VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (Civil Engg.: CBCS) III-Semester Supplementary Examinations, May/June-2018

Surveying-I

Time: 3 hours

Max. Marks: 70

*Note: Answer **ALL** questions in Part-A and any **FIVE** from Part-B*

Part-A (10 ×2 = 20 Marks)

1. What are the basic principles of Surveying?

2. Differentiate the terms Magnetic Declination and Dip?

3. State any two Lehmann's rules used for solving three point problem of resection?

4. Write the intersection method of plane table surveying?

5. Define sensitivity of bubble tube and state how it is calculated?

6. Write the uses of contours?

7. What are the general methods of calculating areas?

8. How do you determine volume from spot levels?

9. What are the ranges of wave lengths applicable for EDM instruments?

10. State the checks applicable for closed traverse and open traverse?

Part-B (5 × 10=50 Marks)

11. a) Write the methods of direct and indirect ranging methods of chain surveying? [5]

    b) A closed compass traverse survey was conducted round a compound wall and the WCB [5] were observed. Determine which of the stations are affected by local attraction and calculate their corrected bearings if the magnetic declination at the place is $3^0 \, 01' \, 01"$W.

LINE	FORE BEARING	BACK BEARING
PQ	$32^0 \, 30'$	$214^0 \, 31'$
QR	$124^0 \, 30'$	$303^0 \, 25'$
RS	$181^0 \, 00'$	$1^0 \, 00'$
SP	$289^0 \, 30'$	$108^0 \, 44'$

12. a) Explain the two point problem of plane table surveying? [4]

    b) Write the Bessel's method of resection used for solving three point problem? Draw [6] sketches to show the salient details.

13. a) Derive expressions to determine curvature and refraction effects? [4]

    b) The following readings were obtained from a reciprocal observations: The horizontal [6] distance between P and Q is 1210 m and the RL of P = 130.015m. Determine (i) True RL of Q (ii) Angular error in the collimation adjustment of the instrument?

Instrument at	P	Q
Staff readings on P	1.804	0.929
Staff readings on Q	2.748	1.616

14. a) The following are the notes of a multi-level cross section for a road. The width of the road Bed is 10m and side slopes are 1:1.5. Calculate the cross-sectional area? [6]

$$\frac{1.8 \quad 2.9 \quad 3.7 \quad 5.9 \quad 6.0}{7.8 \quad 5.0 \quad 0.0 \quad 10.2 \quad 10.4}$$

b) At every 100 ft along a piece of ground, level were taken. They were as follows: [4]

Feet	G.L
0	210.00
100	220.22
200	231.49
300	237.90
400	240.53
500	235.00

A cutting is to be made for a line of uniform gradient passing through the first and last points. What is the gradient? Calculate the volume of cutting on the assumption that the ground at right angles to centre line is levelled. Given: Breadth of formation 30 feet; slope of the cutting in each side 1 ½ to 1. Use prismoidal formula.

15. a) Explain the measurement of transit times and phase comparison applicable to total station measurement? [5]

b) Determine the omitted measurements of the following closed traverse? [5]

Line	Length (m)	Bearing
AB	204	$87^0 30^0$
BC	226	$20^0 30^0$
CD	187	$280^0 03^0$
DE	192	$210^0 45^0$
EA	?	?

16. a) What are the errors in Plane Table surveying and write their remedial measures? [5]

b) What are the types of chains used and write the details of lengths of their each link and total length? [5]

17. Answer any *two* of the following:

a) Measurement of volumes for various cross sections [5]

b) Characteristics of contours [5]

c) Methods of balancing the traverse [5]

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