B.E. Civil Engineering (CBCS Pattern and Old) Sem-IV

4BECE005 / CE405 : Surveying and Leveling-I

P. Pages : 2 **GUG/S/19/11905**

Time : Three Hours * 3 6 9 7 * Max. Marks : 80

Notes : 1. All questions carry equal marks.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answers wherever necessary with the help of neat sketches.
5. Non-programmable electronics calculator is permitted.

1. a) What are the principle of surveying? Explain in details. **8**

b) A 20m chain was found to be 10cm too long after chaining a distance of 1500m. It was found to be 18cm too long at the end of day's work after chaining a total distance of 2900M. Find the true distance if the chain was correct before the commencement of the work. **4**

c) Draw a neat sketch of metric chain & label its parts. **4**

OR

2. a) Explain, "Obstacles in chaining" with neat sketch. **8**

b) i) Convert the following whole circle bearing to quadrantal bearing **8**

a) $22^{o}\,30'$ b) $170^{o}12'$

c) $211^{o}\,54'$ d) $327^{o}\,24'$

ii) Convert the following quadrantal bearing to whole circle bearing

a) $N12^{o}\,24'E$ b) $S31^{o}\,36'E$

c) $S68^{o}\,6'W$ d) $N5^{o}\,42'W$

3. a) The following are bearing taken on a closed compass traverse. **8**

Line	Fore Bearing	Back Bearing
AB	82° 10'	259° 0'
BC	120° 20'	301° 50'
CD	170° 50'	350° 50'
DE	230° 10'	49° 30'
EA	310° 20'	130° 15'

compute the interior angle & correct then for observational error assumed the observed bearing of line CD to be correct adjust the bearing of the remaining sides.

b) What is local attraction. **4**

c) State difference between survey compass & prismatic compass. **4**

OR

4. a) Describe the adjustments of a dumpy level. **4**

b) The following consecutive reading were taken with a level. **12**
0.885, 1.245, 1.425, 1.545, 0.125, 0.320, 0.545, 0.945, 1.160, 1.560. 1.755M level was shifted after 4^{th}, 7^{th}, & 10^{th} reading. 1^{st} reading was taken on B.M. of R. L. 100.00 M. Draw the page of level book and satisfy check and calculate RL & By Rise and Fall method.

5. a) What are the functions of theodolite explain term. **8**

b) What is closing error & how it balance graphically. **8**

OR

6. a) The following records are obtained in a traverse survey where the length & bearing of a line DA were not recorded. **16**

Line	Length (M)	Bearing
AB	75.50	30º 24'
BC	180.50	110º 36'
CD	60.25	210º 30'
DA	?	?

Compute the length and bearing of line DA.

7. a) What are uses of contour maps. **9**

b) Explain characteristics of contours with neat sketches. **7**

OR

8. a) A railway embankment is 15m wide with side slope 1.5 to 1. Assume ground level in traverse direction to centre line, Calculate volume contained in a length of 140m, at 20m interval being at 2.2, 3.70, 3.80, 4.00, 3.20, 2.80, 2.50 m using trapezoidal rule. **10**

b) What are difference between theodolite and tacheometer? **6**

9. Write short note on **any four**. **16**

i) EDM ii) Box sextant

iii) Abney level iv) Geodimeter

v) Ghat tracer

OR

10. a) What are different types of curves. **7**

b) Derive an relation between radius and degree of curve. **9**

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