CBCS Scheme

Third Semester B.E. Degree Examination, Dec.2017/Jan.2018
Surveying – I

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

1 a. What is surveying? Explain the basic principles of surveying. **(06 Marks)**
   b. Distinguish between: i) Plane surveying and Geodetic survey   ii) Plan and Map. **(04 Marks)**
   c. A chain 30 meter length was found to be 12cm too long after chaining distance of 1750m. It was found to be 23cm too long at the end of days work after chaining a total distance of 3600m. Find the true distance if the chain was correct, before commencement of work. **(06 Marks)**

OR

2 a. Give the broad classification of surveying. **(06 Marks)**
   b. Explain the basic principle of EDM devices. **(02 Marks)**
   c. A steel tape was exactly 30m long at 18°C, when supported throughout its length under a pull of 8N. A line was measured with a tape under a pull of 12N and found to be 1602m. The mean temperature during measurement was 26°C. Assuming the tape to be supported at every 30m. Calculate the true length of the line given the cross section area of the tape is 0.04cm^2. The weight of 1Cu-cm of tape is 0.072N. The co-efficient of thermal expansion is 0.000012 per 1°C and modules of elasticity = 2.1×10^6 N/cm^2. **(08 Marks)**

Module-2

3 a. Explain with a neat sketch the construction and working of an optical square. **(06 Marks)**
   b. Distinguish between the following :
      i) Magnetic meridian and True meridian
      ii) Dip and Declination
      iii) Isogonics lines and Agonic lines
      iv) Whole cycle bearing and reduced bearing
      v) Dependent and Independent co-ordinates **(10 Marks)**

OR

4 a. Explain the following terms :
      i) Base line   ii) Random line   iii) Check line   iv) True line   v) Offset. **(05 Marks)**
   b. Differentiate prismatic compass and surveyor's compass. **(08 Marks)**
   c. Define a term well condition triangle. Why it is necessary to have well conditioned triangle in a chain survey? **(03 Marks)**

Module-3

5 a. Following are the bearings of the sides of a closed traverse.

Side	AB	BC	CD	DE	EA
Fore bearing	60°30′	122°0′	46°0′	205°30′	300°0′

Draw a neat sketch of the traverse workout the interior angles of the traverse and apply the check. **(06 Marks)**

b. What is closing error on a traverse? Explain how the closing error in compass survey is adjusted by Bowditch's rule. **(04 Marks)**

c. The following bearings were observed with prismatic compass.

Line	Fore bearing	Back bearing
AB	74°00′	254°00′
BC	91°00′	271°00′
CD	166°00′	343°00′
DE	177°00′	0°00′
EA	189°00′	9°00′

Where do you suspect local attraction? Find the corrected bearing? **(06 Marks)**

OR

6 a. What is local attraction? How it is detected and eliminated? **(06 Marks)**

b. The magnetic bearing of a line AB is S38°30′ W calculate the true bearing, if,
   i) The magnetic declination is 4°30′ west
   ii) The magnetic declination is 3°30′E **(04 Marks)**

c. In the following traverse ABCDEA, the length and bearing of EA is omitted, calculated the length and bearing of line EA. **(06 Marks)**

Line	Length (m)	Bearing
AB	204.00	87°30′
BC	226.00	20°20′
CD	187.00	280°0′
DE	192.00	210°3′
EA	?	?

Module-4

7 a. Define the following terms :
   i) Bench mark   ii) Back sight   iii) foresight   iv) Line of collimation. **(04 Marks)**

b. Explain the temporary adjustment of Dumpy level. **(05 Marks)**

c. The following consecutive readings were taken with a level and 3m leveling staff on continuous sloping ground @ a common interval of 20m. Instrument was shifted after 4th and 8th reading
   0.602, 1.234, 1.860, 2.574. 0.238, 0.914, 1.936, 2.872, 0.568, 1.824, 2.722. The reduced level of the first point was 192.122m. Rule out a page of a level field book and enter the above readings. Calculate the reduced level of the points by using H.I method and also the gradient of the line joining the first and lost point. **(07 Marks)**

OR

8 a. Explain the process of Reciprocal leveling with neat sketch and state its advantages. **(08 Marks)**

b. Two points A and B are 1530m apart across a wide river. The following reciprocal levels are taken with one level.

Level @	Staff Reading on	
	A	B
A	2.165m	3.810m
B	0.910m	2.355m

The error in the collimation adjustments of the level is -0.004m in 100m. calculate the true difference of level between A and B and the correction for refraction **(08 Marks)**

Module-5

9   a.   What is contour? What are the uses of a contour map?   (04 Marks)
    b.   What are characteristics of contour lines?   (04 Marks)
    c.   With neat sketches describe the methods of solving three point problems by Bessels
         Graphical method.   (08 Marks)

OR

10   Define the following terms :   (10 Marks)
    a.   Contour interval
    b.   Horizontal equivalent
    c.   Contour gradient
    d.   Vertical clift   (06 Marks)

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