

AS PER THE LATEST ICSE SYLLABUS

10

ICSE GEOGRAPHY

R K JAIN



Ratna Sagar

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SYLLABUS

There will be one paper of two hours duration carrying 80 marks and Internal Assessment of 20 marks.

The Paper will consist of two parts, Part I and Part II.

Part I (compulsory) will consist of two questions. Question 1 will be based on Topographical Map. Question 2 will be based on an outline Map of India.

Part II Candidates will be expected to answer any five questions.

Candidates will be expected to make the fullest use of sketches, diagrams, graphs and charts in their answers.

Questions set may require answers involving the interpretation of photographs of geographical interest.

PART I

MAP WORK

1. Interpretation of Topographical Maps

- Locating features with the help of a four figure or a six figure grid reference.
- Definition of contour and contour interval. Identification of landforms worked by contours (steep slope, gentle slope, hill, valley, ridge/water divide, escarpment), triangulated height, spot height, bench mark, relative height/depth.
- Interpretation of colour tints and conventional symbols used on a topographical survey of India map.
- Identification and definition of types of scale given on the map.
Measuring distances and calculating area using the scale given therein.
- Marking directions between different locations, using eight cardinal points.
- Identity: Site of prominent villages and/or towns, types of land use / land cover and means of communication with the help of the index given at the bottom of the sheet.
- Identification of drainage (direction of flow and pattern) and settlement patterns.
- Identification of natural and man-made features.

2. Map of India

On an outline map of India, candidates will be required to locate, mark and name the following:

Mountains, Peaks and Plateaus: Himalayas, Karakoram, Aravali, Vindhya, Satpura, Western and Eastern Ghats, Nilgiris, Garo, Khasi, Jaintia, Mount Godwin Austin (K2), Mount Kanchenjunga. Deccan Plateau, Chota Nagpur Plateau.

Plains: Gangetic Plains and Coastal plains (Konkan, Kanara, Malabar, Coromandel, Northern Circars).

Desert: Thar (The Great Indian Desert)

Rivers: Indus, Ravi, Beas, Chenab, Jhelum, Satluj, Ganga, Yamuna, Ghaghra, Gomti, Gandak, Kosi, Chambal, Betwa, Son, Damodar, Brahmaputra, Narmada, Tapi, Mahanadi, Godavari, Krishna, Kaveri, Tungabhadra.

Water Bodies: Gulf of Kutch, Gulf of Khambhat, Gulf of Mannar, Palk Strait, Andaman Sea. Chilka Lake, Wular Lake.

Passes: Karakoram, Nathu-La Passes.

Latitude and Longitudes: Tropic of Cancer, Standard Meridian (82° 30' E).

Direction of Winds: South West Monsoons (Arabian Sea and Bay of Bengal Branches), North East Monsoons and Western Disturbances.

Distribution of Minerals: Oil – Mumbai High (Offshore Oilfield) and Digboi. Iron – Singhbhum. Coal – Jharia.

Soil Distribution – Alluvial, Laterite, Black and Red Soil.

Cities – Delhi, Mumbai, Kolkata, Chennai, Hyderabad, Bengaluru, Kochi, Chandigarh, Srinagar, Vishakhapatnam, Allahabad.

Population – Distribution of Population (Dense and sparse).

PART II

GEOGRAPHY OF INDIA

3. Location, Extent and Physical features

Position and extent of India. (through Map only)

The physical features of India - mountains, plateaus, plains and rivers. (through Map only)

4. Climate

Distribution of temperature, rainfall, winds in summer and winter and factors affecting the climate of the area. Monsoon and its mechanism. Seasons – March to May - Summer; June to September – Monsoon; October to November-Retreating Monsoon; December to February-Winter.

5. Soil Resources

Types of soil (alluvial, black, red and laterite) distribution, composition and characteristics such as colour, texture, minerals and crops associated. Soil Erosion - causes, prevention and conservation.

6. Natural Vegetation

Importance of forests. Types of vegetation (tropical evergreen, tropical deciduous, tropical desert, littoral and mountain), distribution and correlation with their environment. Forest conservation.

7. Water Resources

Sources (surface water and ground water). Need for conservation and conservation practices (Rain water harvesting and its importance). Irrigation: Importance and methods.

8. Mineral and Energy Resources

Iron ore, Manganese, Copper, Bauxite - uses and their distribution. Conventional Sources: Coal, Petroleum, Natural gas (distribution, advantages and disadvantages). Hydel power (Bhakra Nangal Dam and Hirakud).

Non-conventional Sources: Solar, wind, tidal, geothermal, nuclear and biogas (generation and advantages).

9. Agriculture

Indian Agriculture – importance, problems and reforms.

Types of farming in India: subsistence and commercial: shifting, intensive, extensive, plantation and mixed.

Agricultural seasons (rabi, kharif, zayad). Climatic conditions, soil requirements, methods of cultivation, processing and distribution of the following crops: rice, wheat, millets and pulses; sugarcane, oilseeds (groundnut, mustard and soyabean); cotton, jute, tea and coffee.

10. Manufacturing Industries

Importance and classification. Agro based Industry – Sugar, Textile (Cotton and Silk). Mineral based Industry – Iron & Steel (TISCO, Bhilai, Rourkela, Vishakhapatnam), Petrochemical and Electronics.

11. Transport

Importance and Modes – Roadways, Railways, Airways and Waterways - Advantages and disadvantages.

12. Waste Management

Impact of waste accumulation – spoilage of landscape, pollution, health hazards, effect on terrestrial, aquatic (fresh water and marine) life. Need for waste management. Methods of safe disposal – segregation, dumping and composting. Need and methods for reducing, reusing and recycling waste.

INTERNAL ASSESSMENT PRACTICAL/PROJECT WORK

Candidates will be required to prepare a project report on any one topic. The topics for assignments may be selected from the list of suggested assignments given below. Candidates can also take up an assignment of their choice under any of the broad areas given below.

Suggested list of Assignments

1. Local Geography:
 - (a) Land use pattern in different regions of India – a comparative analysis.
 - (b) The survey of a local market on the types of shops and services offered.
2. Environment:
Wildlife conservation efforts in India.
3. Current Geographical Issues:
Development of tourism in India.
4. Transport in India:
Development of Road, Rail, Water and Air routes.
5. List different type of industries in the States and collect information about the types of raw materials used, modes of their procurement and disposal of wastes generated. Classify these industries as polluting or environment friendly and suggest possible ways of reducing pollution caused by these units.
6. Need for industrialization in India, the latest trends and its impact on economy of India.
7. Visit a water treatment plant, sewage treatment plant or garbage dumping or vermicomposting sites in the locality and study their working.

INTERNAL ASSESSMENT IN GEOGRAPHY – GUIDELINES FOR MARKING WITH GRADES

Criteria	Preparation	Procedure/ Testing	Observation	Inference/Results	Presentation
Grade I (4 marks)	Gives complete theoretical information using relevant geographical terms	States the objectives and defines the aspects to be studies.	Studies text and source material and makes a list.	States theoretical information in a coherent and concise manner using geographical terminology. Uses a variety of techniques. Shows resourcefulness. Supports investigation with relevant evidence.	Neatly and correctly stated statement of intent and conclusion matches with objectives.
Grade II (3 marks)	Provides adequate information using appropriate terms.	States objectives but not the limitations of the study.	Makes a limited list of source material only from secondary sources.	Uses sound methodology-using methods suggested. Makes a valid statement about the data collected. Attempts to develop explanations using available information.	Limited use of reference material and a presentation, which is routine.
Grade III (2 marks)	State objectives using some geographical terms but mostly in descriptive terms.	Only lists the aspects to be studied.	References are minimal.	Uses methodology in which selective techniques are applied correctly. Makes descriptive statement. Analysis is limited. Relates and describes systematically the data collected. Tries to relate conclusion to original aim.	Simple and neat with correct placement of references, acknowledgments, contents, maps and diagrams.
Grade IV (1 marks)	State intent without using relevant geographical terms but explaining them correctly.	Shows evidence of what to look for and how to record the same.	Uses methodology with some techniques but is unable to systematically record data and collect information.	Makes few relevant statements. Does analyze data that is not presented or tends to copy analysis available from other sources. Makes superficial conclusions. Link between the original aim and conclusion is not clear.	Neat but lacking in correct placement of table of contents, maps, diagrams and pictures.
Grade V (0 marks)	Does not make any use of geographical terms.	Has not collected any relevant data and has not presented sources correctly.	Does not use any logical technique and does not follow the methodology suggested.	Does not analyze data. Does not use the suggested methods. Makes conclusions but does not relate them to the original aim.	Presents the report without reference.

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Practical Geography – Study of Topographical Maps

1

Map is the most important tool of a geographer. The main aim of a geographer is to find out and understand the exact nature of topography shown in a map. The Survey of India has made Topographical Maps or Topo Sheets for India and the adjoining countries on different scales. These maps are based on the actual survey of land and their scale is large enough to show the relief (through contours), drainage patterns,

land use, settlement patterns, means of transport and other details.

The study and understanding of the topographical maps or topo sheets require a comprehensive knowledge of physical geography as well as the human responses to natural environment.

Initially the topo sheets were prepared by the Survey of India for the Indian Subcontinent and the adjoining

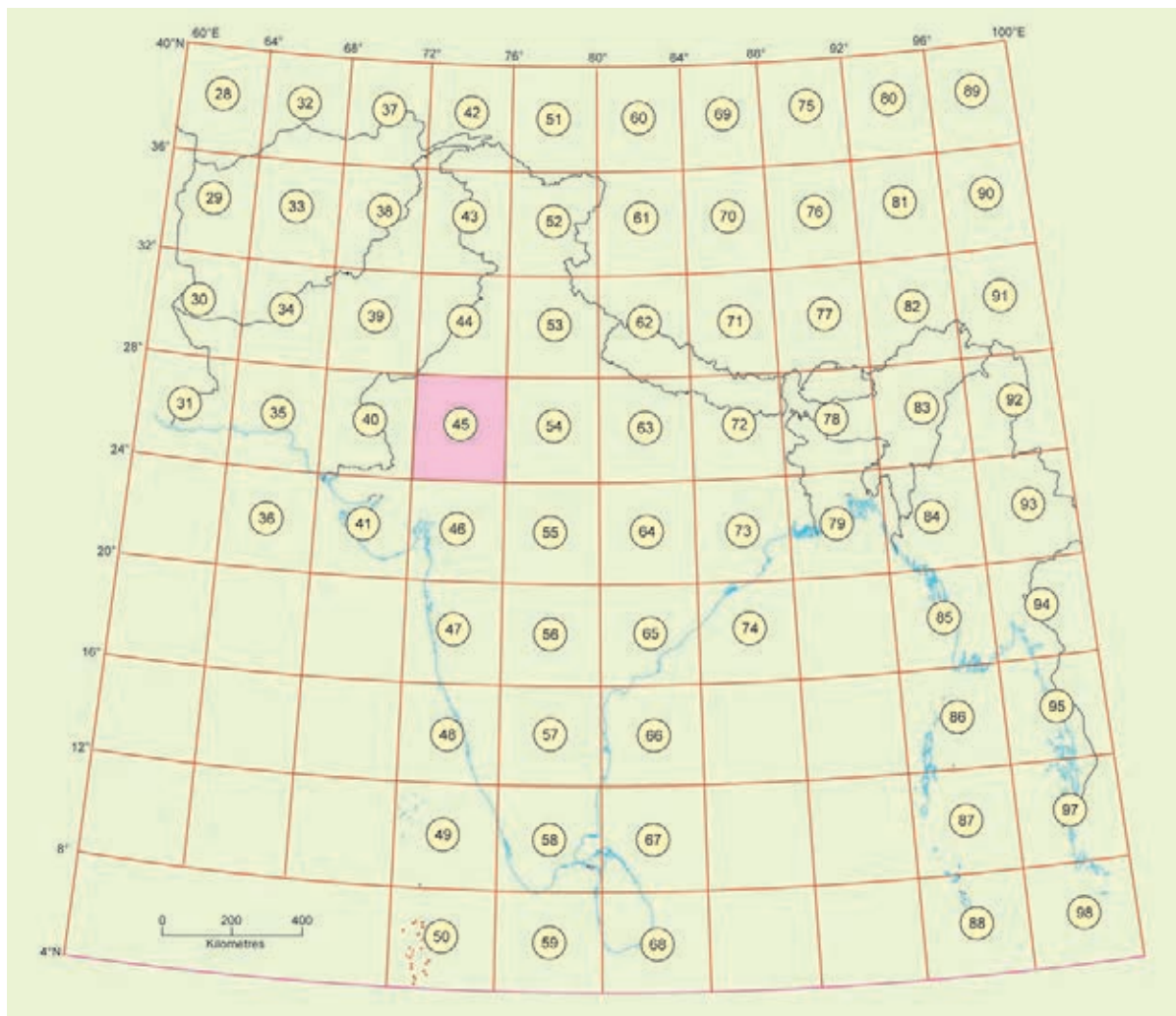
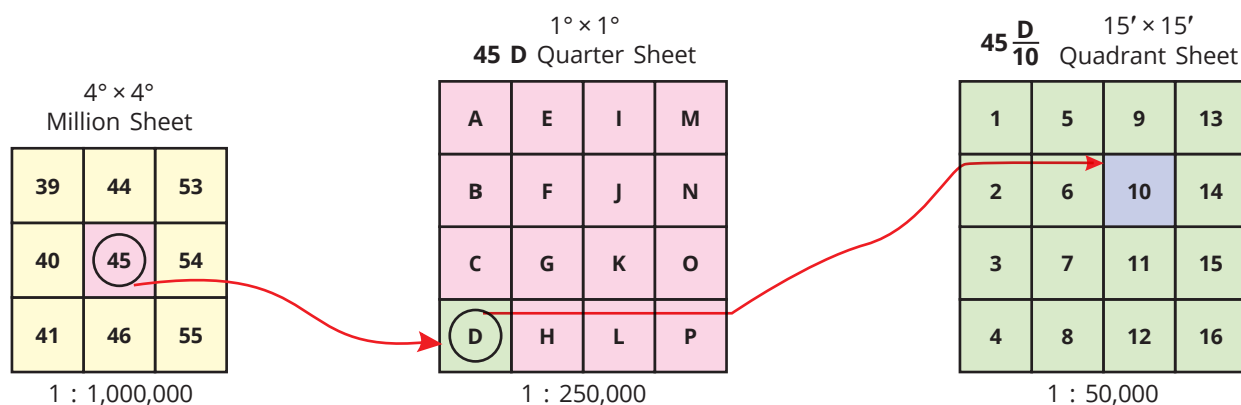


Fig. 1.1 Division of India and the adjacent countries into million sheets





Million Sheet

India and the adjoining countries are divided in $4^\circ \times 4^\circ$ sheets. The extent of each sheet is 4° of latitude and 4° of longitude. These are numbered as 45, 46, 47 and so on. The scale of the sheets in this series is 1 : 1,000,000.

Quarter Sheet or Quarter Inch Map

Each $4^\circ \times 4^\circ$ sheet is sub-divided into 16 equal parts. The extent of each part or sheet is 1° of latitude and 1° of longitude. These are numbered from A to P and written as 45A, 45B, 45C right up to 45P. The scale of the sheets in this series is 1 : 250,000.

Quadrant Sheet or Inch Map

Each $1^\circ \times 1^\circ$ sheet is sub-divided into 16 equal parts. The extent of each part or sheet is $15'$ of latitude and $15'$ of longitude. These are numbered from 1 to 16 and written as 45 D/10. The scale of the sheets in this series is 1 : 50,000. Each sheet covers an area of about 1800 sq km.

Fig. 1.2 Scheme of the topographical maps made by the Survey of India

areas. The scales used were $1'' : 16$ miles, $1'' : 4$ miles and $1'' : 1$ mile. After the introduction of the **metric system** of measurement in India, the scales of these topo sheets were changed to 1 : 1,000,000, 1 : 250,000 and 1 : 50,000.

The parallel of 40° N was taken as the northernmost boundary of the region to be surveyed. Initially the entire area was divided into $4^\circ \times 4^\circ$ sheets, thus forming a total of 105 sheets. Each one is numbered from 1 to 105, like 1, 2, 3, 4, ..., 103, 104, 105.

According to the scale, there are three main groups in which the topo sheets have been prepared in India. These are as under:

1. **The Million Sheets:** Each million sheet covers an area bounded by 4 degrees of latitudes and 4 degrees of longitudes. These sheets are on a scale of 1 : 1,000,000 or 1 cm : 10 km. There are **36 million sheets** covering the whole of India. These sheets are numbered as 45, 46, 47, etc. or named after the most important town of the area. **For example**, Sheet no. 43 is also known as the Srinagar Sheet (See Fig. 1.1).

2. **The Quarter Sheets or Quarter Inch Sheets:** The million sheet is sub-divided into 16 equal parts. Each part covers an area bounded by one degree of latitude

and one degree of longitude. Now these sheets are on a scale of 1 : 250,000 or 1 cm : 2.5 km. Each part of a million sheet is numbered as A, B, C, ..., N, O, P. The quarter inch sheets are separately numbered as 45A, 45B, 45C, 45D and so on (See Fig 1.2).

3. **The Quadrant Sheets or One Inch Sheets:** The quarter inch sheets or the 1° sheets are further sub-divided into 16 equal parts. Each part of one inch sheets covers an area bounded by $\frac{1}{4}$ degree or fifteen minutes latitude and fifteen minutes longitude. Now these sheets are on a scale of 1 : 50,000 or 2 cm : 1 km. Each part of this sheet is numbered as 1, 2, 3, ..., 14, 15, 16 and each part of the quarter inch sheet no. 45D is separately numbered as 45D/1, 45D/2, 45D/3, 45D/4, ..., 45D/16.

GRID REFERENCE

Most of the maps in the atlases, books or wall maps are marked with a network of parallels (lines of latitude) and meridians (lines of longitude). This network of parallels and meridians on the map forms a **grid**. If the latitude and the longitude of a place is known, we can locate that place on the map. Thus, the grid helps us in locating places on the map.



Part of Topo Sheet no. 45 D/7: (Easting: 77 to 85, Northings: 91 to 00)

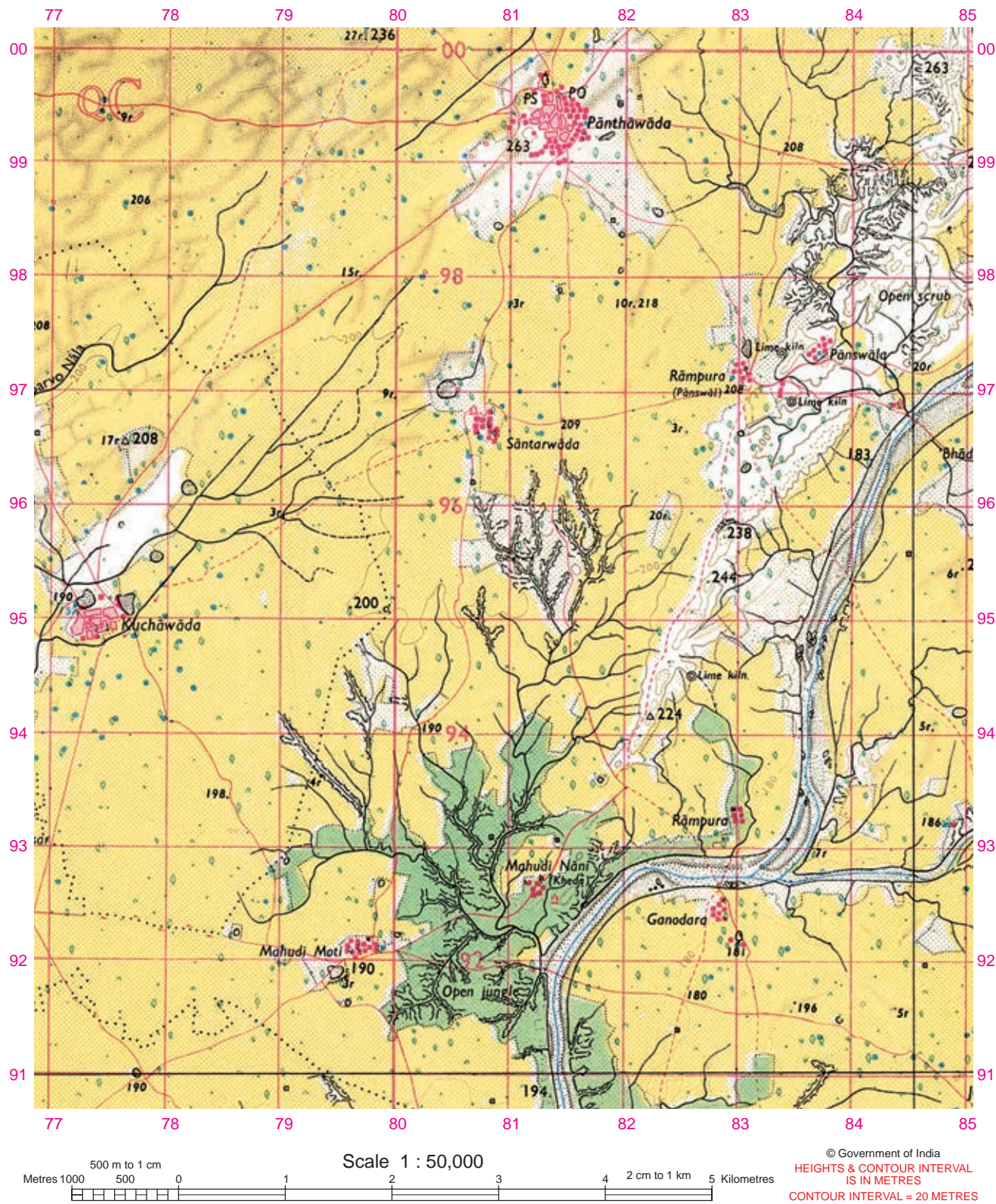


Fig. 1.3 Part of the topo sheet no. 45 $\frac{D}{7}$



PRACTICAL GEOGRAPHY – STUDY OF TOPOGRAPHICAL MAPS

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- ◆ While finding the location of a place on a topo sheet, mention the easting on the left of the place and the northing below the place.
- ◆ While giving the grid reference of a place, the eastings are always quoted first, and then the northings.

For example,

1. The **four figure grid reference** for the square shaded in pink colour in Fig. 1.4 is 25 07.
2. The first two figures are for eastings and the last two figures are for northings.
3. Thus in this grid reference 25 is the value of eastings and 07 is the value of northings in the four-figure grid reference.

To find the **six-figure grid reference**, first divide the grid square on the topo sheet into 10 equal parts – vertically as well as horizontally. These lines will give you the third figure for the eastings and the sixth for the northings. For example, the grid reference of church in Fig. 1.4 is 283 072. In this grid reference, 283 is the value of eastings and 072 is the value of northings.

INTERPRETATION OF TOPO SHEETS

The study or interpretation of a topo sheet can be done under the following heads:

1. **Marginal Information** includes
 - a. Name of the topo sheet
 - b. Number of the topo sheet
 - c. Area shown on the sheet
 - d. Area covered by the topo sheet in square km
 - e. Latitudinal and longitudinal extent of the sheet
 - f. Extent of the arbitrary grid
 - g. Scale of the sheet
 - h. Special information, if any
2. **Relief Features and Drainage** includes
 - a. Contour interval on the topo sheet
 - b. Physical divisions on the topo sheet
 - c. Description of relief features in each physical division
 - d. Major landforms and their location
 - e. Drainage pattern
 - f. Prominent water bodies
 - g. General slope of the area
 - h. Gradient and direction of flow of important rivers

3. **Prominent Land Uses** include

- a. Various types of natural vegetation
- b. Distribution pattern of natural vegetation
- c. Major types of possible land uses
- d. Major occupations possible in the region or the main sources of livelihood, such as lumbering, livestock raising, farming, mining, industries, etc.

4. **Means of Transport and Communication**

- a. Different means of transport and communication as shown on the sheet, such as tracks, footpaths, roads, railways, telegraph and telephone lines and post offices
- b. Correlation between topography and means of transport and communication

5. **The Human Settlements** includes

- a. Urban and rural centres
- b. Their size and location
- c. Settlement patterns
- d. Special activities associated with the urban centres, such as industries, mining, trading, administrative and defence
- e. Density and pattern of the rural settlements
- f. It helps in finding land use and major occupations

MEASURING DISTANCES

The distance between any two places on a map is called the **map distance**. The distance between the same two places on the ground is called the **ground distance**. The ratio between the map distance and the ground distance is called the **scale** of the map.

Suppose the distance between any two points on a map is 2 cm and the distance between the same two points on the ground is 1 km, then the scale of the map will be 2 cm : 1 km. All scales on a map are always the linear scale.

There are three ways in which the scale can be expressed on a map. These are as under:

1. By a Statement, such as 2 cm : 1 km
2. By a Representative Fraction or R.F., such as 1 : 50,000 or 1/50,000.
3. By a Graphical Scale or Linear Scale, as given below.



FINDING DIRECTIONS

Direction is a **relative term** and is always expressed with reference to a given point. For example, Kolkata is towards the east of Mumbai.

The direction on a map is measured and expressed with respect to the North. The top of the map is always considered as the North. If we know the direction of the North, then it is easy to find the other three directions, like East, West and South.

The direction of North can be found in many ways, but the best way is with the help of a **magnetic compass**. The needle of the magnetic compass always points towards the Magnetic North Pole.

The Magnetic North–South line is not the same as the True North–South line. The angle between the True North–South line and the Magnetic North–South line is known as **Magnetic Declination**.

The True North is the direction towards which the **North Pole** of the earth points. It is fixed and is also known as the **Geographic North**. The value of the magnetic declination is always given on every topo sheet. The position of the Magnetic North can change from time to time and also from place to place.

The angular distance of any point on the map with respect to True North and Magnetic North is called the **True Bearing** and the **Magnetic Bearing** of that point respectively. The bearing is always measured in the clockwise direction. The True Bearing is always constant.

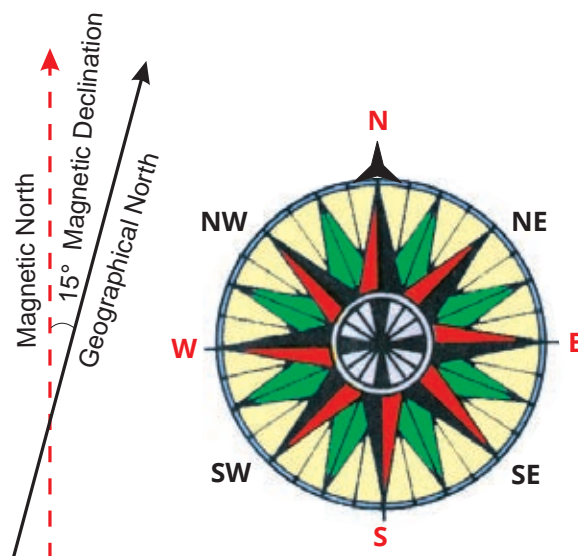


Fig. 1.6 The directions on a compass

The **Grid North** is the direction of the North–South grid lines on the topo sheets. It coincides with the True North only along the meridian of origin. Thus, the true bearing of any point on the topo sheet can be measured with reference to the North–South line on the topo sheet.

Example: Suppose we want to find out the direction or the bearing of the point X in Figure 1.7 from point A. Here A is the point of reference. Draw the North–South line through the point A. Then join point A with point X. Now measure the angle NAX in the clockwise direction. The value of this angle in degrees will be the bearing of point X from point A. The bearing of North is always 0°.

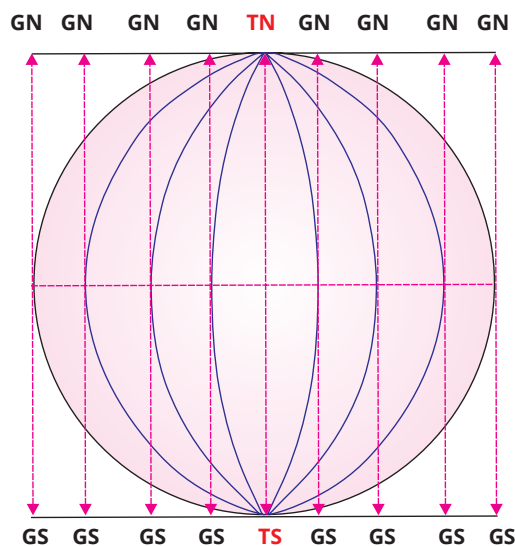


Fig. 1.5 True North and Grid North

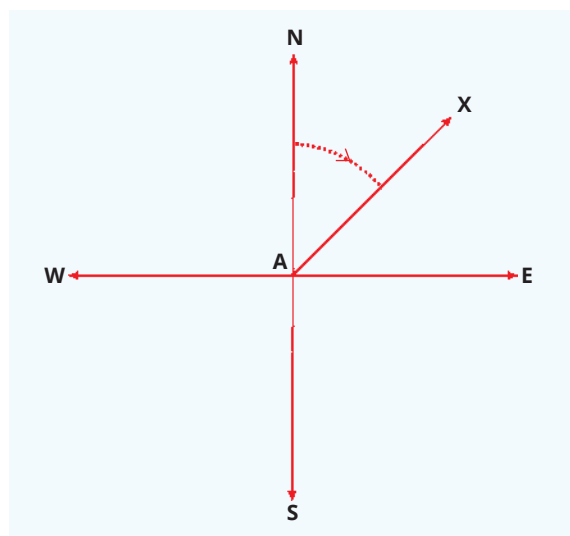


Fig. 1.7 Finding direction with the help of bearing



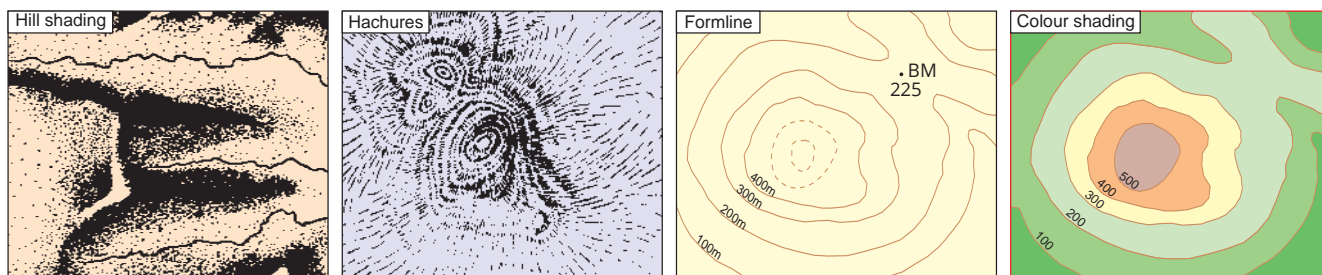


Fig. 1.8 Methods of showing relief on a map

RELIEF FEATURES ON A MAP

A relief map shows the height of land above the mean sea level on a flat surface. Several methods have been developed to show the relief features on a map. Some of them are – the **contours**, **formlines**, **layer-colouring**, **hill-shading**, **spot heights**, **bench marks**, **hachures**, etc. These methods have their merits and demerits. Sometimes a combination of these methods is adopted, such as contours and formlines, contours and layer-colouring, etc.

Contours: A contour is an imaginary line of constant height above the mean sea level. The difference between the value of any two successive contours is known as the **contour interval**, or the **vertical interval (V.I.)**. The horizontal distance between any two contours is called the **horizontal equivalent (H.E.)**. Its value depends upon the slope of the land. The contours are drawn in brown colour on the topo sheet.

Formlines: These are approximate contour lines, based on general observation. They show approximate heights of the place. They are shown by broken lines in brown colour. The formlines help in finding the minor details of topography. These lines are not numbered.

Spot Height: It shows the exact height of a place above the mean sea level on the map. It is shown as a dot in black colour, followed by a number, which is the height of that point, such as •560 in Figure 1.9. These are plotted on the map after actual survey. The spot height does not give any idea about the relief.

Bench Mark: These are marks shown on prominent places, such as rocks or buildings in the field. They indicate the actual height, so measured by the surveys. It is marked on the map as •BM225 (Fig. 1.8). The bench marks serve as points of reference for other places.

Hachures: These are finely drawn disconnected straight lines and indicate the direction of water flow. They are drawn along the direction of the maximum slope. The hachure lines are thicker and drawn closely on the steep slopes and are thin and wide apart on the gentle slope.

INTERVISIBILITY

Sometimes it becomes necessary to find out from a contour map, whether one place is visible from the other and vice versa. This can be easily done by studying the relief along a straight line or the **line of sight** between the two places. If the contour map does not give a clear idea, then we can draw a cross section, between those two places on the contour map (Fig. 1.9). The main facts about **intervisibility** are

- When the two places are on a level ground, the intervisibility will depend on the presence or absence of obstacles like trees and buildings.

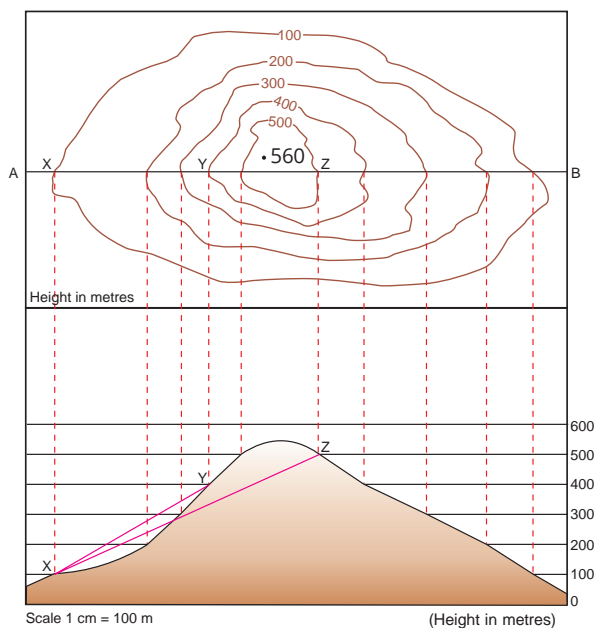


Fig. 1.9 Intervisibility •Point Y is visible from X, while point Z is not visible from X



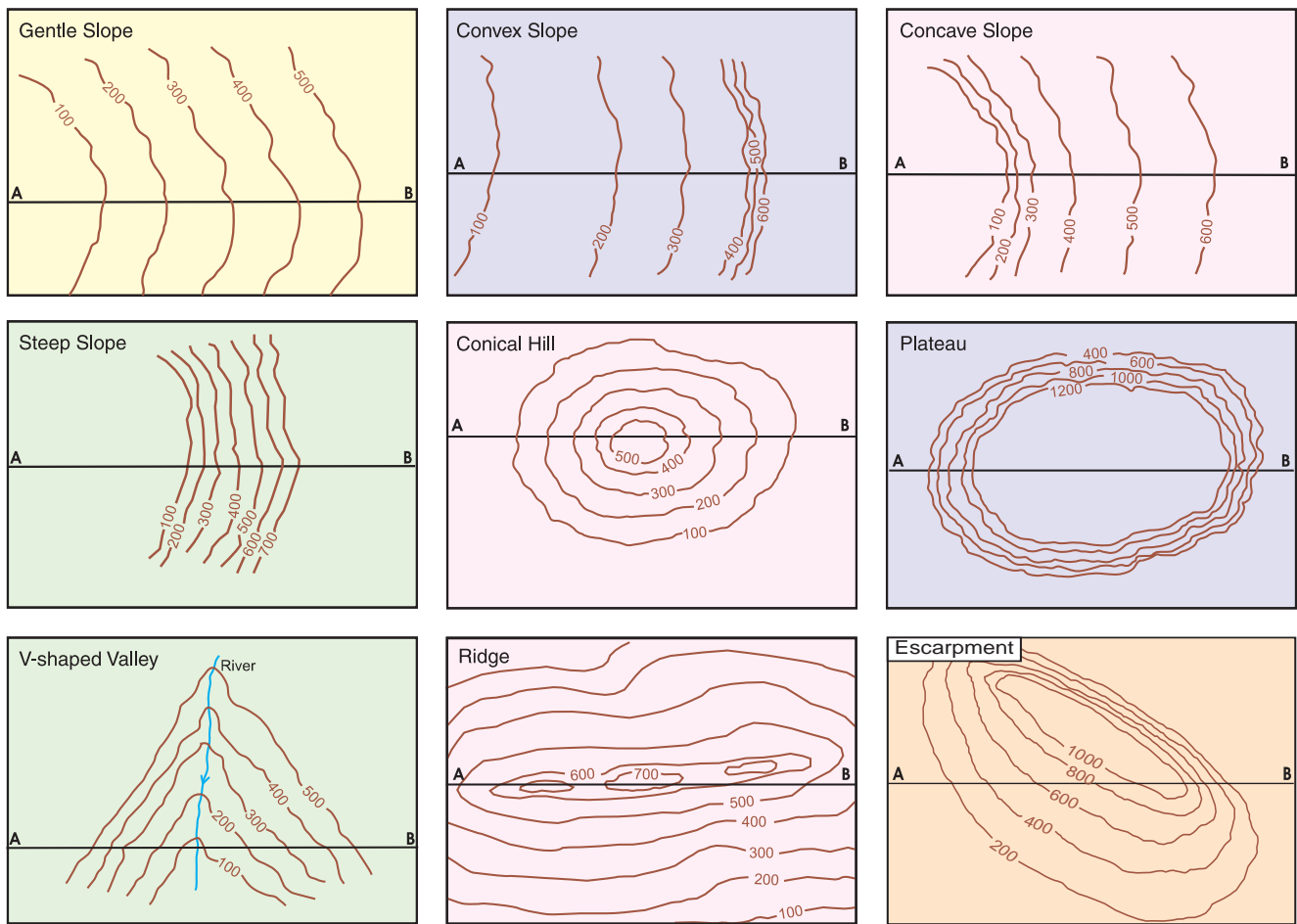


Fig. 1.10 Various types of slopes and relief features shown with the help of contours (Height in metres)

- ◆ When the two places are on the same side of a valley, then both the places are intervisible.
- ◆ When the slope joining the two places is concave, then these two places are probably intervisible.
- ◆ When the slope joining the two places is convex, then these two places will not be intervisible.
- ◆ If the obstacle between the two places is higher than those places, then the two places will not be intervisible.
- ◆ If the obstacle between the two places is higher than one of the places, then the places may or may not be intervisible.
- ◆ If there is no obstruction along the line of sight between the two places, then the places are intervisible.

GRADIENT

It means the amount of steepness of the slope. Sometimes it is not enough to say steep or gentle slope.

For planning and development of the various means of transport, such as roads and railways, we need to know the exact steepness of a slope.

The gradient or slope is normally expressed by stating how much one should travel to gain a given height. See Fig. 1.11. In this right-angled triangle, CA is the distance to be travelled to gain the height AB (200 metres). AB is the vertical interval (V.I.) which can be easily found from the contours. BC is the horizontal equivalent (H.E.), which can be easily measured from the contour map. The ratio between V.I. and H.E. gives the measure of the steepness and is called the **gradient**.

$$\text{Slope or Gradient} = \frac{\text{Vertical Interval or V.I.}}{\text{Horizontal Equivalent or H.E.}}$$

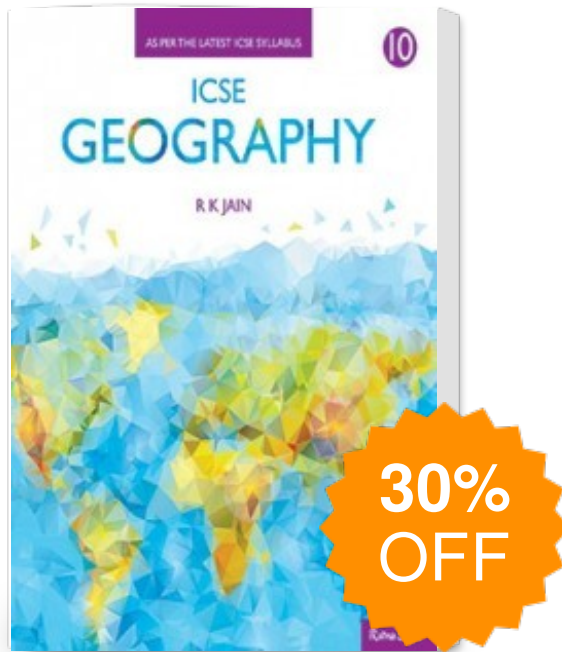
In Fig. 1.11, V.I. = 200 metres and

H.E. = 1000 metres

$$\text{Thus, the gradient} = \frac{200 \text{ metres}}{1000 \text{ metres}} = \frac{1}{5} \text{ or } 1:5 \text{ or } 1 \text{ in } 5.$$



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