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B.TECH.
(SEM III) THEORY EXAMINATION 2022-23
SURVEYING AND GEOMETICS

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

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

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

(a) Give the classification of surveys according to the place of work.
(b) The observed reading on a staff held at A was 2.525 m. The staff was found to be 15 cm off the vertical through its bottom. Find the correct staff reading.
(c) Define Serpentine Curve with neat sketch.
(d) Write the methods of curve ranging.
(e) What do you understand by NAVSTAR GPS?
(f) Write the application of Total Station.
(g) Define oblique photographs.
(h) Which two categories involved in photogrammetry?
(i) Write the application and scope of remote sensing.
(j) Define electromagnetic energy.

SECTION B

2. Attempt any *three* of the following: **10x3=30**

(a) Give the Comparison of the collimation and Rise and Fall methods of reduction of levels.
(b) Calculate the ordinate at 10 m intervals for a circular curve, given that the length of the long cord =80 m and the radius =200 m. by the approximate equation.
(c) The slope distance between two stations A and B elevations 1572.25 m and 4260.46 m, respectively, corrected for metrological conditions is 33449.2150 m . Determine the sea-level distance. Take R= 6370 km.
(d) With neat sketch explain the various terms used in aerial photography.
(e) Explain interaction of electromagnetic energy with matter. Also draw the figure.

SECTION C

3. Attempt any *one* part of the following: **10x1=10**

(a) The following bearings were recorded for a closed compass traverse. Which stations are affected by local attraction and determine the correct bearings. Also find the true bearings if the declination was 2^0-15'

Line	F.B.	B.B.
AB	74^0-15'	256^0-00'
BC	107^0-15'	286^0-15'
CD	224^0-45'	44^0-45'
DA	307^0-45'	127^0-00'

(b) Explain with neat sketch for following (i) Traversing by the method of included angles (ii) Traversing by the method of direct angles.

4. Attempt any *one* part of the following: 10x1=10

(a) Write the procedure of setting out the Simple Circular Curve by the ordinates from the long chord method.
(b) With neat sketch explain the names of various parts of a curve.

5. Attempt any *one* part of the following: 10x1=10

(a) Two stations A and B , 80 km apart, have elevations 15 m and 270 m above mean sea-level, respectively. Calculate the minimum height of the signal at B.
(b) With neat sketch explain the principle of positioning with GPS.

6. Attempt any *one* part of the following: 10x1=10

(a) To determine the average scale of an aerial photograph, three points A, B, and C were selected. Their elevations were determined from a contoured map as 1400 m , 900 m and 1100 m. If the flying height of the aircraft above mean sea-level is 3500 m and the focal length of the camera lens is 160 mm, calculate the average scale of the aerial photograph.
(b) Find the expression for difference in elevation by stereoscopic parallaxes with usual notations.

7. Attempt any *one* part of the following: 10x1=10

(a) Discuss the application of remote sensing in :
  (i) Terrain analysis
  (ii) Construction material inventories
  (iii) Site investigation
(b) Explain image interpretation procedure and image characteristics.