

ISC Class 12 Geography Specimen Paper 1

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Maximum Marks: 70 | Time Allowed: Three hours | Reading Time: 15 minutes

All 13 questions are compulsory. Section A carries 14 marks, Section B 28 marks and Section C 28 marks. Internal choice is given in Questions 4, 5, 8, 10 and 11. Question 1 is answered on an outline map of India.

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. The paper has 13 questions in three sections, A, B and C, and all of them are compulsory. Section A has fourteen very short answer parts of 1 mark each; Section B has seven short answer questions of 4 marks each; Section C has four long answer questions of 7 marks each. Internal choice is given in Questions 4, 5 and 8 of Section B and in Questions 10 and 11 of Section C: where two alternatives are separated by OR, attempt only one of them. For multiple choice parts write only the option you choose. Question 1 is map work and must be answered on a standard outline map of India of the kind used for school map work, not in the answer booklet. Mark each feature on it in pencil, label it with the part number and its name, use arrows where the map would otherwise be crowded, write your index number on the map and fasten it inside your answer booklet. Draw sketch maps and diagrams yourself, in pencil, wherever they help an answer. Marks for each question, or part of a question, are shown in brackets. No maps, graphs, tables or pictures are printed in this paper: any data you need are given in words. Population figures are from the Census of India 2011 unless another source is stated, and climate figures are rounded long-term averages. This theory paper carries 70 marks; the remaining 30 marks of the subject are for the Practical Work and Project Work assessed in school.

SECTION A (14 Marks)

Attempt all questions from this Section.

Question 1 [8]

Answer the whole of this question on your outline map of India. Each part carries 1 mark. In each part decide which option is correct, then mark that feature on the map in pencil and label it with the part number and its name. Write the option letter beside the label.

(A) Mark and label the correct option on the outline map.

(i) The largest brackish water lagoon of India, on the coast of Odisha:

- (a) Pulicat Lake (b) Chilika Lake (c) Vembanad Lake (d) Kolleru Lake

(ii) The pass in Sikkim through which a road and an old trade route cross into the Chumbi valley of Tibet:

- (a) Shipki La (b) Bomdi La (c) Nathu La (d) Karakoram Pass

(iii) The hill range along the border of Arunachal Pradesh with Myanmar, forming the northern end of the Purvanchal:

- (a) Patkai Hills (b) Garo Hills (c) Mizo Hills (d) Khasi Hills

(iv) The gulf that separates the Kachchh peninsula from the Kathiawar peninsula:

- (a) Gulf of Khambhat (b) Gulf of Mannar (c) Palk Bay (d) Gulf of Kachchh

(B) Identify the correct option from the description, then mark and label it on the outline map.

(i) A river that rises at Verinag in the south of the Kashmir valley and flows north-west through Srinagar and Wular Lake:

- (a) Jhelum (b) Chenab (c) Ravi (d) Beas

(ii) The nuclear power station of Rajasthan, on the Chambal close to the Rana Pratap Sagar dam:

- (a) Kudankulam (b) Narora (c) Kakrapar (d) Rawatbhata
- (iii) Among the states, the one with the lowest sex ratio at Census 2011 (879 females per 1,000 males):
- (a) Punjab (b) Haryana (c) Rajasthan (d) Uttar Pradesh
- (iv) The natural harbour of Kerala that opens into the Vembanad backwaters and contains the man-made Willingdon Island:
- (a) Mangaluru (b) Mormugao (c) Kochi (d) Thoothukudi

Question 2 [6]

Each part carries 1 mark. For parts (i) to (iii) write only the option you choose. Answer parts (iv) to (vi) in one or two sentences.

- (i) Assertion (A): The Western Coastal Plain is much narrower than the Eastern Coastal Plain. Reason (R): The west coast receives heavy rainfall from the south-west monsoon between June and September.
- (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.
- (ii) Assertion (A): The Luni is a seasonal river whose flow dwindles downstream and which ends in the marshes of the Rann of Kachchh. Reason (R): It flows through an arid region where high evaporation and seepage into sandy beds remove much of its water.
- (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.
- (iii) Consider the following statements about minerals and fuels in India. P: Mica is valued in the electrical and electronics industries because it is a good insulator. Q: The Koderma and Giridih belt of Jharkhand has long been known for its mica. R: Mumbai High is an onshore oilfield in the Kachchh district of Gujarat. S: Barmer district of Rajasthan has become an important onshore oil-producing area. Which of the statements are correct?
- (a) P and R only (b) Q, R and S (c) P, R and S (d) P, Q and S
- (iv) State one difference between a harbour and a port.
- (v) What is meant by the physiological density of population?
- (vi) Give one reason why sugar mills are usually located close to the sugarcane fields.

SECTION B (28 Marks)

Attempt all questions from this Section. Each question carries 4 marks. Internal choice is given in Questions 4, 5 and 8.

Question 3 [4]

- (i) Distinguish between the Himalayan rivers and the Peninsular rivers on any two bases. [2]
- (ii) The Narmada and the Tapi enter the Arabian Sea through estuaries, not deltas. Give two reasons. [2]

Question 4 [4]

- (i) At Census 2011 the density of population, in persons per sq km, was 1,106 in Bihar, 1,028 in West Bengal, 860 in Kerala, 829 in Uttar Pradesh, 123 in Himachal Pradesh, 86 in Sikkim, 52 in Mizoram and 17 in Arunachal Pradesh, against a national average of 382. Describe the pattern these figures show, and explain three factors responsible for it. [4]

OR

- (ii) Name the four streams of internal migration in India. Explain why women dominate the rural to rural stream while men dominate the rural to urban stream, especially among migrants who move from one state to another. [4]

Question 5 [4]

- (i) The following are approximate long-term averages for two of the five stations named in your syllabus (Mumbai, Delhi, Chennai, Jaisalmer and Leh). Station X: mean temperature about 16 °C in January and about 35 °C in May and June; almost no rain from October to April, about 35 mm in June and about 65 mm in each of July and August; annual total about 250 mm. Station Y: mean temperature about 24 °C in January, about 30 °C in May and about 28 °C in July; rainfall about 525 mm in June, about 920 mm in July, about 560 mm in August and about 385 mm in September, very little in the other months; annual total about 2,500 mm.
- (a) Identify Station X and Station Y, giving one piece of evidence from the data for each. [2]
- (b) Explain why the annual range of temperature is much greater at X than at Y. [2]

OR

- (ii) Explain the origin of the western disturbances and describe their effects on the weather and agriculture of north-west India in winter. [4]

Question 6 [4]

- (i) Explain two factors that helped Bengaluru grow into India's leading centre of the electronics industry. [2]
- (ii) Explain two ways in which the electronics industry of Bengaluru is linked with the rest of India and with other countries. [2]

Question 7 [4]

Read the extract given below and answer the questions that follow. "In the summer of 2019 the reservoirs that supply Chennai were almost dry, and many households depended on water brought by tanker lorries. Officials pointed out that the city receives well over a thousand millimetres of rain in a normal year but lets most of it run off paved surfaces into drains and the sea. Tamil Nadu has required rooftop rainwater harvesting structures on buildings since 2003, and where these structures were kept in good repair, residents found that their wells recovered faster after the rains."

- (i) Explain two ways in which rooftop rainwater harvesting improves the water security of a city such as Chennai. [2]
- (ii) Evaluate two reasons why rainwater harvesting alone cannot solve the water problem of a large city. [2]

Question 8 [4]

- (i) Explain four factors that led to the growth of the Hooghly industrial region. [4]

OR

- (ii) Explain four factors that led to the early concentration of the cotton textile industry in Mumbai and Ahmedabad. [4]

Question 9 [4]

- (i) Explain two ways in which the Chipko movement influenced forest conservation in India. [2]
- (ii) You are the block development officer of a semi-arid block in western Rajasthan where the village grazing land is badly degraded. Suggest two measures to increase tree cover on this land without depriving livestock owners of fodder. [2]

SECTION C (28 Marks)

Attempt all questions from this Section. Each question carries 7 marks. Internal choice is given in Questions 10 and 11.

Question 10 [7]

- (i) Settlement A lies in the Ganga and Yamuna doab of western Uttar Pradesh. Its houses are packed closely together around a temple, a pond and a few wells, and the cultivated fields lie all round the built-up area. Settlement B lies on the coastal plain of Kerala. Its houses are spread out along a road and a backwater channel, each standing in its own garden of coconut palms, so that one settlement merges into the next without a clear centre. Name the type of rural settlement represented by A and by B, and explain three factors responsible for the difference between them. [4]
- (ii) Explain the terms urban agglomeration, conurbation and urban sprawl, giving one Indian example of each. [3]

OR

- (iii) Explain how the Census of India distinguishes a statutory town from a census town, stating the criteria used for a census town. [3]

Question 11 [7]

- (i)
- (a) Explain four ways in which the Golden Quadrilateral and the North-South and East-West corridors have helped the economy of India. [4]
- (b) Explain three advantages of pipelines for transporting crude oil, petroleum products and natural gas, naming one pipeline in India. [3]

OR

- (ii)
- (a) Explain four reasons why air transport is especially important for the north-eastern states, including the part played by the regional connectivity scheme UDAN. [4]
- (b) Explain three ways in which remote sensing and GIS are used in planning and resource management in India. [3]

Question 12 [7]

- (i) Describe the distribution of iron ore in India, naming three leading producing states and one mining area in each. [3]
- (ii) Coal-based thermal power stations still generate the largest share of India's electricity. Explain two advantages of coal-based power, and explain one of its environmental costs and one way in which India is reducing its dependence on it. [4]

Question 13 [7]

Read the extract given below and answer the questions that follow. "For three generations a family of planters has grown coffee on the slopes above Madikeri in Kodagu. In one recent year the March rains that the planters wait for, to make the bushes flower, failed to arrive, and many estates had to pump water from their tanks to save the crop; when the monsoon came, it came in a few violent bursts. International coffee prices later rose sharply, yet many small growers said they had too little crop to gain much. Karnataka produces about seven tenths of India's coffee, most of which is exported, and growers in Kodagu, Chikkamagaluru and Hassan now say that erratic rainfall, a shortage of workers and attacks of the white stem borer worry them more than prices."

- (i) Explain four geographical conditions that make the hill slopes of Kodagu, Chikkamagaluru and Hassan suitable for growing coffee. [4]

- (ii)** With reference to the extract, explain three problems faced by coffee growers and suggest one measure to deal with each. **[3]**

ANSWER KEY AND MARKING SCHEME

A full model answer is given for every part. Marks shown in italics are the step marks an examiner would award, and they add up to the marks for the part. Answers in Sections B and C are marked point by point: credit goes to each correct and relevant point that is explained, not to the wording used here, and any other correct point, example or Indian case study should be accepted. A point that is only named, where the question asks for it to be explained, earns half the credit at most. In Question 1 the mark needs both the correct feature and its correct placing and label on the outline map; the location of each feature is described here in words (state, approximate latitude and longitude and neighbouring features) so that the map can be checked, and a reasonable tolerance should be allowed for freehand marking on a small outline map. For the multiple choice parts of Question 2 only the option letter is needed. Where alternatives are separated by OR, mark only the alternative attempted; if both are attempted, mark both and keep the better mark. Population figures in the paper are from the Census of India 2011 and climate figures are rounded averages; accept more recent official figures used correctly. A neat, relevant sketch map or diagram may earn the mark for a point it shows clearly.

Question 1 [8]

(A)

- (i) (b) Chilika Lake. Mark a lagoon on the Odisha coast at about 19.7°N, 85.3°E, at the south-western edge of the Mahanadi delta and north-east of the Andhra Pradesh border. It is separated from the Bay of Bengal by a narrow sand bar and lies in Puri, Khordha and Ganjam districts.
- (ii) (c) Nathu La. Mark it on the border between Sikkim and the Tibet region of China at about 27.4°N, 88.8°E, east of Gangtok, on the eastern edge of Sikkim overlooking the Chumbi valley, which lies between Sikkim and Bhutan.
- (iii) (a) Patkai Hills (Patkai Bum). Mark a range running from north-east to south-west along the Arunachal Pradesh and Myanmar border, around 27°N, 96°E, south-east of the upper Brahmaputra valley of Assam, continuing south-west into the Naga Hills.
- (iv) (d) Gulf of Kachchh. Shade the inlet of the Arabian Sea in Gujarat at about 22.5°N, 69.5°E, with the Kachchh peninsula to its north and Kathiawar (Saurashtra) to its south. Kandla (Deendayal) port lies near its head and Jamnagar on its southern shore.

(B)

- (i) (a) Jhelum. Draw the course from Verinag (about 33.5°N, 75.2°E) north-westwards through Srinagar (about 34.1°N, 74.8°E) into Wular Lake, then westwards past Baramulla towards the Line of Control, and name it.
- (ii) (d) Rawatbhata (Rajasthan Atomic Power Station). Mark it in Chittorgarh district of south-eastern Rajasthan at about 24.9°N, 75.6°E, on the Chambal upstream (south-west) of Kota.
- (iii) (b) Haryana. Shade the state centred at about 29°N, 76°E, bordered by Punjab and Himachal Pradesh to the north, Rajasthan to the south-west and Uttar Pradesh across the Yamuna to the east, and surrounding Delhi on three sides.
- (iv) (c) Kochi. Mark it on the Kerala coast at about 10.0°N, 76.3°E, in Ernakulam district, roughly midway along the Kerala coast, where the Vembanad backwaters open to the Arabian Sea.

1 mark for each part, given only when the correct feature is marked in the right place on the map and labelled. For a river, the course should be drawn and named; for a state, region or plateau, the area should be shaded or outlined and named; for a town, pass or power station, a dot or symbol in the right place with its name.

Question 2 [6]

- (i) (b) Both statements are true, but the rainfall of the west coast does not explain the width of the plain. The western plain is narrow because the Western Ghats rise steeply close to the Arabian Sea along a faulted margin, while the eastern plain is broad because the Eastern Ghats lie farther inland and the Mahanadi, Godavari, Krishna and Kaveri have built wide deltas.
- (ii) (a) Both are true and R explains A. The Luni rises in the Aravallis near Ajmer and flows south-west across western Rajasthan; it flows only after the monsoon rains, loses water to evaporation and to its sandy bed, turns saline in its lower course and dies out in the Rann of Kachchh.

- (iii) (d) P, Q and S. Statement R is wrong: Mumbai High is an offshore field in the Arabian Sea, roughly 160 km off the Maharashtra coast, found in 1974. The Barmer fields of Rajasthan, such as Mangala, have produced oil since 2009.
- (iv) A harbour is a sheltered stretch of water, natural or artificial, where ships can anchor safely, while a port is a place with docks, cranes, warehouses and land transport links where cargo and passengers are loaded and unloaded and which serves a hinterland. A harbour need not be a port.
- (v) It is the number of persons per unit of net cultivated (net sown) area, that is, total population divided by net sown area, which shows the pressure of population on farmland better than arithmetic density.
- (vi) Cane is bulky and weight-losing, and its sucrose content starts falling soon after it is cut, so it must be crushed within a day or so; carrying it long distances would be costly and would lower the sugar recovered.

1 mark for each correct part. No mark is deducted for a wrong option. In parts (iv) to (vi) accept any correct answer in the candidate's own words that carries the substance of the model answer.

Question 3 [4]

- (i) Source and regime: the Himalayan rivers, such as the Ganga, the Indus and the Brahmaputra, are fed by snow and glaciers as well as by monsoon rain, so they are perennial and carry water even in summer, when the snow melts; the Peninsular rivers, such as the Godavari and the Krishna, depend on monsoon rain alone, so their flow falls sharply in the dry season and many small ones dry up. Stage and valleys: the Himalayan rivers flow through young, still rising mountains, so they are actively eroding, cut deep gorges and V-shaped valleys, and several, such as the Indus, the Sutlej and the Brahmaputra, are antecedent rivers older than the ranges they cross; in the plains they meander, shift course and build large deltas. The Peninsular rivers flow over an old, stable block, so they are mature, with broad, shallow, graded valleys and fairly fixed courses. Size of basin: the Himalayan rivers have very large catchments, while most Peninsular rivers have smaller basins.

First valid basis with both sides of the contrast 1. Second valid basis with both sides of the contrast 1.

- (ii) First, both rivers flow westwards through rift valleys (the Narmada between the Vindhya and the Satpura ranges, the Tapi to the south of the Satpura) over hard rock, so they carry comparatively little fine sediment to their mouths. Second, they enter the Gulf of Khambhat, which has a large tidal range and strong tidal currents; these scour away what sediment does arrive, so it cannot accumulate as a delta. Their short, fairly steep lower courses also give little opportunity for deposition.

Little sediment carried, because of the rift valley course over hard rock 1. Strong tides in the Gulf of Khambhat remove the sediment, or the short steep lower course 1.

Question 4 [4]

- (i) Pattern: density is very high, at more than twice the national average, in the states of the Ganga plain and delta (Bihar, West Bengal, Uttar Pradesh) and on the Kerala coastal plain, and very low, at a fraction of the national average, in the Himalayan and north-eastern hill states, Arunachal Pradesh being the lowest. Factors: (1) Relief: the level alluvial plains of the Ganga and the coastal plain of Kerala allow easy cultivation, settlement and the building of roads and railways, whereas the steep slopes, high altitude and dense forest of Arunachal Pradesh, Sikkim and Mizoram leave little land fit for farming or building. (2) Soil and water: the deep, fertile alluvium of the plains, renewed by floods, and the assured water of perennial rivers, canals and wells support two or three crops a year and therefore many people per square kilometre; the thin, leached hill soils support far fewer. Kerala adds abundant rainfall that sustains intensive cropping of rice, coconut and spices. (3) Climate and history of settlement: the plains have a climate favourable to farming and have been settled and cultivated for thousands of years, with long-established towns and trade, while the cold of the high Himalaya and the heavy rain and isolation of the north-east limited settlement. Accessibility and economic opportunity, such as the transport network and the industry of the Hooghly belt, may be given as a further factor.

Pattern described: high in the Ganga plain and Kerala, low in the hill states, with reference to the figures 1.

Relief explained 1. Soil fertility and water supply explained 1. Climate, history of settlement, or accessibility and economic opportunity explained 1.

OR

- (ii) The four streams are rural to rural, rural to urban, urban to urban and urban to rural. The rural to rural stream is the largest, and women form most of it, because in most of India a woman moves to her husband's village on marriage; since marriages are usually arranged within the same or a nearby district, these moves are mostly short and within the state. Men dominate the rural to urban stream because their movement is mainly economic: lack of land, low farm wages and seasonal unemployment in the village push them out, and the chance of regular work in industry, construction, transport and services pulls them to cities. Such work is concentrated in a few large urban regions, such as Mumbai, Delhi, Surat, Kolkata and Bengaluru, so men often cross state boundaries from states such as Uttar Pradesh, Bihar and Odisha, frequently leaving their families behind because of the cost and difficulty of housing in the city.

All four streams named 1. Women and the rural to rural stream: marriage migration explained 1. Men and the rural to urban stream: push and pull of employment explained 1. Why men's moves cross state boundaries, with destinations or source states named 1.

Question 5 [4]

(i)

- (a) Station X is Jaisalmer: its annual rainfall of only about 250 mm marks a desert station, and its large contrast between a mild January (about 16 °C) and very hot May and June (about 35 °C) shows a continental interior. Station Y is Mumbai: its very heavy rainfall of about 2,500 mm, concentrated in June to September with a peak of over 900 mm in July, is typical of the windward west coast, and its small temperature range (about 24 °C to 30 °C) shows the moderating effect of the sea.

X identified as Jaisalmer with valid evidence 1. Y identified as Mumbai with valid evidence 1.

- (b) The range is about 19 °C at X against about 6 °C at Y. X lies deep in the interior of the Thar desert, far from the moderating influence of the sea; its dry air and clear skies let the sandy surface heat strongly by day and in summer and lose heat rapidly at night and in winter, when cold air also reaches it from the north. Y is a coastal city: the sea heats and cools slowly, sea breezes moderate temperature through the year, and in July the thick monsoon cloud and rain keep the temperature down, so that July is cooler than May.

Continentality and dry air at X explained 1. Maritime influence, sea breezes or monsoon cloud at Y explained 1.

OR

- (ii) Origin: western disturbances are low-pressure systems (temperate cyclones) that form over the Mediterranean Sea and adjoining regions and are carried eastwards across West Asia, Iran, Afghanistan and Pakistan by the subtropical westerly jet stream, which lies south of the Himalayas in winter. They reach north-west India mainly from December to February. Effects on weather: they bring light to moderate rain to Punjab, Haryana, Delhi, western Uttar Pradesh and northern Rajasthan, and snowfall to the mountains of Jammu and Kashmir, Ladakh, Himachal Pradesh and Uttarakhand; they bring cloudy skies and slightly warmer nights while they pass, and are followed by cold waves, as cold air flows in behind them, and by dense fog in the plains. Effects on agriculture: the winter rain, though small in amount, comes when the rabi crops are growing and is very valuable for wheat, barley, gram and mustard; the Himalayan snow feeds the rivers in spring and summer. Heavy rain or hail at harvest time and frost after a disturbance can damage crops.

Origin over the Mediterranean and movement with the westerly jet stream 1. Rain in the plains and snow in the mountains, with the season named 1. Cold waves and fog after their passage 1. Importance for rabi crops, or harm from hail and frost 1.

Question 6 [4]

- (i) First, an early base of public sector and research institutions: the Indian Institute of Science (1909), Hindustan Aeronautics, Indian Telephone Industries and Bharat Electronics (1954) were set up in or near the city, and later the Indian Space Research Organisation, which created a pool of skilled engineers, a demand for electronic components and a culture of high technology. Second, the supply of educated labour and supporting policy: many engineering colleges in Karnataka and neighbouring states produced trained manpower, and the state government set up Electronics City (1978) and later software technology parks with good power and communication links, which attracted Indian and foreign firms. The pleasant climate of the plateau at about 900 m and the clustering of firms, which brings suppliers and specialised services together, may also be credited.

First factor explained 1. Second factor explained 1.

- (ii) National linkages: the city's firms buy components and raw materials from, and supply equipment, defence electronics, telecommunication systems and software to, users all over India, including the armed forces, the railways, banks and state governments, and engineers migrate to Bengaluru from every state. International linkages: many multinational companies have research, design and software centres in the city, Texas Instruments being one of the first in the 1980s; Bengaluru exports software and chip design services, chiefly to the United States and Europe, imports specialised components and machinery, and is connected to these markets by its international airport and high-speed data links.

National linkage explained 1. International linkage explained 1.

Question 7 [4]

- (i) First, it recharges groundwater: rain from roofs is led through filters into pits, trenches or old wells, so it soaks into the aquifer instead of running off into drains, and the water table rises, wells and borewells yield more and for longer, and in a coastal city the inflow of sea water into over-pumped aquifers is checked. Second, it provides water at the household and reduces demand on the public supply: water stored in sumps or tanks can be used for washing, gardening and, after treatment, for drinking, which reduces dependence on reservoirs and tankers during a dry period. It also reduces urban flooding by holding back part of the storm runoff.

Groundwater recharge explained 1. Stored supply reducing demand on reservoirs, or reduced flooding 1.

- (ii) First, the rain is seasonal and uncertain: most of it falls in a few months, so harvesting can store only part of it, and in a year of poor rain there is little to harvest, which is exactly when the shortage is worst. Second, the city's demand is far greater than what its roofs and open ground can capture, because a large population, industry and commerce need water every day, and much of the city is paved, built up or has structures that are badly maintained. A large city therefore also needs protected reservoirs and lakes, reuse of treated waste water, reduction of leakage, desalination and fair pricing; rainwater harvesting is one part of such a plan.

First limitation evaluated 1. Second limitation evaluated, with the need for other measures 1.

Question 8 [4]

- (i) (1) Port and capital: Kolkata grew as the chief port of eastern India and was the capital of British India until 1911, so trade, banking, administration and British capital were concentrated on the banks of the Hooghly. (2) Raw material: the jute grown in the Ganga and Brahmaputra delta supplied the jute mills that lined both banks of the river from the 1850s, and the tea of Assam and north Bengal passed through Kolkata. (3) Power and minerals: coal from the Raniganj and Jharia fields of the Damodar valley, and later the electricity of the Damodar Valley Corporation, were close at hand, together with the iron ore and other minerals of the Chota Nagpur plateau. (4) Transport: the river itself, the railways that converged on Kolkata and Howrah from the mid nineteenth century, and roads linked the region with a vast hinterland in the Ganga plain, the north-east and Nepal. (5) Labour and market: cheap labour came from Bihar, Odisha and eastern Uttar Pradesh, and the densely populated plain provided a large market. Engineering, chemicals, cotton textiles, paper and electrical goods grew up alongside jute.

Port and capital city explained 1. Jute or other raw material explained 1. Coal and power explained 1. Transport network, or labour and market, explained 1.

OR

- (ii) (1) Raw cotton: the black soil of the Deccan lava region in Maharashtra and of Gujarat grew cotton, so raw material was close to both cities. (2) Climate: the humid coastal climate of Mumbai helped spinning, since the thread broke less often; Ahmedabad has a drier climate, but artificial humidification was later used. (3) Port and capital: Mumbai's natural harbour allowed the import of machinery from Britain and the export of yarn and cloth, and its merchants, who had grown rich on the cotton trade, provided capital; the first successful mill was set up in Mumbai in 1854. In Ahmedabad local merchants and bankers financed the mills. (4) Labour and market: workers came from the Konkan and the Deccan to Mumbai and from rural Gujarat to Ahmedabad, and the large population of western and central India, together with markets abroad, bought the cloth. Railways, which linked both cities with the cotton tracts, and cheap power, from the Tata hydroelectric stations in the Western Ghats for Mumbai, also helped.

Raw cotton from the black soil region 1. Humid climate 1. Port, capital and enterprise 1. Labour, market, railways or power 1.

Question 9 [4]

- (i) The Chipko movement began in 1973 in Chamoli district of the present Uttarakhand, when villagers, many of them women such as Gaura Devi at Reni in 1974, hugged trees to stop contractors felling them; Chandi Prasad Bhatt and Sunderlal Bahuguna spread its message. First, it changed policy: in 1980 the central government stopped the commercial felling of green trees in the Himalayan forests of Uttar Pradesh above 1,000 m for fifteen years, and the movement added to the pressure that produced the Forest (Conservation) Act of 1980, which restricts the diversion of forest land. Second, it changed attitudes: it showed that local people, especially women who collect fuel, fodder and water, depend on forests and can protect them, which encouraged similar movements such as Appiko in Karnataka and the later approach of joint forest management, in which villagers share in protecting and using forests.

Influence on law or policy explained 1. Influence on attitudes or on community participation explained 1.

- (ii) First, rotational closure and silvipasture: fence or protect one part of the common land at a time with the agreement of the village, plant drought-resistant native trees whose leaves and pods are fodder, such as khejri (*Prosopis cineraria*), ber and neem, together with perennial grasses such as sewan, and open each part to cut-and-carry grass while the next is closed, so fodder supply continues while the trees establish. Second, water conservation and community management: dig contour trenches, half-moon pits and small check dams to hold the scanty rain around the saplings, and hand the plantation to a village committee or self-help group that shares the grass, fodder and fruit and is paid under rural employment schemes for planting and watering.

First workable measure that adds trees and keeps fodder 1. Second workable measure 1.

Question 10 [7]

- (i) A is a compact (clustered or nucleated) settlement; B is a dispersed settlement, strung out in a linear or ribbon pattern along the road and the channel. Factors: (1) Water supply: in the doab ground water is reached through a limited number of wells and ponds, and canals serve the fields rather than the houses, so houses cluster around the common water sources; in Kerala heavy rain, a high water table and the backwaters make water available almost everywhere, so each family can live on its own plot. (2) Land and farming: the fertile, level alluvium of the doab is too valuable to be used for houses, so the houses are kept together and the open fields around are farmed, often after consolidation; in Kerala homestead farming of coconut, banana, pepper and vegetables is carried on around each house, so the dwelling and the farm are combined. (3) Social and historical factors: the villages of the northern plains grew as cohesive communities that needed security against raids and shared a temple, a market and a panchayat, which kept houses together; in Kerala a long period of security, high literacy and good communications, together with the road and the backwater as lines of transport, allowed people to live apart and to string their houses along these lines. The ribbon of houses along the road gives B its linear pattern.

Both types correctly named: compact for A; dispersed, or linear or ribbon, for B 1. Water supply explained 1. Land use and farming explained 1. Social, historical or transport factor explained 1.

- (ii) An urban agglomeration, as the Census uses the term, is a continuous urban spread made up of a town and its adjoining outgrowths, or of two or more physically contiguous towns with or without outgrowths; for example the Greater Mumbai urban agglomeration or the Kolkata urban agglomeration. A conurbation is a large urban region formed when separate cities and towns grow outwards until they merge into one continuous built-up area while keeping their separate identities and administrations; for example Delhi with Gurugram, Noida, Ghaziabad and Faridabad, or the chain of towns along both banks of the Hooghly around Kolkata and Howrah. Urban sprawl is the unplanned, low-density spread of a city into the surrounding countryside, usually along highways, in which farmland is converted to housing, factories and shops faster than services can be provided; for example the growth of Bengaluru towards Whitefield and along its ring roads, or of Hyderabad and Pune into their surrounding villages.

Urban agglomeration explained with an example 1. Conurbation explained with an example 1. Urban sprawl explained with an example 1.

OR

- (iii) A statutory town is any place with a municipal corporation, municipality, cantonment board or notified town area committee, that is, a place declared urban by law. A census town is a place without such a body that is nevertheless treated as urban because it satisfies all three of the following conditions at the census: a minimum population of 5,000; at least 75 per cent of the male main workers engaged in non-agricultural work; and a density of population of at least 400 persons per sq km. Many census towns are large villages around big cities whose people have moved into non-farm work but which are still governed by village panchayats.

Statutory town explained 1. Census town criteria: any two correct 1. All three criteria correct, or the meaning of a census town as urban without a municipal body 1.

Question 11 [7]

(i)

- (a) The Golden Quadrilateral, about 5,846 km of four- and six-lane highway, links Delhi, Kolkata, Chennai and Mumbai; the North-South corridor runs from Srinagar to Kanyakumari and the East-West corridor from Silchar to Porbandar, the two crossing at Jhansi. (1) Faster, cheaper freight: wider roads with fewer bottlenecks cut journey times and fuel costs for lorries, which lowers the cost of moving raw materials and goods between the four largest metropolitan regions and ports. (2) Industrial growth along the routes: factories, warehouses, logistics parks and truck terminals have grown up along the highways, for example between Delhi and Jaipur or around Chennai, creating jobs and new growth centres. (3) Integration of markets and agriculture: farmers can send perishable goods such as fruit, vegetables, milk and fish quickly to distant cities, and small towns on the routes are drawn into national markets. (4) Regional development and services: the corridors pass through backward areas of central India and the north-east and link them with the core regions; tourism, roadside services and trade grow, and the roads also help in moving troops and relief. Building and maintaining the highways itself created employment and demand for cement and steel.

Lower cost and time of freight 1. Industrial or logistics growth along the routes 1. Integration of markets, including agriculture 1. Regional development, tourism, services or defence 1.

- (b) Pipelines carry fluids continuously and in very large volumes at a low running cost once they are laid; they are not held up by traffic, weather or breakdowns of vehicles, so supply to refineries, fertiliser plants and power stations is steady. They are safer and cause less pollution and loss than road tankers, and they can cross difficult terrain such as hills, rivers and the sea bed; being buried, they occupy little land and relieve the pressure on railways and roads. They also make it possible to locate refineries and fertiliser plants inland, close to their markets. Examples: the Hazira to Bijaipur and Jagdishpur gas pipeline, the Salaya to Mathura crude oil pipeline, the Naharkatiya to Barauni crude oil pipeline, or the Pradhan Mantri Urja Ganga gas pipeline.

First advantage explained 1. Second advantage explained 1. Third advantage explained, with one pipeline correctly named 1.

OR

(ii)

- (a) (1) Difficult terrain: the region is mountainous, forested and cut by fast rivers, so roads and railways are costly to build and maintain and are often blocked by landslides and floods in the long monsoon; aircraft and helicopters cross such country easily. (2) Distance and isolation: the region is joined to the rest of India only through the narrow Siliguri corridor, so surface journeys to Delhi, Kolkata or Bengaluru take days, while a flight takes a few hours, which matters for students, patients, business and tourism. (3) Strategic and emergency needs: the region borders China, Myanmar, Bangladesh and Bhutan, and air links are needed for defence and for relief during floods and earthquakes. (4) UDAN (Ude Desh ka Aam Nagrik), launched in 2016, supports flights on unserved and underserved regional routes by subsidising part of the seats to keep fares low; it has brought small airports and helipads in the north-east into use and opened new airports, such as Pakyong in Sikkim and the Donyi Polo airport at Itanagar, which link remote towns with Guwahati and the rest of the country and support tourism and trade.

Difficult terrain and climate 1. Distance and isolation through the Siliguri corridor 1. Strategic or emergency needs 1. UDAN explained 1.

- (b) Remote sensing is the collection of information about the earth's surface from satellites or aircraft, such as India's IRS, Resourcesat and Cartosat satellites; GIS is a computer system that stores, combines and analyses such data by location, in layers. (1) Agriculture and land use: satellite images are used to map land use and crop area, to estimate crop production before harvest and to monitor drought, so that procurement, insurance and relief can be planned. (2) Water, forests and the environment: they help to identify sites for wells and watershed works, to map surface water and snow cover, and to monitor forest cover, mining and pollution; the Forest Survey of India assesses forest cover from satellite data. (3) Disasters and urban planning: they track cyclones and floods and map damage, and GIS is used to plan roads, utilities and land records in growing cities; ISRO's Bhuvan portal makes such maps available to government departments and the public.

First use explained 1. Second use explained 1. Third use explained 1.

Question 12 [7]

- (i) Most of India's iron ore, chiefly high-grade haematite with some magnetite, comes from the ancient rocks of the Peninsular Plateau, and the bulk of production is concentrated in a belt in eastern India. Odisha is the largest producer, with mines in Keonjhar, Sundergarh and Mayurbhanj districts, for example around Joda and Barbil. Chhattisgarh mines ore at Bailadila in Dantewada district, much of it sent by rail to Visakhapatnam, and at Dalli-Rajhara, which supplies the Bhilai steel plant. Karnataka produces ore in the Ballari and Hosapete area, and Jharkhand in the Noamundi and Gua area of Singhbhum. Goa is a smaller producer of mostly lower-grade ore, traditionally exported through Mormugao.

Note for the examiner: Accept any three of Odisha, Chhattisgarh, Karnataka, Jharkhand and Goa with a correct mining area.

Three leading states, each with a correct mining area (two correct earn 1 of these 2 marks) 2. Distribution described: concentration in the ancient rocks of the Peninsula, chiefly the eastern belt 1.

- (ii) Advantages: (1) India has large reserves of coal, mostly in Jharkhand, Odisha, Chhattisgarh, West Bengal, Madhya Pradesh and Telangana, so coal is a domestic fuel that reduces the need for imported oil and gas, and large pithead stations such as those at Singrauli, Korba and Talcher avoid the cost of carrying coal far. (2) Thermal stations provide steady, round-the-clock base-load power whatever the weather or season, unlike solar and wind power, which vary through the day and the year, and they can be built in large units near load centres or ports. Environmental cost: burning coal releases carbon dioxide, which causes climate change, and sulphur dioxide, nitrogen oxides and particulate matter, which pollute the air; the stations also produce huge quantities of fly ash, need large volumes of water for cooling, and the open-cast mines that feed them destroy forests and displace people. Reducing dependence: India is expanding non-fossil capacity, and by June 2025 non-fossil sources made up about half of its installed generating capacity; large solar parks such as Bhadla in Rajasthan and Pavagada in Karnataka, wind farms in Gujarat and Tamil Nadu, the rooftop solar scheme PM Surya Ghar and new nuclear and hydel projects are part of this, towards a target of 500 GW of non-fossil capacity by 2030.

First advantage explained 1. Second advantage explained 1. One environmental cost explained 1. One way of reducing dependence explained 1.

Question 13 [7]

- (i) (1) Temperature: coffee is a tropical crop needing warm conditions, roughly 15 °C to 28 °C, without frost or scorching heat; the hills of the Western Ghats at about 600 m to 1,600 m are warm but moderated by altitude, Arabica being grown higher up and Robusta lower down. (2) Rainfall: it needs about 150 cm to 250 cm of rain, well distributed, with a short dry spell before flowering followed by the March and April showers (blossom showers) that make the bushes flower; the south-west monsoon gives this region heavy rain, and wells and tanks provide water when the showers fail. (3) Slopes and soil: the plants cannot stand waterlogging, so well-drained hill slopes are used, with deep, friable soils rich in humus and iron, such as the red and laterite soils formed under forest. (4) Shade and protection: young and mature bushes need protection from direct sun and strong winds, which is provided by shade trees left from the forest or planted among the bushes; pepper vines are often grown on these trees as a second crop. Cheap and skilled labour for picking and processing, and a long history of plantation farming since the nineteenth century, also favour the region.

Temperature and altitude 1. Rainfall and its distribution, including blossom showers 1. Well-drained slopes and fertile soil 1. Shade, or labour and tradition 1.

- (ii) Erratic rainfall: the failure of the blossom showers, followed by heavy rain at the wrong time, reduces flowering and yield; growers can build farm ponds and use sprinkler or drip irrigation to provide water at flowering, and choose more tolerant varieties. Shortage of labour: picking and pruning are done by hand and workers have moved to towns; growers can raise wages and improve housing, use mechanical aids where the slope allows, and form cooperatives to share workers and machines. Pests: the white stem borer bores into the stems of Arabica bushes and kills them; growers can maintain shade, trace and uproot infested plants and follow the integrated pest management advised by the Coffee Board and research stations. Price swings may also be discussed: small growers can sell through cooperatives, add value by processing or branding, and use insurance.

First problem with a suitable measure 1. Second problem with a suitable measure 1. Third problem with a suitable measure 1.