Code No. 6014

# FACULTY OF ENGINEERING

**B.E. 2/4 (Civil) I – Semester (Main) Examination, December 2013**

**Subject : Surveying – I**

**Time : 3 hours** **Max. Marks : 75**

***Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.***

## PART – A (25 Marks)

1. The bearings of PQ & QR are $300^0$ and $60^0$ respectively. What is the included angle PQR? (2)

2. State the differences between a prismoidal compass and surveyor's compass. (3)

3. The length of a line measured with 30 m chain was found to be 250 m. Calculate the true length of the line of the chain was 10 cm too long. (3)

4. What is a well conditional triangle? Why is it necessary to use a well conditions triangle? (2)

5. When do you recommend a plane table surveying? (2)

6. What do you mean by 'Line of collimation' and fore sight? (2)

7. List any three uses of contours with sketches. (3)

8. What is meant by contour gradient? (2)

9. During leveling with a dumpy level, the bubble has been displaced by 3 divisions when the length of the sight in 120m. If the angular value of one division of the bubble is 20 seconds. Find the error in the staff reading. (3)

10. A leveling work was started from a point of R-L-400.000m the sum of the back sight is 24.200m and that of the fore sight in 22.200m. upto a certain point. Find the R-L- of this point. (3)

## PART – B (50 Marks)

11.a) Explain the principle of chain surveying. (3)

b) In passing an obstacle in the form of a pond, station A and D, on the main line, were taken on the opposite sides of the pond. On the left of AD, a line AB, 225m long was laid down, and a second line. AC 275m long, was ranged on the right of AD. The points B, D and C being in the same straight line. BD and DC were then chained and found to be 125m and 137.5m respectively. Find the length of AD? (7)

12.a) What is bark bearing and what are the advantages of observing it in a traverse. (3)

b) The bearings of a traverse ABCD were taken with a prismatic compass and the observation are as follows : (7)

| Line | Fore bearing | Bark bearing |
|---|---|---|
| AB | $139^0\ 25^1$ | $319^0\ 25^1$ |
| BC | $154^0\ 45^1$ | $334^0\ 45^1$ |
| CD | $295^0\ 40^1$ | $115^0\ 20^1$ |
| DA | $353^0\ 30^1$ | $175^0\ 00^1$ |

Compute the interior angles by correcting the bearings for local attraction.

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13.a) Explain how reciprocal leveling eliminates the effect of atmospheric refraction and the earth's curvature, as well as the effect of not adjusting the line of collimation. (3)

b) The following consecutive readings were taken with a dumpy level, the instrument having been shifted after the second, fourth and seventh readings = 0.900, 1.250, 2.400, 1.375, 2.945, 3.125, 3.725, 0.100, 1.975, 2.025 and 1.775. The first reading was taken with a staff held on a 13m of elevation 100.000. Enter the readings in a level book form and reduce the levels by the rise and tall method. (7)

14. Describe the methods of contouring. Discuss the merits and demerits of each. (10)

15.a) State the characteristics of a contour. (3)

b) A series of offsets were taken from a chain line to a curved boundary line at intervals of 15m in the following order. (7)

0, 2.65, 3.80, 3.75, 4.65, 3.60, 4.95, 5.85m

Compute the area between the chain line, the curves boundary and the end offsets by A) Trapezoidal rule and B) Simpron's rule

16.a) Short notes on 'Lehmani rule'. (4)

b) What is three point problem? Explain the triangular of error method for locating the true position on the plane table sheet of the station occupied by it. (6)

17. Write short note on : (10)

a) Bowditch method
b) Errors in prismatic compass
c) Temporary adjustments of dumpy level

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