SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR

Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

Subject with Code : Surveying&Geomatics(18CE0109)**Course & Branch**: B.Tech - CE

Year &Sem: II-B.Tech& II-Sem   **Regulation:** R18

UNIT –I

PRINCIPLES OF SURVEYING, ANGLES, AZIMUTHS, BEARING AND

TYPES OF SURVEYING

1. a) Briefly explain the principles of surveying?   5M

   b) Write short notes on types of errors.   5M

2. Explain in detail the classifications of surveying.   10M

3. a) A Chain was tested before starting and it was found to be exactly 20m after measurement of total length   2600m . The Chain length was again tested and found 20.2m after that another 4600m was measured and at end of the day length of chain was found 20.36 m. Calculate the True length of chain measured   5M

   b) A steel tape was exactly 30 m long at 20°C when supported throughout its length under a pull of 98N. A line was measured with this tape under a pull of 147N and at a mean temperature of 32°C and found to be 780 m long. The cross-sectional area of the tape = 0.03 cm^2, and its total weight = 6.8N. For steel $\propto$ = 11 X 10^{-6} per °C and E for steel = 20.58 X 10^6 N/cm^2. Compute the true length of the line if the tape was supported during measurement (i) at every 30 m (ii) at every 15 m.5M

4. With neat sketch, explain the prismatic compass or surveyor compass.   10M

5. At what stations do you suspect local attraction? Find the correct bearings of lines and also compute the included angles.   10M

LINE	FORE BEARING	BACKBEARING
AB	66°20'	246°20'
BC	139°30'	318° 50'
CD	189°40'	11°20'
DA	300°30'	119° 30'

6. Explain with neat sketch the radiation and intersection method in plane table surveying.10M

7. Explain two-point problem and three-point problem with sketches.   10M

8. a) Briefly explain the various accessories (any three) in chain surveying.   5M

   b) What is local attraction and how it is detected and eliminated?   5M

9. What are the different tape correction and how they are applied?   10M

10. Define

       i. Magnetic meridian and true meridian.   2M

       ii. Whole circle bearing and reduced bearing.   2M

       iii. Dip and declination.   2M

iv. Closed traverse and open traverse. 2M

v. Fore bearing and back bearing. 2M

Prepared by: **T.BABU SARANAM**

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UNIT –II

LEVELING AND CONTOURING

1. a). Write short notes on methods of leveling. 5M

   b). Briefly explain the temporary adjustment of leveling. 5M

2. a). Write short notes on errors in leveling 5M

   b). Discuss the effects of curvature and refraction in leveling. 5M

3. What are the indirect methods of locating a contour? Write about any two method.10M

4. Describe in detail how you would proceed in the field for (i) Profile leveling

   (ii) Reciprocal leveling.

   10M

5. The following staff readings were observed successively with level, the instrument has been moved forward after the second, fourth and eighth readings: 0.875, 1.235, 2.310, 1.385, 2.930, 3.125, 4.125, 0.120, 1.875, 2.030 and 3.765. The first reading was taken with the staff held upon a benchmark of elevation 132.135m. Enter the readings in level book-form and reduce the levels. Apply the usual checks. Find also the difference in level between the first and the last points. 10M

6. The following consecutive readings were taken with a dumpy level and 4 m leveling staff on a continuously sloping ground at common intervals of 30 m 0.905 (on A), 1.745, 2.345, 3.125,3.725, 0.545, 1.390, 2.055, 2.955, 3.445, 0.595, 1.015, 1.850,2.655, 2.945(on B). The RL of A was 395.500 m. Tabulate the page of field book and calculate the levels of the points. 10M

7. The following readings have been taken from a page of an old level book. It is required to reconstruct the page. Fill up the missing quantities and apply the usual checks.   10M

Station	BS	IS	FS	Rise (+)	Fall (-)	RL	Remark
1	3.125					?	B.M
2	?		?	1.325		125.505	CP
3		2.320			0.055	?	

4			?		?		125.850	
5	?		2.655		?	?		CP
6	1.620		3.205		2.165	?		CP
7		3.652				?	?	
8			?				123.090	T.B.M

8. a) Define contour. State the various characteristics of contour lines.   5M
   b) Mention the uses of contour in civil engineering works?   5M
9. a) In leveling between two points A and B on opposite sides of a river, the level was set up near A and the staff readings on A and B were 2.642 and 3.228m respectively. The level was then moved and set up near B, the respective staff readings on A and B were 1.086 and 1.664. Find the true difference level of A and B.   5M
   b) Write short notes on difficulty in leveling.   5M
10.a) Differentiate between back sight and foresight.   2M
b) Define contour interval and horizontal equivalent.   2M
c) What is a bench mark? Describe different types of bench marks.   2M
   d) Write a note on self-reading staff.   2M
e) Define contour gradient.   2M

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UNIT –III

THEODOLITE AND TACHEOMETRIC SURVEYING

1.a) Write the temporary adjustments of a theodolite   4M
b) How do you measure horizontal angle between two points with the help of a theodolite by
repetition method?   6M
2. a) Write about parts of the Transit Theodolite. Explain in detail.   6M
b) What are the different errors in theodolite work? How are they eliminated?   4M
3. For the following traverse, compute the length CD, so that A, D and E may be in one straightline.
                                                                                                                       10M

Line	Length(m)	Bearing
AB	110	83°12´
BC	165	30°42´
CD	?	346°06´
DE	212	16°18´

4. Determine the R.L of the top of a temple from the following data. Station A and B are in linewith
the top of the temple.

                                                                                                                       10M

Inst Station	Reading on BM(m)	Vertical Angle	R.L of BM
A	1.085	10°48´	R.L of BM = 150.000m
B	1.265	7°12´	AB=50 m

5. Derive an expression to find the height of an object by double plane method.   10M
6.a) What is an analytical lens? Establish the basic equation for an analytic lens.   5M
 b) What is tacheometry? What are different systems of tacheometric measurements?   5M
7. a) Find the horizontal and vertical distances by tangential method when both angles areangles of
elevation.   6M
b) How would you, determine the constants K and C of a Tacheometer.   4M
8.The following readings were taken by a tacheometer with the staff held vertical. Thetacheometer
is fitted with Analytic lens and the multiplying constant is 100. Find out the horizontal distance
from A to B and the R.L of B.   10M

Inst.station	Staff station	Vertical angle	Staff readings	Remarks
A	BM	-6º00'	1.100,1.153, 2. 060.	R.L. of B.M =
	B	8°00'.	0.982, 1.105, 1.188	976.000

9. The vertical angles to vanes fixed at 0.5m and 3.5m above the foot of the staff held vertically at a point were - 00° 30' and + 10 °12' respectively. Find the horizontal distance and the reduced level of the point, if the level of the instrument axis is 125.380meters above datum.   10M

10.a) Differentiate between transiting and swinging.   2M

b) Define traversing   .   2M

c) Define closing error.   2M

    d) Write a note on movable hair method in tacheometric surveying.   2M

e) Give any two advantage of tacheometric surveying.   2M

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UNIT –IV

CURVES

1. a) Write short notes on types of circular curves.   6M
   b) Define degree of curve. Derive a relation between the radius and degree of a curve.   4M
2. Explain various elements of a simple curve with a neat sketch.   10M
3. a) Define and draw a typical compound curve. Under what circumstance compound curves are provided.   4M
   b) Derive the expression for the elements of a compound curve.   6M
4. Mention the various methods of setting out of simple curve. Explain with sketch offsets from long chord method in detail.   10M
5. Describe with sketch the method of setting a simple circular curve by Rankine's deflection angle method.   10M
6. a) Write short notes on reverse curves.   4M
   b) Briefly explain the field procedure of setting out of curve by two theodolite methods.   6M
7. Two tangents intersect at chainage 1250 m. The angle of intersection is 150^0. Calculate all data necessary for setting out a curve of radius 250 m by the deflection angle method. The peg intervals may be taken as 20 m. prepare a setting out table when the least count of the Vernier is 20". Calculate the data for field checking.   10M
8. Two straight lines AC and CB, to be connected by a 3^0 curve, intersect at a chainage of 2760 m. The WCBs of AC and CB are $45^030'$ and $75^030'$ respectively. Calculate all necessary data for setting out the curve by the method of offsets from the long chord.   10M
9. A compound curve is made up of two arcs of radii 380 m and 520 m. The deflection angle of the combined curve is 105^0 and that of the first arc of radius 380 m is 58^0. The chainage of the first tangent point is 848.55 m. find the chainage of the point of intersection, common tangent point, and forward tangent point.   `   10M
10.a) Differentiate between simple curve and compound curve.   2M
   b) Give the relationship between the radius and the degree of a simple curve.   2M
   c)Mention the various methods of setting out the simple curve.   2M
   d) Write a note on two theodolite method of curve setting.   2M
   e) Draw a neat sketch of reverse curve.   2M

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UNIT –V

ELECTRONIC DISTANCE MEASUREMENTS

1. a) List out and explain the properties of EM waves.   5M
   b) State and brief about transit time.   5M
2. a) Explain in detail about the infrared type of EDM instrument.   6M
    b) Write short notes on total stations.   4M
3. Explain with sketch the principle of EDM instrument.   10M
4. Briefly explain the types of EDM instrument.   10M
5. How will you measure the horizontal angle and vertical angle by using total station?   10M
6. Describe in detail about the following EDM instruments. (i) Microwave instrument
   (ii) Visible light instrument.   10M
7. a) Explain about AM and FM modulation.   5M
    b) What is modulation? Explain the necessity of modulation.   5M
8. Explain in detail about the Wild T-1000 Electronic Theodolite.   10M
9. Describe with sketch, the fundamental measurement of angles and distances by total station.
                                                                                     10M

10. Define the following terms.
        i. Cycle.   2M
        ii. Frequency.   2M
        iii. Wave length   2M
        iv. Period.   2M
        v. Phase of a wave.   2M

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