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B TECH
(SEM II) THEORY EXAMINATION 2017-18
SURVEYING & LEVELLING

Time: 3 Hours ***Total Marks: 100***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a. What do you mean by magnetic declination?
b. Differentiate between plan and map.
c. Define surveying.
d. Classify surveying on the basis of instrument used.
e. What do you mean by leveling?
f. Find the correction for curvature for a distance of 800 m and 2.5 km.
g. Explain representative fraction with an example.
h. Write down the rules for reduced bearing.
i. What are the components of plane table outfit?
j. What are temporary adjustments of Transit Theodolite?

SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30

a. The following bearings were taken in running an open traverse with a compass in a place where local attraction was suspected :
Line Fore Bearing Back Bearing
AB 44° 40’ 225° 20’
BC 96° 20’ 274° 18’
CD 30° 40’ 212° 2’
DE 320° 12’ 140° 12’ At what stations do you suspect local attraction ?Find the corrected bearing of the lines.
b. Explain clearly the two point problem and how it is solved.
c. Describe how you will overcome the obstacles in chain surveying when chaining is obstructed but vision is free.
d. The bearing of one side of a plot in the shape of a regular pentagon is 80°. Find the bearing of the remaining sides taken in a clockwise order in the same way round.
e. How will you convert the quadrant system bearing to whole circle system bearing? Also show the errors caused in this survey.

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

(a) What is orientation? What are the different methods of Orientation of a Plane Table?
(b) How will you find the height of a hill with the help of Theodolite? Also discuss the temporary adjustments.

4. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain the working of Abney Level.

(b) What are the errors in compass survey is caused? Give remedial measures.

5. Attempt any *one* part of the following: 10 x 1 = 10

(a) The plan of an old survey plotted to a representative fraction of 1/5000 was found to have shrunk so that a line originally 20 cm long was 19.6 cm. There was also a note on the plan that the 20 m chain used was 0.1 m too long. If the area of the plan measured now by a Planimeter is 150.28 cm2. Find the true area of the survey.

(b) What do you mean by chaining? Enlist the cumulative and compensating errors in chaining?

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) The bearing of one side of a plot in the shape of a regular pentagon is 80°. Find the bearing of the remaining sides taken in a clockwise order in the same way round.

(b) Explain the following terms : (i) Deflection angle (ii) Dip of the needle (iii) Magnetic meridian (iv) Fore bearing

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) Describe how you will overcome the obstacles in chain surveying when chaining is obstructed but vision is free.

(b) The following consecutive readings were taken with a dumpy level :
0.894 1.643 2.896 3.016 0.954 0.692
0.582 0.251 1.532 0.996 2.135
The instrument was shifted after the forth and the eighth readings. The first reading was taken on the staff held on the bench mark of R.L. 820.765. Calculate the reduced levels of the points by the rise and fall method, and the difference of level between the first and the last point.