.

Population pyramid is gives population composition age wise. Hence people in age bracket of 18-59 are the working population.

The portion in pyramid below 18 gives an indication of future of working population. Regions with low socio-economic development has high work participation rate because large number of manual workers are needed for subsistence or near subsistence.

88. Ans. D

Exp: India is second largest producer of silk in the world after China. India produces four varieties of silk viz. Mulbery, Eri, Tassar and Muga.

89. Ans. C

Exp: It is conducted every 5 years. There are 5 kinds of land holdings in India, depending on various sizes as follows:

a) Marginal holdings: size 1 hectare or less
b) Small holdings: size 1 to 2 hectares
c) Semi-medium holdings: size 2 to 4 hectares
d) Medium holdings: size 4 to 10 hectares
e) Large holdings: size above 10 hectares

Out of total operational land holdings in India, 12.78% belong to women.

90. Ans. A

Exp: Tourism provides financial support for the conservation of ecosystems and natural resource management, making the destination more authentic and desirable to visitors. It also adds more value to the local tourism business.

Many of the negative impacts from tourism occur when the amount of visitors is greater than the environment's ability to cope with the visitor volume.

Unchecked tourism development may lead to soil erosion, increased pollution and waste, discharges into the sea and waterways, increased pressure on endangered species of animals and plants, and heightened vulnerability to deforestation, as well as loss of biodiversity.

The same way that tourism can encourage the preservation of socio-cultural authenticity of host communities, mass tourism may also erode traditional values by introducing foreign elements which are in conflict with the cultural, historical, and religious heritage of the community.

91. Ans. A

Exp: Rapid transit systems are typically located either in underground tunnels or on elevated rails above street level. Outside urban centers, rapid transit lines may run on grade separated ground level tracks. The capital cost is high, as is the risk of cost overrun and benefit shortfall; public financing is normally required.

92. Ans. C

Exp: Large deposits of bauxite are found mainly in the tropical regions — Australia, Surinam, Jamaica, Venezuela, Guyana, Malaysia, Indonesia and India. They are also found in China, Yugoslavia, the USA, Greece and Hungary. Bauxite, if not available locally, is imported from outside. Hence, statement 1 is correct.

Bauxite is the ore of aluminium. Like iron, it is being used widely in a variety of ways — machine tools, electricals, utensils, aeroplanes, packing and construction. Extraction of aluminium from bauxite requires large amount of electricity. It is, therefore, called an energy intensive industry. Many major dams in the world have been constructed to supply cheap hydro-electricity for smelting aluminium. Hence, statement 2 is correct.

93. Ans. D

Exp: The leather industry in India is geographically well diversified, though Tamil Nadu, Uttar Pradesh and West Bengal account for bulk of the output.

The major production centres for leather and leather products are located at Chennai, Ambur, Ranipet, Vaniyambadi, Trichi, Dindigul in Tamil Nadu, Kolkata in West Bengal, Kanpur, Agra and Noida in Uttar Pradesh, Jalandhar in Punjab, Bahadurgarh and Manesar in Haryana, Bangalore in Karnataka, Delhi and Hyderabad in Andhra Pradesh. The sector is dominated by micro and small units with bigger units accounting for just around 5 per cent of the total manufacturing units.

94. Ans. B

Exp: Wide range of low land tropical cash crops are cultivated in tropical monsoon climate. The most important crop in this category is cane sugar as much as two third of world's sugar production comes from tropical countries. Sugar is either grown in plantations or on small holdings whenever rainfall and sunshine are abundant. Hence pair (1) is not correctly matched.

Olive tree is extensively cultivated in Mediterranean climate. It is hardy and long rooted and can survive even on very poor limestone soils with less than 10 inches of annual rainfall

Cocoa is a tropical plantation crop that is well suitable in hot and wet equatorial climate . It is most extensively cultivated in west Africa bordering of Gulf of Guinea. The two most important producers are Ghana and Nigeria.

Hence, pair (2) and (3) are correctly matched.

95. Ans. C

Exp: Mediterranean type of climate is charaterised by wet and mild winter and hot dry summers instead of severe and long winters. Mediterranean regions are net importer of dairy products.

Conditions in Mediterranean do not suit growth of grasses as most of the rain comes in cool season, when growth is slow. Slow growing vegetation which cannot replenish its foliage readily and which is without deep penetrating root is least suited here.

Even if grasses do survive they are so wiry and bunchy that not suitable for animal rearing. Hence, option (c) is correct.

96. Ans. A

Exp: Tropics have great potential in timber resources. Commercial extraction in equatorial region is a difficult task because of:

Trees of tropical rain forests are not found in pure stands of a single species. Hence, statement 1 is correct.

There is no frozen surface to facilitate logging. Hence, statement 2 is correct.

Tropical hardwoods sometimes too heavy to float in the river and this makes haulage an expensive matter. Hence, statement 3 is correct.

Hence, tropical countries are net timber importers. Hence the correct answer is option (a).

97. Ans. C

Exp: Monocropping is the agricultural practice of growing a single crop year after year on the same land, in the absence of rotation through other crops or growing multiple crops on the same land (polyculture).

One of the serious problems that arises out of faulty strategy of irrigation and agricultural development is degradation of land resources. This is serious because it may lead to depletion of soil fertility. The situation is particularly alarming in irrigated areas.

A large tract of agricultural land has lost its fertility due to alkalisation and salinisation of soils and waterlogging. Excessive use of chemicals such as insecticides and pesticides has led to their concentration in toxic amounts in the soil profile. Leguminous crops have been displaced from the cropping pattern in the irrigated areas and duration of fallow has substantially reduced owing to multiple cropping. This has obliterated the process of natural fertilisation such as nitrogen fixation. Hence the correct answer is option (c).

98. Ans. A

Exp: Following conditions are best suitable for wheat cultivation.

At the time of germination, it requires cool weather and sufficient moisture in the soil.

The annual rainfall should be between 40-75 cm.

An average temperature of 16°C and clear sky are required at the time of ripening.

Loamy and chernozem type of soils are best suited for wheat cultivation. Hence, option (a) is correct.

99. Ans. B

Exp: Nuclear Energy Resources: Important minerals used for the generation of nuclear energy are uranium and thorium. Uranium deposits occur in the Dharwar rocks. Geographically, uranium ores are known to occur in several locations along the Singbhum Copper belt.

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.

100. Ans. B

Exp: The regions where farmers specialise in **vegetables** only or grow mainly **vegetables**, the farming is known as truck farming. Hence statement 2 is correct.

It is called truck farming, because the distance of truck farms from the market is governed by the distance that a truck can cover overnight from farm to market. Hence statement 1 is not correct.