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**Question Paper Code: 41136**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

Third Semester

Civil Engineering

14UCE306 - SURVEYING - I

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 1 = 10 Marks)

- In chain surveying field work is limited to
  - linear measurements only
  - angular measurements only
  - both (a) and (b)
  - all the above
- In chain surveying tie lines are primarily provided
  - to check the accuracy of the survey
  - to take offsets for detail survey
  - to avoid long offsets from chain lines
  - to increase the number of chain lines
- ABCD is a regular parallelogram plot of land whose angle BAD is  $60^\circ$ . If the bearing of the line AB is  $30^\circ$ , the bearing of CD, is
  - $180^\circ$
  - $210^\circ$
  - $90^\circ$
  - $270^\circ$
- The bearings of the lines AB and BC are  $146^\circ 30'$  and  $68^\circ 30'$ . The included angle ABC is
  - $45^\circ$
  - $102^\circ$
  - $78^\circ$
  - none of these
- For true difference in elevations between two points A and B, the level must be set up
  - near the point B
  - near the point A
  - at the exact midpoint of A and B
  - at any point between A and B

6. In leveling operation
- (a) The line commences with a back sight and closes with a foresight
  - (b) The first sight on any change point is a back sight
  - (c) The second sight on any change point is a fore sight
  - (d) The line commences with a fore sight and closes with a back sight
7. Closed contours of decreasing values towards their centre, represent
- (a) a depression
  - (b) a river bed
  - (c) a hill
  - (d) a saddle or pass
8. The method generally preferred to for contouring an undulating area, is
- (a) tacheometrical surveying
  - (b) plane table surveying
  - (c) chain surveying
  - (d) compass surveying
9. The most reliable method of plotting a theodolite traverse, is
- (a) by plotting included angles and scaling off each traverse leg
  - (b) by independent co-ordinates of each station
  - (c) by consecutive co-ordinates of each station
  - (d) by the tangent method of plotting
10. One of the tacheometric constants is additive, the other constant, is
- (a) subtractive constant
  - (b) dividing constant
  - (c) multiplying constant
  - (d) indicative constant

PART - B (5 x 2 = 10 Marks)

11. What is plumb BOB?
12. Name the method of orienting plane table. Which method if preferable?
13. Define Bench mark.
14. What do you mean by contour interval?
15. State the location and function of a plate bubble in a theodolite.

PART - C (5 x 16 = 80 Marks)

16. (a) (i) What are the accessories required for a chain survey? Explain the functions of each.

(8)

- (ii) Explain the methods of chaining while there are obstacles such as building or river. (8)

Or

- (b) A survey line ABC crossing a river at right angles cuts its banks at B and C. To determine the width BC of the river, the following operation was carried out. A point E was established on the perpendicular BE such that angle CEF is a right angle where F is a point on the survey line. If the chainage of F and B are respectively 1200 m and 1320 m, and also the distance EB is 90 m, calculate the width of the river and the chainage of C. (16)

17. (a) The following are the bearings observed in traversing with a compass, an area where local attraction was suspected. Find the amount of local attraction at different stations, the correct bearings of the lines and the included angles

Line	AB	BC	CD	DE	EA
FB	59°00'	139°30'	215°15'	208°00'	318°30'
BB	239°00'	317°00'	36°30'	29°00'	138°45'

(16)

Or

- (b) (i) With neat sketches, explain the method of intersection in plane tabling. (10)  
(ii) List the common errors in plane tabling and the precautions to be taken. (6)
18. (a) Write short note on (i) Reciprocal leveling (ii) Fly leveling (iii) Differential leveling (iv) Simple leveling and state where each is used. (16)

Or

- (b) The following consecutive readings were taken with a dumpy level and 4 m leveling staff on a continuously sloping ground at 30 m intervals. 0.680, 1.455, 1.855, 2.330, 2.885, 3.380, 1.055, 1.860, 2.265, 3.540, 0.835, 0.945, 1.530 and 2.250. R.L of the starting point was 80.750 m.
- (i) Rule out a page of a level book and enter the above readings.  
(ii) Determine the RL of various staff stations.  
(iii) Estimate average gradient of ground measured (16)
19. (a) (i) Define contours and give characteristics of contours. (8)  
(ii) Name the methods of contouring and explain the procedure of any one method. (8)

Or

- (b) (i) The following perpendicular offsets (in meters) were taken at 15 m intervals from a chain line to an irregular boundary line: 3.50, 4.30, 6.75, 5.25, 7.50, 8.80, 7.90, 6.40, 4.40 and 3.25. Compute the area between the chain line, the irregular boundary and the end offsets by Trapezoidal rule and Simpsons rule. (6)
- (ii) What is meant by interpolation of contours? Describe the various methods used. (10)
20. (a) (i) To find out the distance between two inaccessible points P and Q, the theodolite is set up at two stations A and B, 1000 m apart and the following angles were observed:  $\text{PAQ} = 45^\circ$ ,  $\text{QAB} = 57^\circ$ ,  $\text{PBA} = 56^\circ$  and  $\text{PBQ} = 50^\circ$ . Calculate the distance PQ. (6)
- (ii) What are the possible sources of errors while using a theodolite? (10)

Or

- (b) Describe briefly about temporary and permanent adjustments of a theodolite. (16)
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