16117

3 Hours / 100 Marks Seat No. | | | | | | | | |

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

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

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

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

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

Marks

1. (A) Attempt any SIX of the following : **12**

(a) State any two uses of Plane Surveying.

(b) State any four classification of surveying based on instrument used.

(c) State different tapes used based on material of which they are made.

(d) Define : (i) Open traverse, (ii) Closed traverse.

(e) Define : (i) W.C.B., (ii) Reduced Bearing.

(f) Enlist the methods of plane tabling.

(g) State objectives of levelling.

(h) Define : (i) Mean sea level, (ii) Station point.

(B) Attempt any TWO of the following : **8**

(a) Draw conventional symbols for

(i) Railway line

(ii) Bridge

(iii) Compound Wall

(iv) Water pipe-line

(b) State the classification of surveys based on

(i) the nature of the field of survey.

(ii) the object of survey.

(c) State the meaning of local attraction and state its effect on prismatic compass and how is it taken care of.

2. Attempt any FOUR of the following : 16

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

(b) State the uses of following instruments in survey :

(i) Cross staff

(ii) Chain

(iii) Pegs

(iv) Arrows

(c) Length of a survey line measured with a 20 m chain was found to be 750 m. When the chain was compared with a standard chain, it was found to be 0.20 m too long. Find correct length of the line.

(d) Define base line and check line with neat sketch.

(e) Explain principle of optical square with sketch.

(f) Explain reciprocal ranging with neat sketch.

3. Attempt any FOUR of the following : 16

(a) State the procedure to find the foot of the perpendicular on the chain line to take the offset.

(b) State any eight component parts with its functions of prismatic compass.

(c) Explain dip of magnetic needle with neat sketch.

(d) Convert following bearings into R.B. :

(i) 129° 30′

(ii) 79°

(iii) 295° 30′

(iv) 212° 30′

(e) Explain four types of meridians.

(f) State different methods of plotting compass traverse.

4. Attempt any FOUR of the following : 16

(a) Convert following reduced Bearings into W.C.B.

(i) N 45° W

(ii) S 20° E

(iii) S 53° W

(iv) N 38° E

(b) Define orientation and principle of plane tabling.

(c) Explain the radiation method of plane table survey with neat sketch.

(d) State merits and demerits of plane table surveying.

(e) Explain errors occurred due to manipulation and sighting in plane tabling.

(f) Define : (i) Level line, (ii) Horizontal line, (iii) Vertical line, (iv) Bench Mark.

5. Attempt any FOUR of the following : 16

(a) Define the following :

(i) Height of instrument

(ii) Back-sight

(iii) Fore-sight

(iv) Axis of bubble tube

(b) Differentiate between H.I. method and Rise and Fall method.

(c) State different types of levelling. Explain any one in brief.

(d) State the important points to be remembered while doing profile levelling.

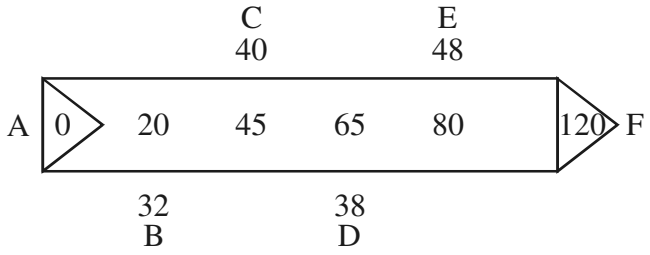
(e) Explain the temporary adjustments of a dumpy level.

(f) Draw a neat sketch of dump level and name all the parts.

P.T.O.

6. Attempt any TWO of the following : **16**

(a) Plot the following cross staff survey of field and calculate its area in m^2 as shown in Fig. No. 1.



Line AF → All dimensions in metres

Fig. No. 1

(b) Calculate the included angle for a closed traverse survey and apply usual check.

Line	FB	BB
AB	46° 30′	226° 30′
BC	118°	297° 30′
CD	168° 30′	349° 30′
DA	292°	110° 30′

(c) The following are the consecutive readings on a 4 m levelling staff on a continuously sloping ground at a interval of 30 m. 0.880, 1.600, 1.970, 2.550, 2.990, 3.485, 1.250, 1.980, 2.465, 3.740, 0.920, 1.145, 1.850, 2.740.

The R.L. of first point is 200.00 m. Rule out a page of level field book and enter the above readings. Calculate the reduced levels of all the points by rise and fall method.

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