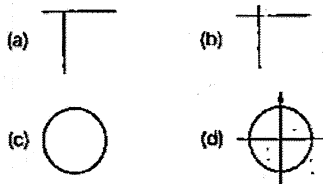


## Introduction

Q.1 Which of the following is an obstacle to chaining but not to ranging?

- (a) River
- (b) Hillock
- (c) Building
- (d) None of the above

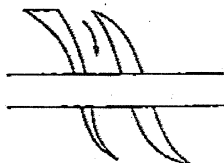
Q.2 Which one of the following is a conventional sign for North direction in surveying?



Q.3 Surveys which are carried out to depict mountains, rivers, water bodies, wooded areas and other cultural details, are known as

- (a) cadastral surveys
- (b) city surveys
- (c) topographical surveys
- (d) guide map surveys

Q.4 The conventional sign shown in figure represents a



- (a) road bridge
- (b) railway bridge
- (c) canal bridge
- (d) aqueduct

Q.5 Match List-I with List-II and select the correct answer using the codes given below the lists:

List-I

- A. Topographical surveys
- B. Geodetic surveys
- C. Engineering surveys
- D. Cadastral surveys

List-II

1. To obtain data for carrying out any type of project such as roads, railways, water supply, etc.
2. To show boundaries of fields, buildings, etc.
3. To furnish data for size and shape of the Earth
4. To show natural features of the country such as rivers, hills, streams, lakes, roads, bridges, towns etc.

Codes:

- |     | A | B | C | D |
|-----|---|---|---|---|
| (a) | 1 | 2 | 3 | 4 |
| (b) | 2 | 1 | 4 | 3 |
| (c) | 1 | 3 | 4 | 2 |
| (d) | 4 | 3 | 1 | 2 |

Q.6 The shrinkage factor of an old map is found to be 15/16 and the representative fraction of the map is 1/1600. The corrected scale for the map is

- (a) 1/1600
- (b) 1/1500
- (c) 1/1706.67
- (d) None of these

Q.7 Which one of the following closely represents the shape of the earth?

- (a) Spheroid
- (b) Ellipsoid
- (c) Oblate spheroid
- (d) Prolate spheroid

Q.8 Which of the following scale is largest one?

- (a) 1 cm = 50 m
- (b) 1: 42000
- (c)  $RF = \frac{1}{300000}$
- (d) 1 cm = 5 km

- Q.9 The principle of 'working from whole to part' is used in surveying because
- plotting becomes easy
  - survey work can be completed quickly
  - accumulation of errors is prevented
  - All of the above
- Q.10 Which one of the following surveys is employed for collecting sufficient data in connection with sewage disposal and water supply works?
- Topographic survey
  - Cadastral survey
  - Geodetic survey
  - Cross-sectioning and profile levelling
- Q.11 The representative fraction  $1/2500$  means that the scale of 1 cm is equal to
- 0.25 m
  - 2.5 m
  - 25 m
  - 2.5 km
- Q.12 Geodetic surveying is different from plane surveying because of
- the curvature of earth
  - the large difference of elevations between various points
  - coverage of very large area
  - undulations of very large area
- Q.13 The error due to bad ranging is
- cumulative; positive
  - cumulative; negative
  - compensating
  - cumulative; positive or negative
- Q.14 For a well-conditional triangle, no angle should be less than
- $20^\circ$
  - $30^\circ$
  - $45^\circ$
  - $60^\circ$
- Q.15 An invar tape is made of an alloy of
- copper and steel
  - brass and nickel
  - brass and steel
  - nickel and steel
- (b) aligning the chain in a straight line between two extremities
- taking offsets from a chain line
  - chaining over a range of mountains
- Q.17 Systematic errors are those errors
- whose effects are cumulative and can be determined
  - which cannot be recognized
  - whose character is not understood
  - whose effect is recognized but character is not understood
- Q.18 The plan of a map was photo copied to a reduced size such that a line originally 100 mm measures 90 mm. The original scale of the plan was 1 : 1000. The revised scale is
- 1 : 900
  - 1 : 1111
  - 1 : 1121
  - 1 : 1221
- Q.19 Which of the following tape is least affected by temperature changes and is highly precise?
- Linen tape
  - Metallic tape
  - Steel tape
  - Invar tape
- Q.20 If  $L$  is the measured length of a line, then the compensating errors are proportional to
- $L^3$
  - $L^2$
  - $L$
  - $\sqrt{L}$
- Q.21 Knowledge of surveying is significant for
- Laying underground pipe lines
  - Town planning
  - Laying of canals
  - All of these
- Q.22 Subtense bar is an instrument used for
- Levelling
  - Measurement of horizontal distance in plain areas
  - Measurement of horizontal distance in undulating areas
  - Measurement of angles
- Q.23 Hydrographic survey deals with the mapping of,
- Large water bodies

**Q.24** The main principle of surveying is to work

- (a) from part to the whole
- (b) from whole to the part
- (c) from higher level to the lower level
- (d) from lower level to the higher level

**Q.25** Geodetic surveying is undertaken

- (a) for production of accurate maps of wide areas
- (b) for determination of accurate positions on the earth's surface of system of control points
- (c) making use of most accurate instruments and methods of observations
- (d) All of the above

■ ■ ■ ■

**Answers Introduction**

1. (a) 2. (d) 3. (c) 4. (a) 5. (d) 6. (c) 7. (c) 8. (a) 9. (c) 10. (d)  
11. (c) 12. (a) 13. (a) 14. (b) 15. (d) 16. (b) 17. (a) 18. (b) 19. (d) 20. (d)  
21. (d) 22. (c) 23. (a) 24. (b) 25. (d)

**Explanations Introduction**

6. (c)

Corrected scale

$$= SF \times RF = \frac{15}{16} \times \frac{1}{1600} = \frac{1}{1706.67}$$

7. (c)

The actual shape of the earth is an oblate spheroid. It is an ellipsoid of revolution, flattened at the poles and bulging at the equator. The length of the polar axis is about 12,113.168 km and that of equatorial axis is about 12,756.602 km. Thus polar axis is shorter than the equatorial axis by about 43.434 km.

11. (c)

1/2500 means  
1 cm = 2500 cm  
 $\therefore$  1 cm = 25 m

18. (b)

$$\text{Reduction factor} = \frac{90}{100} = 0.9$$

Revised scale = original scale  $\times$  reduction factor

$$= \frac{1}{1000} \times 0.9 = \frac{1}{1111}$$

22. (c)

The subtense bar was developed by Mr. Kern. The length of the substance bar is 2 m (6 ft.). It is used for the measurement of comparatively short horizontal distance in undulating areas. A substance bar may be used as a substance base, the length of the bar is made equal to the distance between two targets.

Hence option (c) is correct.

■ ■ ■ ■