Survey (Th-3)

4th sem/Summer (2020).

Model -1

F.M = 80. Time - 3 hrs.

(Answer any five question including Q No 1 and 2).

1) Answer all the questions. [2×10].

(a) What is the principle of plane table surveying.

(b) What are the types of 'BM' that you know?

(c) Define latitude and departure of a line.

(d) Define the term "contour interval" and horizontal equivalent".

(e) What is a field book? What kind of field book would you prefer and why?

(f) Define declination. Write down the relation bet' true bearing and magnetic bearing.

(g) What do you mean by ranging? when would you prefer indirect ranging?

(h) Define the term "Swinging of telescope" and "transiting of telescope".

(i) Convert the WCBs to QB.

(a) 220°30' (b) 330°45' (c) 79°0' (d) 174°25'

(j) Write down the statement of Simpson's Rule. Also write the limitation of Simpson's Rule.

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(2) Answer any six questions. [5×6].

(a) What are the obstacles in chaining? Explain with examples when chaining is free but vision is obstructed.

(b) What are the types of compass used in Surveying. Describe prismatic compass with neat sketch.

(c) Describe the method of intersection in plane table surveying.

(d) In an operation involving reciprocal levelling, two points A & B are taken on opposite banks of a river. when the level was set up near A, the staff readings on A & B are 2.245m and 3.375m. respectively. when the level was set up near B, the respective staff readings were 1.955 m and 3.055 m. ~~respectively~~ find the true difference of level bet^n A and B.

(e) An embankment of ~~which~~ width 10m and side slopes 1.5:1 is required to be made on a ground, which is level in direction, transverse to the centre line. The central hieghts at 20m intervals are as follows.

0.85, 1.50, 2.20, 2.50, 1.85, 1.45 and 0.95. Calculate the volume of earthwork by trapezoidal formulae.

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(f) write down the characteristics of contour.

(g) Describe the cadastral map preparation methodology.

(h) Find the area of the closed traverse ABCDA from the following data.

Side	Lattitude	Departure
AB	+108.0m	+14.0m
BC	+25m	+230.0m
CD	−123.0m	+13.0m
DA	−10.0m	−257.0m

(3) A closed traverse ABCDEA have following observation. [10]

Line	length	Bearing
AB	217.5m	120°15'
BC	318.0m	62°30'
CD	375m	322°24'
DE	283.5m	235°18'

Calculate the length and bearing of ~~traverse~~ side EA.

(4) The following consecutive readings were taken with a levelling instrument at an interval of 10m. 2.430, 1.730, 0.615, 3.450, 2.835, 2.070, 1.840, 0.985, 0.435, 1.630, 2.225 and 3.650.

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The instrument was shifted after the 4th and 7th reading. The first reading was taken on a B.M of R.L 120.000m. Find the R.L of all points. [10]

(5) A 30m steel tape was standardised at a temperature of 20°C and under a pull of 5kg. The tape was used in a catenary at a temperature of 25°C and under a pull of 10kg. The cross-sectional area of the tape is 0.02cm^2, its weight per unit length is 22g/m. Young's Modulus = 2×10^6 kg/cm^2. $\alpha = 11 \times 10^{-6}$ per/°C. A line was measured using this tape and found to be 650m long. Find the true length of the line. [10]

(6) The following are the observed bearings of the lines of a traverse ABCDEA with a compass in a place where local attraction was suspected. [10]

Line	F.B	B.B
AB	191°45'	13°0'
BC	39°30'	222°30'
CD	22°15'	200°30'
DE	242°45'	62°45'
EA	330°15'	147°45'

Find the correct bearings of line.

(7) Describe the method of radiation and intersection in plane table surveying. [10]

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Survey (Th-3)

4th sem (Summer/2020)

Model-2

Time-3 hr

FM: 80

→ Answer any five question including 'Q' No '1' & '2'

(1) Answer all questions.

(a) what do you mean by dip of magnetic needle. what is the cause of dip.

(b) what are the different types of tape. Write the composition of 'INVAR'.

(c) what do you mean by cadastral map?

(d) what do you mean by orientation. write the name of methods used for orientation of plane table.

(e) Define Reduced level (RL) and Hieght of Instrument. write the relation bet' them.

(f) Define Consecutive co-ordinate and Independent co-ordinate of a point.

(g) Define force bearing and back bearing of a line. write the relation between them.

(h) what do you mean by contour?

(i) The co-ordinate of point 'A' are 100 (Northing) and 200 (Easting) and that of point 'B' are 100 (Southing) and 300 (Easting). Find the length of Survey line AB.

(j) what do you mean by traverse. write down

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the type of traverse.

(2) Answer any six questions. [5×6].

(a) P and Q are two points 500m apart on the same bank of a river. The bearings of a tree on the other bank observed from P and Q are N36°25'E and N40°35'W respectively. Find the width of the river, if the bearing of PQ are S86°35'E.

(b) Describe the working principle of optical square.

(c) Describe the temporary adjustment of a dumpy level.

(d) A man on the deck of a ship observes a luminous object, which is 50m above sea level. If the man's eye-level is 10m above sea level find the distance bet^n man and object.

(e) Describe the process of measurement of magnetic bearing of a line.

(f) Describe any one method for indirect contouring.

(g) Balance the closed traverse using Bowditch's Rule.

Line	Length	Latitude	Departure
AB	70	+21.500	−65.450
BC	80	−80.755	−5.250
CD	45	−41.000	+13.550
DE	38	−14.250	+35.150
EA	115	+114.150	+22.315

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(h) Describe the types of error that may occur in Chain surveying.

(3) The following offsets were taken at 15m intervals from a survey line to an irregular boundary line.

3.5, 4.3, 6.75, 5.25, 7.5, 8.8, 7.9, 6.4, 4.4, 3.25m.

Calculate the area enclosed between the survey line, irregular boundary line and the first and last offset by,

(1) Trapezoidal Rule.

(2) Simpson's Rule.

(4) The Record of a closed traverse is given below. with two distances missing.

Line	Length	Bearing
AB	100.5	N 40°30'E
BC	?	S 45°0'E
CD	75.0	S 40°45'W
DE	50.5	S 60°15'W
EA	?	N 40°15'W

Calculate the length of BC and EA.

(5) The following consecutive readings were taken with a levelling instrument at intervals of 20m.

2.375, 1.730, 0.615, 3.450, 2.835, 2.070, 1.835, 0.985, 0.435, 1.630, 2.255 and 3.630m.

The instrument was shifted after the 4th and 8th reading. The last reading was taken

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on a B.M of R.L 110.200m. Find the R.L of other points.

(6) The following bearings were observed in traversing with a compass, in an area, where local attraction was suspected. Find the amount of local attraction at different stations, the correct bearing of lines and included angles.

Line	F.B	B.B
AB	68°15'	248°15'
BC	148°45'	326°15'
CD	224°30'	46°00'
DE	217°15'	38°15'
EA	327°45'	147°45'.

(7) Describe about different instruments required in plane-table surveying.

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