CBCS SCHEME

USN | | | | | | | | | | |

18CV45

Fourth Semester B.E. Degree Examination, Jan./Feb. 2023
Advanced Surveying

Time: 3 hrs. Max. Marks: 100

Note: 1. ***Answer any FIVE full questions, choosing ONE full question from each module.***
2. Assume any missing data suitably as applicable.

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.

Module-1

1 a. Explain the temporary adjustment of a transit Theodalite **(06 Marks)**

b. List the fundamental axes of Theodalite? State the relationship between them. **(06 Marks)**

c. With the help of tabular column, explain the procedure of measuring horizontal angle by repetition method. **(08 Marks)**

OR

2 a. Define the following ;
i) Changing of face ii) Swinging the telescope iii) Line of sight iv) Telescope normal. **(04 Marks)**

b. Derive the expression for the horizontal distance vertical distance and elevation of an object by double plane method, when the base is in accessible. **(08 Marks)**

c. In order to determine the elevation of top 'Q' of the signal on a hill, observation were mode from stations 'P' and 'R' the stations P, R and Q were on the same plane. If angles of elevation of the top 'Q' of signal measured at 'P' and R were 25°35′ and 15°05′ respectively. Determine the elevation of the foot of the signal if height of signal above its base was 4m, the start readings upon the BM (RL.105.420m) were respectively. 2.755 and 3.855m. when the instrument was @ 'P' and at 'R' the distance between 'P' and 'R' was 120m. **(08 Marks)**

Module-2

3 a. Derive the tachometric equation for horizontal time of slight. **(06 Marks)**

b. Explain fixed hair method and moveable hair method of tacheometry. **(06 Marks)**

A tachometers was setup @ station 'C' and following reading were taken. Calculate the distance 'CD' and RL of 'D' when the constant of the instrument are 100 and 0.15.

inst@	Staff station	Staff Readings	Vertical angle	Remarks
C	BM	1.5, 1.8, 2.45	-5°20′	RL of BM = 750.15m
C	D	0.75, 1.5, 2.25	8°12′	

(08 Marks)

OR

4 a. List the various factors that are to be considered in the selection of site for baseline and station in triangulation survey. **(06 Marks)**

b. Write a note on classification of triangulation system. **(06 Marks)**

c. From a satellite station 'S' which is 14m from 'A' angles measured to 3 triangulation station are as follows $\angle CSA = 32° 45'48''$, $\angle BSC = 68°26'30''$ the length of sides AC and AB are 5678m and 1414m respectively, Find the angle of BAC. **(08 Marks)**

Module-3

5 a. With the help of a neat sketch of a simple circular curve. Define i) Tangent length ii) length of long Chord iii) Inter section angle iv) point of curve v) Deflection angle vi) Point of Tangency. **(06 Marks)**

b. Explain the linear method of setting out simple curve the method of offset from long chord. **(06 Marks)**

c. Two tangents intersect @ a Chainage (59 + 60) the deflection angle being 50°30′. Calculate the necessary data for setting out a curve of 15chaines radius to connect the two tangents, if it is intended to setout the curve by Rankine's method of deflection angles take the peg interval equal to 100 links. The length of chain being 20m (100 links). Draw the curve table. **(08 Marks)**

OR

6 a. What is transition curve? List the essential requirements of an ideal transition curve. **(04 Marks)**

b. Two parallel railway lines are to be connected by a reverse curve. Each station having the same radius. It the lines are 12m apart and the maximum distance between tangents points measured parallel to the straight is 48m. Find the maximum allowable radius. If however, both the radii are to be different. Calculate the radius of the second branch, if that of the first branch is 60m. Also calculate the length of both branches. **(10 Marks)**

c. Two straight BA and AC are intersected by a line EF. The angle BEF and EFC are 130° and 140° respectively the radius of the first arc is 500m and that second arc 300m. Find the changes of the tangent points and the points of compound curvature given that the chainage of the intersection point 'A' is 3200m. **(06 Marks)**

Module-4

7 a. Explain the procedure for aerial survey **(06 Marks)**

b. Define the terms : i) Drift ii) Crab iii) Mosaics. **(06 Marks)**

c. A vertical photograph was taken @ an altitude of 1200m above MSL. Determine the scale of the photograph for the terrain lying @ elevation of 80m and 300m. It the Focal length of the camera is 15cm. **(08 Marks)**

OR

8 a. With a neat sketch, derive the expression for the scale of a vertical photograh. **(06 Marks)**

b. Define the terms :
i) Picture plane ii) Camera axis iii) Focal length iv) Principle plane iv) Perspective projection vi) Film base. **(06 Marks)**

c. The scale of an aerial photography is 1cm = 100m, the photograph size is 20cm × 20cm. Determine the number of photography required to cover an area 10km × 10km, if the longitudinal lap is 60% and side lap is 30%. **(08 Marks)**

Module-5

9 a. What is total station? What re the advantages of disadvantages of total station? **(08 Marks)**

b. With neat sketch, explain the electromagnetic spectrum. **(06 Marks)**

c. Define Remote sensing? Explain the application in civil engineering. **(06 Marks)**

OR

10 a. What is GIS? With a neat sketch, explain the components of GIS? **(08 Marks)**

b. What are the advantages of LIDAR technology? **(04 Marks)**

c. What is GPS? Explain the basic principle of GPS and state its application in surveying. **(08 Marks)**

* * * * *