# ICSE Class 10 Geography Specimen Paper 1

Written by the Future Topper subject team on the CISCE examination pattern. Not an official CISCE paper.
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**Maximum Marks: 80 | Time Allowed: Two hours | Reading Time: 15 minutes**

Part I is compulsory. Attempt any five questions from Part II.

## General Instructions

*Write your answers on the separate answer paper provided. The first 15 minutes are for reading the paper, and you may not write during that time. Marks for each question, or part of a question, are shown in brackets. Part I carries 30 marks and all of it must be attempted. In Part II you must attempt any five questions, each of which carries 10 marks. Question 1 must be answered from the Future Topper Topographical Sheet Extract FT-1 printed on page 2 of this paper; the extract is an original map drawn for practice and is not a Survey of India sheet, but it uses the conventional signs of an Indian topographical sheet at the scale of 1:50,000, so that two centimetres on the map stand for one kilometre on the ground and every grid square measures one square kilometre. Question 2 must be answered on a standard school outline map of India, which you should mark neatly in pencil and fasten to your answer booklet. All distances on the extract are to be measured with a ruler and a length of thread, and all directions are to be given from the north line of the grid.*

## PART I (30 Marks)

*Attempt all questions from this Part.*

### Question 1 [10]

*Study the extract of Future Topper Topographical Sheet FT-1, printed on page 2, and answer the following questions.*

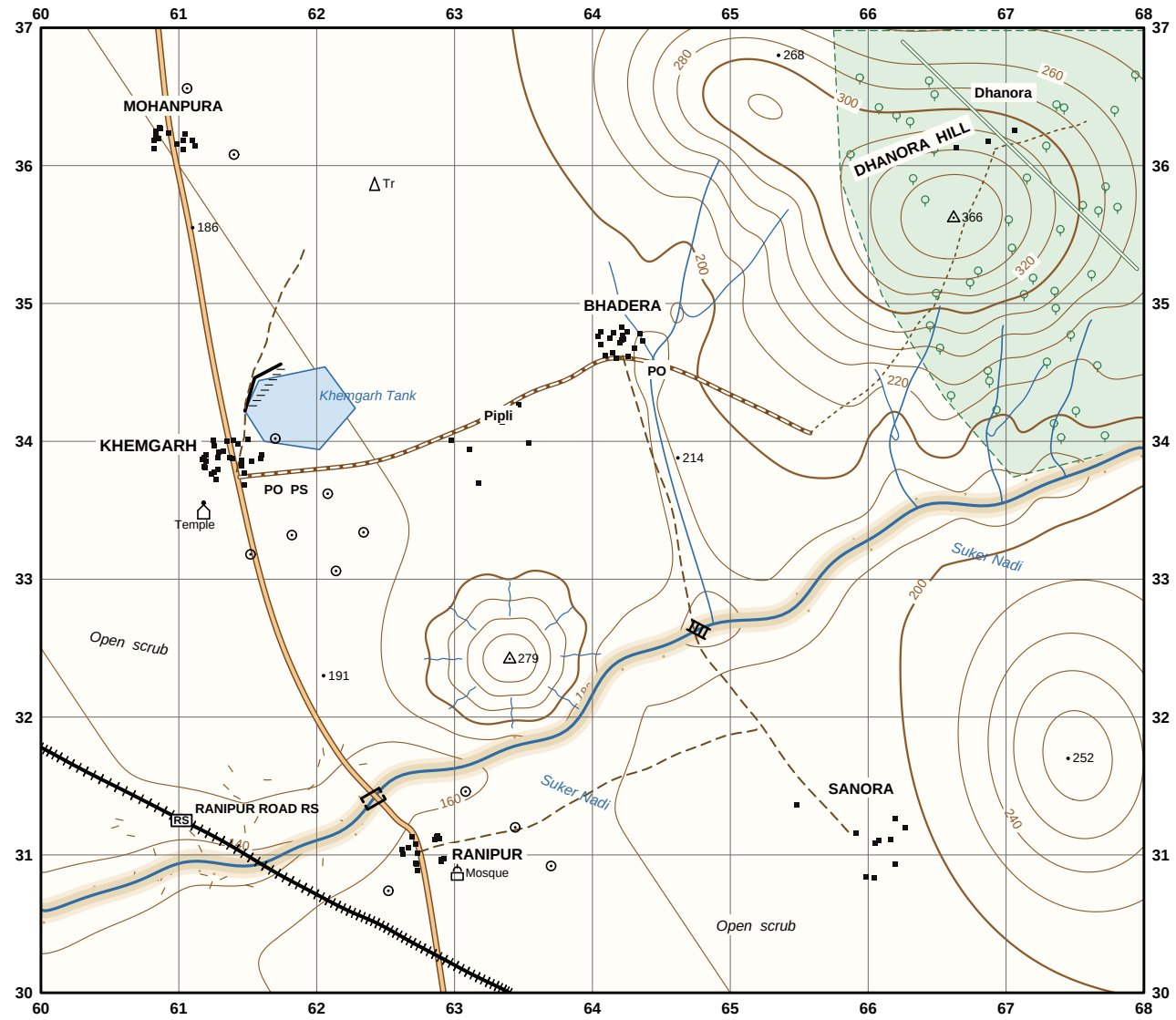
**(i)** (a) Give the six-figure grid reference of the triangulated height 366 on Dhanora Hill. (b) In which compass direction does Sanora lie from Bhadera? **[2]**

**(ii)** (a) Name the drainage pattern seen in grid square 6332. (b) Name the man-made feature built across the Suker Nadi at 648326, and state the season in which it is of most use. **[2]**

**(iii)** (a) Measure the straight-line distance, in kilometres, between the settlement of Khemgarh (614339) and the settlement of Bhadera (642347). (b) Name the type of settlement pattern shown at Sanora. **[2]**

**(iv)** (a) Give two pieces of evidence from grid squares 6133 and 6233 which show that the people of Khemgarh depend on agriculture. (b) What does the sandy bed of the Suker Nadi tell you about the flow of the river? **[2]**

**(v)** (a) Name the means of transport a villager of Ranipur would use to reach Sanora. (b) Name any two man-made features shown in grid square 6134. **[2]**




**CONVENTIONAL SIGNS USED ON THIS EXTRACT**

| | | |
|---|---|---|
| 200 Contour with value, interval 20 m | Cart track | Well |
| Index contour (every 100 m) | Footpath | Tr Tower |
| 366 Triangulated height | Railway line | Reserved forest |
| • 214 Spot height | RS Railway station | Fire line |
| Stream with sandy bed | Causeway | Broken ground |
| Tributary stream | Bridge | Sand in a river bed |
| Tank with embankment | Village site, each square a hut | Open scrub; land use named in words |
| Metalled road | Temple | Grid line, 1 km square |
| Unmetalled road | Mosque | |

*FUTURE TOPPER TOPOGRAPHICAL SHEET EXTRACT FT-1 | Scale 1:50,000 | Contour interval 20 metres | Each grid square is one kilometre square (2 cm on the map). Eastings are printed along the top and bottom of the extract and northings along the sides. This is an original map drawn by Future Topper for practice. It is not a Survey of India map sheet and it does not show any real place.*

**Question 2 [10]**

*On a standard school outline map of India, mark and label the following. Use arrows where the map is crowded, and write the name of every feature you mark.*

**(i)** Shade and label the Thar Desert. **[1]**

**(ii)** Mark and name the river Narmada. **[1]**

**(iii)** Shade and label an area of laterite soil in the Western Ghats. **[1]**

**(iv)** Mark with a single arrow the direction of the Arabian Sea branch of the south-west monsoon. **[1]**

**(v)** Mark and name the Palghat Gap. **[1]**

**(vi)** Shade and label the state that leads India in the production of tea. **[1]**

**(vii)** Mark and name the Tropic of Cancer. **[1]**

**(viii)** Mark with a dot and name the port of Kandla (Deendayal Port). **[1]**

**(ix)** Shade and label an area which receives rainfall of over 200 centimetres in the north-east. **[1]**

**(x)** Mark and name the iron and steel plant at Bhilai. **[1]**

**Question 3 [10]**

*Choose the correct answer. Write only the number of the part and the letter of your answer.*

**(i)** The local time of a place in Arunachal Pradesh is about two hours ahead of the local time of a place in Gujarat. This is because the two places differ in their
(a) latitude (b) longitude (c) altitude (d) relief **[1]**

**(ii)** The soil formed by the weathering of lava, rich in iron, lime and magnesia and able to hold moisture for a long time, is
(a) alluvial soil (b) red soil (c) black soil (d) laterite soil **[1]**

**(iii)** Teak : Monsoon forest :: Sundari : _____
(a) Tidal forest (b) Tropical evergreen forest (c) Alpine forest (d) Thorn forest **[1]**

**(iv)** Rain falling on the roof of a house is led through pipes into an underground tank and used in the dry months. This practice is called
(a) sprinkler irrigation (b) contour ploughing (c) drip irrigation (d) rain water harvesting **[1]**

**(v)** Which one of the following arranges the varieties of coal in the increasing order of their carbon content?
(a) Anthracite, bituminous, lignite, peat (b) Lignite, peat, anthracite, bituminous (c) Bituminous, anthracite, peat, lignite (d) Peat, lignite, bituminous, anthracite **[1]**

**(vi)** Assertion (A): The Tamil Nadu coast receives very little rain in the months of June and July.
Reason (R): The Tamil Nadu coast lies in the rain shadow of the Western Ghats and runs parallel to the Bay of Bengal branch of the south-west monsoon.
(a) Both A and R are true, and R is the correct explanation of A (b) Both A and R are true, but R is not the correct explanation of A (c) A is true but R is false (d) A is false but R is true **[1]**

**(vii)** The stalks of a crop are steeped in water for several days so that the fibre can be stripped from them. The crop is
(a) cotton (b) jute (c) sugarcane (d) coffee **[1]**

**(viii)** The iron and steel plant set up with German collaboration is at
(a) Bhilai (b) Rourkela (c) Durgapur (d) Bokaro **[1]**

**(ix)** Fresh flowers have to be sent from Pune to a buyer in Europe on the same day. The most suitable means of transport is
(a) railways (b) roadways (c) airways (d) inland waterways **[1]**

**(x)** Kitchen waste is placed in a pit with earthworms, which turn it into manure. This method of waste disposal is called
(a) incineration (b) segregation (c) vermicomposting (d) sanitary landfill **[1]**

## PART II (50 Marks)

*Attempt any five questions from this Part.*

### Question 4 [10]

*Climate of India.*

**(i)** Give one reason for each of the following: (a) Kochi has a smaller annual range of temperature than Delhi. (b) Shillong receives more rain than Kolkata. **[2]**

**(ii)** Name the rain-bearing wind that brings rainfall to the Punjab in the month of January, and state the direction from which it comes. **[2]**

**(iii)** Study the climate data of Station X given below and answer the questions that follow.
**Temperature (°C):** January 24.5, May 32.2, July 28.0, December 25.6.
**Rainfall (cm):** January 0.2, May 1.5, July 21.4, October 18.6, December 3.9. Total annual rainfall 82.4 cm.
(a) Calculate the annual range of temperature of Station X. (b) Name the season in which the station gets its October rainfall. (c) Is Station X on the east coast or the west coast of India? Give one reason for your answer. **[3]**

**(iv)** Explain briefly: (a) why the Ganga plain gets less rain from east to west; (b) why the monsoon is said to "burst"; (c) why Leh receives very little rainfall. **[3]**

### Question 5 [10]

*Soils of India.*

**(i)** Name the process by which alluvial soil is formed, and state one way in which khadar differs from bhangar. **[2]**

**(ii)** A farmer in Kerala finds that his soil is poor in humus and has to be heavily manured, yet he is able to grow cashew and tapioca on it. (a) Name this soil. (b) Give one reason why it is poor in humus. **[2]**

**(iii)** State three ways in which soil erosion may be checked on a steep hill slope. **[3]**

**(iv)** Give a reason for each of the following: (a) Black soil is suited to the growing of cotton. (b) Red soil is red in colour. (c) Alluvial soil of the delta is renewed every year. **[3]**

### Question 6 [10]

*Natural vegetation of India.*

**(i)** Name the type of forest in which the trees have breathing roots, and name one tree found in it. **[2]**

**(ii)** State two ways in which the tropical desert vegetation is adapted to a dry climate. **[2]**

**(iii)** Explain the difference between social forestry and afforestation, and state one object of the National Forest Policy with regard to the area under forest. **[3]**

**(iv)** Give a reason for each of the following: (a) Tropical evergreen forests are difficult to exploit for timber. (b) The monsoon forest is called a deciduous forest. (c) Forests are important in checking floods. **[3]**

### Question 7 [10]

*Water resources and irrigation.*

**(i)** State two advantages of drip irrigation over the flooding of fields. **[2]**

**(ii)** Give two reasons why canal irrigation is more common in the Northern Plain than in the Deccan Plateau. **[2]**

**(iii)** Name the method of irrigation most suited to each of the following, giving a reason in each case: (a) a small plot in the Ganga plain where the water table is high; (b) the hard rock uplands of Telangana; (c) a tea garden on a hill slope in Assam. **[3]**

**(iv)** Describe three steps a town can take to conserve its water supply. **[3]**

**Question 8** [10]

*Minerals and energy resources.*

**(i)** Name the best variety of iron ore found in India and state one reason why it is of high quality. [2]

**(ii)** Name one state that produces manganese and state one use of manganese. [2]

**(iii)** Give a reason for each of the following: (a) Petroleum is called a fossil fuel. (b) Thermal power stations are often built close to the coalfields. (c) Nuclear power is produced in only a few places in India. [3]

**(iv)** A village in Gujarat is far from the electricity grid and has strong sunshine for most of the year. (a) Name the source of energy best suited to it. (b) State two advantages of using this source. [3]

**Question 9** [10]

*Agriculture in India.*

**(i)** State two differences between a kharif crop and a rabi crop, naming one crop of each kind. [2]

**(ii)** Name the leading state in the production of coffee and state one geographical condition that favours its growth there. [2]

**(iii)** Explain the importance of the Green Revolution under the following heads: (a) yield per hectare; (b) the use of fertilisers; (c) one drawback of the revolution. [3]

**(iv)** Give a reason for each of the following: (a) Rice is grown in fields that are flooded. (b) Sugarcane is sent to the mill soon after it is cut. (c) Millets are called dry crops. [3]

**Question 10** [10]

*Industries in India.*

**(i)** State two reasons why Mumbai became the leading centre of the cotton textile industry. [2]

**(ii)** Name two raw materials, other than iron ore, used in the iron and steel industry, and state the use of each. [2]

**(iii)** Explain why the petrochemical industry is usually set up near an oil refinery, and name two products of this industry. [3]

**(iv)** Give a reason for each of the following: (a) The electronics industry is called a footloose industry. (b) The sugar industry is a seasonal industry. (c) Silk weaving is carried on as a cottage industry in many parts of India. [3]

**Question 11** [10]

*Transport and communication.*

**(i)** State two reasons why roads are more useful than railways in a hilly region. [2]

**(ii)** Name the National Waterway that joins Prayagraj to Haldia, and name the river along which it runs. [2]

**(iii)** Give a reason for each of the following: (a) Railways are better suited than roads to carry coal from Dhanbad to Durgapur. (b) Air transport is the only means of reaching some parts of the north-eastern hills. (c) Pipelines are a cheap means of carrying petroleum. [3]

**(iv)** The Golden Quadrilateral joins the four largest cities of India. (a) Name any two of these cities. (b) State two ways in which it has helped trade and industry. [3]

**Question 12** [10]

*Waste generation and management.*

**(i)** State two harmful effects of dumping untreated waste on open ground outside a town. [2]

**(ii)** Name one biodegradable and one non-biodegradable waste found in a household, and state how each should be dealt with. [2]

**(iii)** Explain the meaning of segregation of waste, and state two reasons why it should be done at the household stage rather than at the dumping ground. [3]

**(iv)** A hospital produces used syringes, soiled dressings and expired medicines. (a) Name the method of disposal best suited to this waste. (b) Give two reasons for your choice. **[3]**

## ANSWER KEY AND MARKING SCHEME

*Marks shown in italics are the step marks an examiner would award. In Question 1 a measured distance within two tenths of a kilometre of the value given should be accepted in full. In Question 2 credit the mark if the feature is placed correctly and named, even where the shading is untidy; a feature marked but not named earns half the mark only if the question asks for marking alone. Elsewhere accept any correct point of equal value, and credit a candidate who gives the substance of the answer in different words.*

### Question 1 [10]

**(i)** (a) 666356. The triangulated height 366 stands on Dhanora Hill, in the north-east of the extract. (b) Sanora lies to the **south-east** of Bhadera.

*Grid reference, all six figures correct 1. Direction 1. (A grid reference with the eastings and northings reversed earns no mark.)*

**(ii)** (a) **Radial drainage.** The streams in grid square 6332 flow outwards in all directions from the isolated conical hill marked by the triangulated height 279, like the spokes of a wheel. (b) A **causeway**. It is of most use in the **dry season**, when the bed of the Suker Nadi carries little or no water and carts can be driven across it; in the rains it is under water and cannot be used.

*Radial 1. Causeway named, with the dry season 1.*

**(iii)** (a) About **3 kilometres** (2.9 to 3.1 km). On the map the two settlements are about 6 cm apart, and 2 cm stands for 1 km. (b) A **scattered** or dispersed settlement: the huts at Sanora stand apart from one another in ones and twos, with fields between them.

*Distance within 0.2 km 1. Scattered or dispersed 1.*

**(iv)** (a) Any two of: the many wells shown in grid squares 6133 and 6233, which are used to irrigate the fields; the Khemgarh Tank, which stores water for the fields in the dry months; the cart tracks that run out from the village to the surrounding land. (b) The sandy bed shows that the Suker Nadi is a **seasonal** river. It is in flood during the rains and dries up for the rest of the year, leaving the sand of its bed exposed.

*Any two pieces of evidence, 1/2 each 1. Seasonal flow explained 1.*

**(v)** (a) A **cart track** runs from Ranipur eastwards and then joins the track to Sanora, so the villager would go by bullock cart or on foot. There is no metalled road between the two settlements. (b) Any two of: the Khemgarh Tank with its embankment, a well, a cart track, cultivated fields.

*Cart track 1. Any two man-made features, 1/2 each 1.*

### Question 2 [10]

*One mark for each feature correctly marked and named.*

**(i)** The Thar Desert shaded in western Rajasthan, west of the Aravalli range.

*Correct area 1.*

**(ii)** The Narmada drawn from the Amarkantak plateau westwards through the rift valley between the Vindhya and Satpura ranges to the Gulf of Khambhat, and named.

*River correctly drawn and named 1.*

**(iii)** Laterite soil shaded along the crest and western slopes of the Western Ghats, in Karnataka, Goa or Kerala.

*Correct area 1.*

**(iv)** An arrow drawn from the Arabian Sea striking the west coast of India in a south-westerly to north-easterly direction.

*Arrow in the correct direction 1.*

**(v)** The Palghat Gap marked in the Western Ghats, between the Nilgiri hills and the Anaimalai hills, on the Kerala and Tamil Nadu border.

*Correct position 1.*

**(vi)** Assam shaded and named.

*Assam 1.*

**(vii)** The Tropic of Cancer drawn as a line across the middle of the country, about 23 and a half degrees north, and named.

*Line correctly placed and named 1.*

**(viii)** Kandla (Deendayal Port) marked with a dot on the Gulf of Kachchh in Gujarat, and named.
*Correct position 1.*

**(ix)** An area of over 200 cm of rain shaded in Meghalaya or the hills of the north-east, such as the Khasi hills.
*Correct area 1.*

**(x)** Bhilai marked with a dot in Chhattisgarh and named.
*Correct position 1.*

## Question 3 [10]

**(i)** **(b) longitude.** The two states lie about 30 degrees of longitude apart, and local time changes by four minutes for every degree.
*Correct option 1.*

**(ii)** **(c) black soil**, also called regur or cotton soil.
*Correct option 1.*

**(iii)** **(a) Tidal forest.** The sundari is the characteristic tree of the tidal or mangrove forest of the Sundarbans.
*Correct option 1.*

**(iv)** **(d) rain water harvesting.**
*Correct option 1.*

**(v)** **(d) Peat, lignite, bituminous, anthracite.** Anthracite has the highest carbon content, about 90 per cent and more.
*Correct option 1.*

**(vi)** **(a) Both A and R are true, and R is the correct explanation of A.**
*Correct option 1.*

**(vii)** **(b) jute.** The process described is retting.
*Correct option 1.*

**(viii)** **(b) Rourkela**, in Odisha, set up with German collaboration.
*Correct option 1.*

**(ix)** **(c) airways.**
*Correct option 1.*

**(x)** **(c) vermicomposting.**
*Correct option 1.*

## Question 4 [10]

**(i)** (a) Kochi lies on the coast, and the sea heats and cools more slowly than the land, so the sea breeze keeps its summers cool and its winters mild. Delhi lies far inland and has an extreme or continental climate. (b) Shillong lies on the windward slopes of the Khasi hills and the moist monsoon winds are forced to rise there, giving heavy relief rainfall, while Kolkata lies on the plain where the winds are not lifted in the same way.
*Maritime influence at Kochi 1. Relief rainfall at Shillong 1.*

**(ii)** The **western disturbance**, a cyclonic depression that travels from the Mediterranean Sea, reaching the Punjab from the **west** or north-west. The rain it brings is light but very useful to the rabi crop, especially wheat.
*Western disturbance named 1. From the west or north-west 1.*

**(iii)** (a) Annual range of temperature = 32.2 − 24.5 = **7.7°C**. (b) The rain of October falls in the season of the **retreating monsoon**, when the north-east monsoon picks up moisture over the Bay of Bengal. (c) Station X lies on the **east coast**. It receives heavy rain in October, after the south-west monsoon has passed, which is the mark of the Coromandel coast; a west coast station would have had its heaviest rain in June and July.
*Range worked out correctly 1. Retreating monsoon 1. East coast with a sound reason 1.*

**(iv)** (a) The monsoon winds shed most of their moisture as they travel up the plain, so the amount of water they carry falls steadily from the Bay of Bengal in the east towards Punjab in the west. (b) The monsoon arrives suddenly, with violent thunder, lightning and a downpour that may give several centimetres of rain in a day, instead of beginning with light showers, and this sudden onset is called the burst of the monsoon. (c) Leh lies in the rain shadow on the far side of the Himalaya, so the monsoon winds reach it after their moisture has been shed on the southern slopes.
*Decreasing moisture eastwards to westwards 1. Sudden onset described 1. Rain shadow 1.*

### Question 5 [10]

**(i)** Alluvial soil is formed by **deposition**: rivers carry silt and sand from the mountains and lay it down on the plains and in their deltas. Khadar is the new alluvium of the flood plain, renewed every year and more fertile, while bhangar is the older alluvium of the higher ground, often containing lime nodules called kankar.

*Deposition by rivers 1. One sound difference 1.*

**(ii)** (a) **Laterite soil.** (b) The heavy rain of Kerala washes the soil continually, and this leaching carries away the lime and the silica and leaves iron and aluminium behind; the high temperature also makes the vegetable matter decay quickly, so little humus is left.

*Laterite 1. Leaching or rapid decay of humus 1.*

**(iii)** Any three of: terracing, that is cutting the slope into steps so that the water cannot run straight down it; contour ploughing, in which the furrows are drawn along the contour and hold back the water; afforestation and the planting of grass, whose roots bind the soil; the building of check dams or bunds across the gullies; a ban on shifting cultivation and on overgrazing.

*Three measures, 1 mark each.*

**(iv)** (a) Black soil is made of very fine clay, holds moisture for a long time and is rich in lime, potash and magnesia, all of which suit the long growing season of cotton. (b) Red soil gets its colour from the iron compounds in the crystalline rocks from which it is weathered. (c) The river floods every year and spreads a fresh layer of fine silt over the delta, so the soil does not lose its fertility.

*Moisture retention or suitable minerals 1. Iron content 1. Annual deposit of fresh silt 1.*

### Question 6 [10]

**(i)** The **tidal** or mangrove forest, found in the deltas of the Ganga, Mahanadi, Godavari and Krishna. The trees send up breathing roots, or pneumatophores, above the waterlogged mud. The **sundari** is the best-known tree; the mangrove and the screw pine may also be named.

*Tidal or mangrove forest 1. Tree named 1.*

**(ii)** Any two of: the leaves are reduced to thorns or spines, so that very little water is lost by transpiration; the roots are long and go deep to reach the water table; the stems are thick and fleshy and store water; the bark is thick and the plants are often waxy, which checks evaporation.

*Two adaptations, 1 mark each.*

**(iii)** Afforestation means planting trees on land where there was no forest, or replanting a forest that has been cut, chiefly to increase the forest cover. Social forestry means growing trees on waste land, along roads, canals and railway lines and around villages, so that the people of the locality have fuel, fodder and small timber and do not cut the natural forest. The National Forest Policy aims at bringing **one third of the total land area** of the country under forest, and two thirds in the hills.

*Afforestation explained 1. Social forestry explained 1. One third of the area 1.*

**(iv)** (a) The trees are of many different kinds growing close together, the forest is dense and the region is hot, wet and unhealthy, so it is hard to find a stand of one species and hard to carry the timber out. (b) The trees shed their leaves for six to eight weeks in the dry season, in order to check the loss of water, and a forest that sheds its leaves is called deciduous. (c) The roots hold the soil and the leaf litter soaks up the rain, so the water sinks into the ground instead of running off at once into the rivers.

*Mixed species and difficult terrain 1. Shedding of leaves 1. Checking of run-off 1.*

### Question 7 [10]

**(i)** Any two of: water is delivered drop by drop at the root of the plant, so very little is lost by evaporation or seepage and far less water is needed; fertiliser can be given with the water, so it is used more efficiently; the land between the plants stays dry, so fewer weeds grow; there is no waterlogging and no rise of salt to the surface.

*Two advantages, 1 mark each.*

**(ii)** Any two of: the Northern Plain is level, so canals can be dug easily and the water flows gently over a long distance; its rivers are perennial, fed by snow, and carry water all the year; the soft alluvial soil is easy to dig. The Deccan is hard rock and uneven, which makes digging costly, and its rivers are seasonal.

*Two reasons, 1 mark each.*

**(iii)** (a) A **well or tube well**, because the water table is high and the water can be lifted cheaply for a small plot. (b) **Tank irrigation**, because the hard rock does not let water sink in and the uneven surface gives natural hollows in which rain water collects. (c) **Sprinkler irrigation**, because water can be spread evenly over a slope where flooding would wash the soil away.

*Each method with a sound reason, 1 mark each.*

**(iv)** Any three of: repair leaking mains and taps, since a great deal of treated water is lost in the pipes; make rain water harvesting compulsory in new buildings; treat and reuse waste water for gardens, parks and industry; meter the supply and charge for what is used so that waste is discouraged; protect and clean the tanks and lakes of the town so that they recharge the ground water.

*Three measures, 1 mark each.*

## Question 8 [10]

**(i)** **Magnetite.** It has the highest iron content, between 60 and 70 per cent, and it is magnetic, so it can be separated easily from the waste rock. (Haematite, with about 60 per cent iron, may be named as the best in quality that India actually mines in quantity, and should be accepted with a sound reason.)

*Ore named 1. Reason 1.*

**(ii)** Odisha, Madhya Pradesh, Maharashtra or Karnataka. Manganese is used in making ferro-manganese for hard steel, and also in dry cells, paints, glass and bleaching powder.

*State named 1. One use 1.*

**(iii)** (a) It was formed from the remains of tiny plants and animals that were buried under the sea bed and changed over millions of years by heat and pressure, so it is the fossil of once living matter. (b) Coal is bulky and loses weight when it is burnt, so it is cheaper to carry the electricity than to carry the coal, and a pit-head station saves heavy freight charges. (c) Nuclear power needs uranium or thorium, a very large supply of cooling water, heavy capital and strict safety arrangements, and such sites are few.

*Origin in buried organic matter 1. Saving in transport of bulky coal 1. Any sound reason 1.*

**(iv)** (a) **Solar energy.** (b) Any two of: it is free once the panels are set up, and the village need not wait for the grid; it is clean and causes no pollution; it cannot be used up; it is well suited to scattered houses, since each can have its own panel; running costs and maintenance are low.

*Solar energy 1. Two advantages, 1 mark each 2.*

## Question 9 [10]

**(i)** A kharif crop is sown at the beginning of the south-west monsoon, in June and July, and harvested in September and October; it depends chiefly on the monsoon rain. Examples are rice, jute, cotton and maize. A rabi crop is sown in October and November and harvested in March and April; it needs cool weather while growing and relies more on irrigation and winter rain. Examples are wheat, gram and mustard.

*Sowing and harvesting seasons distinguished 1. One crop of each kind named 1.*

**(ii)** **Karnataka.** Any one of: well drained hill slopes between 900 and 1800 metres; a warm temperature of 15 to 28 degrees Celsius with no frost; 150 to 250 cm of rainfall with a dry spell at ripening; shade from taller trees; rich, friable, well drained loam or lateritic soil.

*Karnataka 1. One geographical condition 1.*

**(iii)** (a) High yielding varieties of seed, chiefly of wheat and rice, raised the yield per hectare several times over and made India self-sufficient in food grains. (b) The new seeds respond to chemical fertiliser, so its use grew quickly and had to be matched by assured irrigation. (c) Any one drawback: the gains were confined to a few states such as Punjab, Haryana and western Uttar Pradesh and to a few crops; heavy use of fertiliser and pesticide has harmed the soil and the ground water; the water table has fallen where tube wells are over-used; the gap between the large and the small farmer has widened.

*Rise in yield 1. Use of fertiliser with irrigation 1. One drawback 1.*

**(iv)** (a) Rice needs standing water for much of its growing period, which keeps the roots at an even temperature and checks the growth of weeds. (b) The sucrose in the cane begins to dry out and the sugar content falls within a day or two of cutting, so the cane must be crushed quickly if the yield of sugar is not to fall. (c) Millets such as bajra and jowar can be grown with 25 to 75 cm of rain, on poor and sandy soils, without irrigation, so they are called dry crops.

*Standing water 1. Loss of sucrose 1. Low water requirement 1.*

## Question 10 [10]

**(i)** Any two of: the black soil of the Deccan hinterland grows cotton, so the raw material is close at hand; the moist sea air keeps the thread from breaking; Mumbai is a natural port through which machinery was imported and cloth exported; cheap hydel power from the Western Ghats and a large supply of labour; capital supplied by the Parsi merchants of the city.

*Two sound reasons, 1 mark each.*

**(ii)** Any two of: coking coal, which supplies heat and acts as the reducing agent that takes the oxygen out of the ore; limestone, which acts as a flux and carries off the impurities as slag; manganese, which hardens the steel; dolomite, used as a flux and as a furnace lining.

*Two materials with their uses, 1 mark each.*

**(iii)** The raw materials of the petrochemical industry, such as naphtha, ethylene and propylene, are obtained in the course of refining petroleum. They are bulky, and some are difficult and costly to store and carry, so it is cheaper and safer to use them where they are produced, and the heat and power of the refinery can be shared. Products: plastics, synthetic fibre such as nylon and polyester, synthetic rubber, detergents, dyes, drugs and fertiliser.

*Raw material obtained at the refinery 1. Saving in transport or storage 1. Two products 1.*

**(iv)** (a) Its raw materials are light and of small bulk and its products are valuable in proportion to their weight, so transport costs hardly affect where the factory stands and it can be set up almost anywhere. (b) Sugarcane is harvested in a season of four to seven months and must be crushed at once, so the mills can work only while the cane is coming in. (c) Silk weaving needs skill rather than heavy machinery, the capital required is small and the craft has been handed down in families, so it is carried on at home in centres such as Varanasi, Kanchipuram and Murshidabad.

*Light raw material and valuable product 1. Short crushing season 1. Skill and small capital 1.*

## Question 11 [10]

**(i)** Any two of: a road can be carried up a steep slope in hairpin bends, while a railway needs an easy gradient and costly tunnels and bridges; a road costs much less to build and to repair after a landslide; a road can reach small scattered villages for which a railway would never pay; goods can be carried from door to door without being handled again.

*Two reasons, 1 mark each.*

**(ii)** **National Waterway 1**, which runs along the **Ganga** (the Ganga, Bhagirathi and Hooghly river system) from Prayagraj to Haldia, a distance of about 1620 km.

*Waterway named or numbered 1. Ganga 1.*

**(iii)** (a) Coal is a heavy and bulky load carried in large quantities over a fixed route, and railways carry such loads far more cheaply than lorries. (b) The hills are rugged and heavily forested, roads and railways are few and are often cut by landslides, so aircraft and helicopters are the quickest and sometimes the only means of reaching such places. (c) Once the pipeline has been laid there is almost no running cost, it works day and night in any weather, there is no loss or pilferage in transit and no return journey is needed.

*Bulk carried cheaply 1. Difficult terrain 1. Low running cost 1.*

**(iv)** (a) Any two of Delhi, Mumbai, Chennai and Kolkata. (b) Any two of: goods move faster between the four metropolitan cities, so transport costs and delays fall; industry and markets have grown along the route; farm produce reaches the market while it is still fresh; the towns through which it passes have gained trade and employment.

*Two cities 1. Two ways, 1 mark each 2.*

## Question 12 [10]

**(i)** Any two of: rain water soaks through the heap and carries poisons into the ground water, which the nearby wells then draw up; the waste rots and gives off a foul smell and methane, which pollutes the air and may catch fire; it breeds flies, mosquitoes, rats and stray dogs, which spread disease; the land is spoilt and cannot be used for anything else.

*Two harmful effects, 1 mark each.*

**(ii)** A biodegradable waste such as vegetable peel, leftover food, paper or garden leaves should be composted, in a pit or a bin, and the manure used in the garden. A non-biodegradable waste such as a plastic bottle, a glass jar, a tin or an old battery should be kept apart and sent for recycling or, in the case of a battery, for safe disposal.

*Biodegradable item with its treatment 1. Non-biodegradable item with its treatment 1.*

**(iii)** Segregation means separating the waste into kinds, chiefly wet or biodegradable waste, dry or recyclable waste and hazardous waste, and keeping each in its own bin. It should be done at home because once the kinds are mixed the wet waste soils the paper and the plastic, so they can no longer be recycled and the whole load has to be dumped; and because sorting a mixed heap by hand at the dumping ground is slow, costly and dangerous to the health of the workers.

*Segregation explained 1. Mixing spoils recyclable waste 1. Sorting later is costly or unsafe 1.*

**(iv)** (a) **Incineration**, that is controlled burning at a high temperature in a hospital incinerator. (b) Any two of: the waste is infectious, and burning at a high temperature destroys the germs completely; it reduces a large bulk of waste to a small quantity of ash, which can be buried safely; needles and dressings buried or dumped could injure or infect waste pickers and could be sold again.

*Incineration 1. Two reasons, 1 mark each 2.*