

CBCS SCHEME

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18CV45

**Fourth Semester B.E. Degree Examination, Jan./Feb. 2021
Advanced Surveying**

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Explain Repetition method of measuring horizontal angles with transit theodolite with tabular column. List the errors that can be eliminated. **(10 Marks)**
- b. Explain the following terms : i) Transiting ii) Vertical axis
iii) Face left observation iv) Line of collimation v) Swinging. **(10 Marks)**

OR

- 2 a. Define Trigonometrical leveling. **(02 Marks)**
- b. Derive the expression for the Horizontal distance, Vertical height and the Elevation of an inaccessible object by Single Plane method. **(08 Marks)**
- c. The following observations were made on a hill top to ascertain its elevation. The height of the target F was 5m.

Inst. Station	Staff reading on B.M	Vertical angle	Remarks
01	2.550	18° 6'	R.L. of BM
02	1.670	28° 42'	= 345.580 m

The Inst. Station were 100m apart and were in line with F. **(10 Marks)**

Module-2

- 3 a. What is Tachometry? What are the different system of tachometric measurements. **(04 Marks)**
- b. Describe the field procedure to determine tachometric constants. **(06 Marks)**
- c. Determine the gradient from a point A to point B from the following observation made with the tachometer fitted with analectic lens. The constant of the instrument was 100 and the staff was held vertically. **(10 Marks)**

Inst. Station	Staff point	Bearing	Vertical angle	Staff reading
P	A	134°	+10° 32'	1.360, 1.915, 2.470
P	B	224°	+5° 6'	1.065, 1.885, 2.705

OR

- 4 a. What is Triangulation? What are the classification of triangulation system? Explain briefly. **(10 Marks)**
- b. Define Satellite station and Reduction to centre. **(04 Marks)**
- c. What are the points considered in selection of triangulation station and base line? **(06 Marks)**

Module-3

- 5 a. Explain Rankine's method of deflection angle for setting out a simple curve with neat sketch. **(10 Marks)**
- b. Two tangent intersect at chainage 59 + 60, the deflection angle being 50° 30'. It is required to connect the two tangents by a curve of radius 15 chains. Taking peg interval as 100 links. Calculate the necessary data for setting out the curve by the method of offset from chord produced. Length of chain is 20m (with 100 links). **(10 Marks)**

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

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OR

- 6 a. Draw a neat labeled sketch of compound curve and giving the elements of compound curve. Explain the method of setting out compound curve. (10 Marks)
- b. Two parallel railway lines are to be connected by a reverse curve, each section having same radius. If the lines are 12m apart and the maximum distance between tangent points measured parallel to the straight is 48m. Find the maximum allowable radius. If however, both radii are to be different, calculate the radius of the second branch if that of the first branch is 60m. Also calculate the lengths of both the branches. (10 Marks)

Module-4

- 7 a. Define the following terminologies : i) Exposure station ii) Picture plane
iii) Perspective centre iv) Flying height. (08 Marks)
- b. Mention the general features of photographic image. (06 Marks)
- c. A line AB 2000m long lying at an elevation of 500m measures 8.65cm on a vertical photograph for which focal length is 20cm. Determine the scale of a photograph in an area the average elevation of which is about 800m. (06 Marks)

OR

- 8 a. Express the procedure for aerial survey. (06 Marks)
- b. Derive the expression for relief displacement on a vertical photograph. (08 Marks)
- c. A vertical photograph was taken at an altitude of 1200m above mean sea level. Determine the scale of photograph for a terrain lying at elevation of 80m and 300m. If the focal length of camera is 15cm. (06 Marks)

Module-5

- 9 a. What is Total station? What are the advantages and uses of total station? (08 Marks)
- b. What is Remote sensing? Differentiate between active and passive remote sensing. (06 Marks)
- c. What is Electro magnetic spectrum? How it is useful in remote sensing? (06 Marks)

OR

- 10 a. What is GIS? With neat sketch, explain the components of GIS. (08 Marks)
- b. Explain the working principle of GPS and distinguish between hand held GPS and differential GPS. (06 Marks)
- c. What are the application of GIS in Civil Engineering? (06 Marks)
