

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

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 $2^{\circ}-15'$

Line	F.B.	B.B.
AB	$74^{\circ}-15'$	$256^{\circ}-00'$
BC	$107^{\circ}-15'$	$286^{\circ}-15'$
CD	$224^{\circ}-45'$	$44^{\circ}-45'$
DA	$307^{\circ}-45'$	$127^{\circ}-00'$

- (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.