23242

3 Hours / 70 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.

Marks

1.　**Attempt any FIVE of the following :**　　**5 × 2 = 10**

(a)　State any two uses of surveying.

(b)　Define offset and enlist types of offset.

(c)　Enlist any four component of transit theodolite.

(d)　State any two uses of theodolite.

(e)　Enlist types of benchmarks.

(f)　Define :

　　(i)　Contour interval

　　(ii)　Horizontal equivalent

(g)　State principle of plane table survey.

2. **Attempt any THREE of the following :** 3 × 4 = 12

(a) Draw symbols used in chain survey map for the following :

(i) Cutting

(ii) Wall with gate

(iii) Orchard

(iv) Electric post

(b) Describe the procedure of indirect ranging with neat sketch.

(c) Describe the temporary adjustments of transit theodolite.

(d) Describe the procedure of fly levelling with neat sketch.

3. **Attempt any THREE of the following :** 3 × 4 = 12

(a) Convert the following R.B. into W.C.B. :

(i) N 55° 30' E

(ii) S 60° 20' E

(iii) N 47° 20' E

(iv) S 39° 30' W

(b) Describe the procedure of measurement of horizontal angle by repetition method using transit theodolite.

(c) State any four uses of contour map.

(d) Enlist accessories used in plane table survey and state function of each of them.

4. **Attempt any THREE of the following :** 3 × 4 = 12

(a) Find the length and bearing of line AB, if two co-ordinates A & B are as given below :

Point	Co-ordinate
A	870.30, 777.00
B	1150.20, 575.30

(b) State fundamental axis and lines of theodolite and give relations between them.

(c) The following consecutive readings were taken with a level and a 4 m levelling staff on continuously slopping ground at a common interval of 30 m : 0.585 on A, 0.936, 1.953, 2.846, 3.644, 3.938, 0.962, 1.035, 1.689, 2.534, 3.844, 0.956, 1.979, 3.016 on B. The elevation of A was 520 · 450 m. Make a page of level book and apply usual checks. Use collimation plane method.

(d) State features of digital level.

(e) Differentiate between W.C.B. and R.B.

5. **Attempt any TWO of the following :** 2 × 6 = 12

(a) The following bearings were taken in closed compass traverse survey. Determine the correct bearings. Find stations affected by local attraction.

Line	FB	BB
AB	48° 25'	230° 0'
BC	177° 45'	356° 0'
CD	104° 15'	284° 55'
DE	165° 15'	345° 15'
EA	259° 30'	79° 0'

(b) The following angles were measured in running a closed traverse ABCDEA.

∠A = 87° 50' 20", ∠B = 114° 55' 40", ∠C = 94° 38' 50", ∠D = 129° 40' 40"

and ∠E = 112° 54' 30". If the bearing of line AB is 221° 18' 40", calculate the

bearings of remaining lines.

(c) State characteristics of contour lines with neat sketch.

6. **Attempt any TWO of the following :** **2 × 6 = 12**

(a) A traverse survey was conducted and following data is received, find missing

length and bearing of line ST :

Line	Length (m)	Bearing
PQ	154.80	78° 30'
QR	174.00	155° 35'
RS	238.50	248° 42'
ST	?	?

(b) The following readings were recorded with a dumpy level and a 4 m staff :

2.500, 2.815, 3.100, 0.845, 2.720, 2.955, 3.150, 0.675, 1.405 and 1.840. The

level was shifted after the third and seventh reading. The first reading was

taken on BM having RL = 100.00 m. Calculate the RLs of the stations by Rise

and Fall method. Perform usual checks.

(c) State merits and demerits of plane table survey.

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