CBCS SCHEME

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Sahyadri College of Engineering & Management CENTRAL LIBRARY Adyar, Mangalore-7

Third Semester B.E. Degree Examination, Dec.2019/Jan.2020
Basic Surveying

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

1 a. Distinguish between plane surveying and geodetic surveying. **(06 Marks)**

b. Explain the following:
(i) Principle of working from whole to part
(ii) Topo sheets and their numbering **(06 Marks)**

c. Explain different types of errors. **(04 Marks)**

OR

2 a. With a neat sketch, explain step by step procedure for conducting reciprocal leveling. **(06 Marks)**

b. Explain how will you continue chaining past the following obstacles: (i) river (ii) a building. **(06 Marks)**

c. A steel tape of 30 m long was standardized at a temperature of 20°C at a pull of 65N. Find the correction per tape length if the temperature and pull at the time of measurement are 30°C and 100 N. Cross section area of tape = 0.08 cm^2. Modulas of elasticity of steel = 2.1×10^5 N/mm^2, coefficient of thermal expansion = 1.16×10^{-5}/°C **(04 Marks)**

Module-2

3 a. Distinguish between
(i) True meridian and magnetic meridian
(ii) Declination and Dip **(04 Marks)**

b. The following interior angles were measured with a sextant in a closed traverse. The bearing of the line AB was measured [illegible] rismatic compass. Calculate the bearing of all other lines if ∠A = 80°30′; ∠[illegible] = 100°30′; ∠D = 107°30′. **(06 Marks)**

c. The following bearings wer[illegible]ile traversing with a compass in clockwise direction.

Line	FB	[illegible]
AB	220°15′	4[illegible]
BC	150°0′	329°45′
CD	77°30′	256°0′
DE	41°30′	222°45′
EA	314°15′	134°5′

Determine the local attraction and corrected bearing. **(06 Marks)**

OR

4 a. Define the following: Line of collimation, Axis of level tube, Face left observation, Transiting. **(06 Marks)**

b. Briefly explain repetition method of measuring horizontal angles. Give advantages and also state what errors are eliminated by repetition method. **(06 Marks)**

c. What are the desired relationship between fundamental lines of a theodolite? **(04 Marks)**

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Module-3

5 a. Distinguish between closed traverse and open transverse. **(06 Marks)**

b. Briefly explain Bowditch's rule and transit rule. **(04 Marks)**

c. Calculate the latitude and departure of a closed traverse from the following details:

Line	Length (m)	WCB
AB	130	92°
BC	158	172°
CD	145	220°
DE	308	279°
EA	337	48°

State weather the traverse needs adjustment or not. **(06 Marks)**

OR

6 a. Briefly explain various types of tacheometry. **(06 Marks)**

b. The following notes refer to a line leveled tacheometrically with an anallactic tacheometer, the multiplying constant being 100:

Inst. Station	Height of axis	Staff stations	Vertical angle	Hair reading
P	1.50	BM	−6°12′	0.963, 1.515, 2.067
P	1.50	Q	+7°5′	0.819, 1.341, 1.863
Q	1.60	R	+12°27′	1.860, 2.445, 3.030

Compute the reduced levels of P,Q and R and the horizontal distance PQ and QR. Given RL of BM = 202.000 **(10 Marks)**

Module-4

7 a. Define level surface, horizontal surface, datum, bench mark. **(04 Marks)**

b. Compare the height of instrument method and rise and fall method of reduction of levels. **(06 Marks)**

c. The following staff readings were observed with a level, the instrument having been moved forward after 3rd and 7th reading.
0.875, 1.245, 2.380, 1.46, 2.885, 3.240, 3.960, 0.120, 1.920
The first reading was taken with the staff held upon a bench mark of elevation 200.00 m. Enter the reading in a page of level book form and calculate the reducing levels of all stations. Apply arithmetic check. **(06 Marks)**

OR

8 a. Explain:
(i) Profile levelling
(ii) Check levelling
(iii) Reciprocal levelling
(iv) Fly levelling **(08 Marks)**

b. Explain the method if determining the distance and elevation of an object using trignomatric leveling. When the bale is inaccessible and the instrument stations are in the same plane as that of the object. Derive the required equations. Assume the station faraway from object is at higher level. **(08 Marks)**

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the area in sq.m enclosed between the chain line and the irregular boundary using Simpson's rule and trapezoidal rule. **(06 Marks)**

c. The following table gives the corrected latitudes and departures (in meters) of the sides of a closed traverse ABCD.

Line	Latitude	Departure
AB	+84.58	+630.35
BC	–419.94	+95.67
CD	–100.83	–553.03
DA	+436.19	–172.99

Compute the area of traverse. **(06 Marks)**

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OR

10 a. Explain the factors affecting contour interval. **(04 Marks)**

b. With the help of neat sketches describe the characteristics of contours (any 3). **(06 Marks)**

c. An embankment of width 10m and side slopes 1½ :1 is required to be made on a ground which is level in a direction transverse to the center line. The central height at 40 m intervals are as follows: 0.90, 1.25, 2.15, 2.50 and 1.85. Compute the amount of earthwork according to prismoidal formula. **(06 Marks)**

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