11718

3 Hours / 100 Marks   Seat No.

Instructions :
(1) All Questions are *compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. **(A) Attempt any SIX :**   **12**

(a) Classify survey as per instruments used.

(b) State two principles of survey.

(c) State the use of arrows and invar tape in surveying.

(d) What is meant by magnetic declination ?

(e) Differentiate between open traverse and closed traverse on any two points.

(f) State any two desired relationships between fundamental axes of dumpy level.

(g) State the principle of plane table survey.

(h) Define the terms : (1) Level surface and (2) Line of Collimation.

(B) **Attempt any TWO :** 8

(a) Differentiate between plane and geodetic survey on any four points.

(b) Draw the conventional symbols for embankment, lake, railway line double, marshy land.

(c) State any four code of signals in ranging with their meaning.

2. **Attempt any FOUR :** 16

(a) Explain with neat sketch method of stepping of chaining on sloping ground.

(b) Explain with neat sketch the procedure of reciprocal ranging.

(c) The length of line measured by 20 m chain was found to be 751 m. The chain was tested before start of measurement and was found correct. The chain was again tested after measurement of length of line and was found 6 cm too short. What shall be the correct length of line ?

(d) State any four precautions to be taken while selecting stations for chain surveying.

(e) Define the terms – base line and check line.

(f) Draw a neat sketch of optical square. Explain its working.

3. **Attempt any FOUR :** 16

(a) State any four types of offsets and define them.

(b) State the functions of needle, glass cover, pivot and adjustable mirror of a compass.

(c) (i) Convert following bearings into reduced bearing.

315° 30' and 164° 30'.

(ii) Convert following bearings into WCB.

N 23° 30' W and S 35° 30' E.

(d) Define the terms – dip of needle, magnetic bearing, fore bearing and back bearing.

(e) With neat sketch, write the procedure of measurement of fore bearing with compass.

(f) With neat sketch, explain the included angle method of plotting compass traverse.

4. Attempt any FOUR : 16

(a) Explain with neat sketch graphical adjustment of closing error.

(b) State any four accessories of plane table with their use.

(c) State any four advantages and four disadvantages of plane table survey.

(d) What is orientation of plane table ? State the procedure of any one method of orientation.

(e) Explain with neat sketch the procedure of radiation method of plane tabling.

(f) State and explain temporary adjustments of dumpy level.

5. Attempt any FOUR : 16

(a) State any four advantages of auto level.

(b) Define the terms – Foresight, back sight, intermediate sight and change point.

(c) State under what situations differential levelling and reciprocal levelling is adopted.

(d) Explain the procedure of profile levelling for construction of road.

(e) Compare collimation plane method and rise and fall method of reduction of levels.

(f) Describe instrumental errors in levelling.

6. **Attempt any TWO :** 16

(a) (i) What is local attraction ? How it is defected ?

(ii) Enlist different errors in compass surveying.

(b) Following consecutive readings were taken with level :

3.875, 2.100, 2.635, 1.895, 2.410, 0.540, 3.185, 2.155, 1.970, 2.675

The first reading was taken on BM of RL 575.000 m. The level was shifted after fourth and eighth reading. Rule out page of level field book. Using rise and fall method, calculate reduced levels of all stations. Apply check.

(c) Fig. shows data related to cross staff survey. Calculate the area of the field ABCDEF in tabular form.
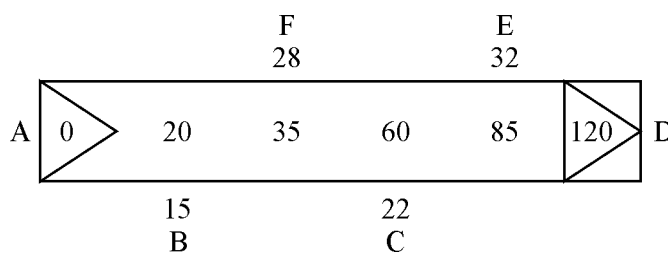

Fig. No. – 1

Note : All dimensions are in 'M'.

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