VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. II Year (Civil Engg.) I-Semester Supplementary Examinations, May/June-2017

Surveying-I

Time: 3 hours

Max. Marks: 70

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

Part-A (10 X 2=20 Marks)

1. Find the hypotenusal allowance per chain length of 30 m if the angle of slope is 8 degrees.

2. Describe the process to range a line between two points which are not visible to each other due to small hillock in between.

3. In 1850 the bearing of a line was measured as N34°W and the declination was 11°15' W. In 2007 the declination changed to 15°45'E. What is the magnetic bearing of the line in 2007?

4. What is local attraction? How to detect and correct it?

5. What do you mean by "strength of fix" in plane table survey?

6. What is orientation and why is it done?

7. For any engineering work, how will you get the RL of the starting point?

8. A reading on a 4 m staff at a point is observed as 2.895m. If the staff was 8 cm out of the plumb line, find out the correct reading.

9. Why are face left and face right observations taken and two vernier readings taken?

10. What are the methods of traversing by a theodolite?

Part-B (5 × 10 = 50 Marks)

11. a) P and Q are two points 367 m apart on the same bank of a river. The bearings of a tree on the other bank observed from P and Q are N 36°25' E and N 40°35'W, respectively. Find the width of the river if bearings of PQ are S 86°35'E. [6]

    b) Explain the principle of optical square on which it works with a neat sketch. Describe its use in the field. [4]

12. a) Below are the bearings observed in a traverse survey conducted with a prismatic compass at a place where local attraction was suspected. [7]

LINE	FB	BB
AB	59°	239°
BC	139°30'	317°
CD	215°15'	36°30'
DE	208°	29°
EA	318°30'	138°45'

    At what stations do you suspect local attraction? Find the correct bearings of the lines and also the true bearings, if the magnetic declination is 10°W.

    b) Differentiate between prismatic and surveyors compass. [3]

13. a) What is three point problem? Describe stepwise the solution of the problem in the field by the Bessel's method. [6]

    b) Explain with sketches the following methods of locating a point in plane table survey [4]
    i) Radiation ii) Intersection.

14. a) The following successive readings were taken with a dumpy level along a chain line at common intervals of 20m. The first reading was taken on a chainage 140 m. The RL of the second change point was 107.215 m. The instrument was shifted after the third and seventh readings. Calculate the RL's of all the points. [8]

   3.150, 2.245, 1.125, 3.860, 2.125, 0.760, 2.235, 0.470, 1.935, 3.225 and 3.890 m.

   b) Describe the sensitivity of a level tube. [2]

15. a) The record of a closed traverse is given below, with two distances missing. [7]

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

   Calculate the lengths of BC and EA.

   b) What are the fundamental lines of a theodolite? What should be the relation between them? [3]

16. a) The following are taken from a survey line to a curved boundary line [7]

Distance (m)	0	5	10	15	20	30	40	60	80
Offset (m)	2.5	3.8	4.6	5.2	6.4	4.9	5.8	3.2	2.2

   Find the area between the survey line, the curved boundary line and the first and last offset by Trapezoidal rule and Simpsons rule.

   b) What is magnetic declination and dip? Describe briefly the 4 types of variations which occur in magnetic declination. [3]

17. Write short notes on any *two* of the following:

   a) Lehmann's rules [5]

   b) Applications of contours [5]

   c) Parts of a vernier theodolite with neat sketch. [5]

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