USN | | | | | | | | | |

**17CV46**

# Fourth Semester B.E. Degree Examination, Aug./Sept.2020
## 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. List the different methods of setting out simple circular curve. Explain the Rankine's method of setting out simple circular curve. **(08 Marks)**
   b. Two tangents intersect at chainage of 1190 mt, the deflection angle being 36°. Compute all the data necessary to set out a simple circular curve of radius 300 mt by deflection angle method. Take peg interval as 30 mt. Tabulate the results. **(12 Marks)**

**OR**

2  a. What is a Transition curve? List the function and essential requirements of an ideal transition curve. **(06 Marks)**
   b. Two straight with a total deflection angle of 72° are to be connected by a compound curve of two branches of equal length. The Radius of the first branch is 300 mt and that of the second is 400 mt. Chainage of intersection point is 1500 mt. Calculate the chainages of tangent points and that of point of compound curvature. **(07 Marks)**
   c. Two parallel railway lines are to be connected by a reverse curve of different radii. If the lines are 10 mt apart and the maximum distance between the tangent points measured parallel to the straight is 45 mt. Calculate the radius of the second branch, if that of first branch is 65 mt. Also calculate the length of both the branches. **(07 Marks)**

### Module-2

3  a. Mention the points to be considered in the selection of triangulation stations. **(08 Marks)**
   b. From an eccentric station, S, 12.25 mt to the west of the main station B, the following angles were measured.

   $\angle BSC$ = 76° 25′ 32″     ;     $\angle CSA$ = 54° 32′ 20″

   The station S and C are to the opposite sides at the line AB, calculate the correct angle ABC, if the lengths of AB and BC are 5276.5 and 4932.2 m respectively. **(12 Marks)**

**OR**

4  a. State and explain Laws of weights. **(08 Marks)**
   b. Find the most probable values of the angles, from the following given equations.

   A = 42° 36′ 28″   Weight 2
   B = 28° 12′ 42″   Weight 1
   C = 65° 25′ 16″   Weight 1
   A + B = 70° 49′ 14″   Weight 2
   B + C = 93° 37′ 55″   Weight 1 **(12 Marks)**

### Module-3

5  a. Define the following terms:
   (i) Celestial sphere   (ii) Vertical circle   (iii) The sensible horizon   (iv) Zenith and Nadir **(08 Marks)**

**17CV46**

b. Find the GMT corresponding to following LMT:
   (i) 9 h 40 m 12s A.M at a place in Longitude 42° 36′ W
   (ii) 4 h 32 m 10s A.M at a place in Longitude 56° 32′ E **(12 Marks)**

**OR**

6  a. Define the following terms:
   (i) Celestial horizon          (ii) The Altitude
   (iii) The hour angle           (iv) The prime vertical. **(08 Marks)**

   b. The standard time meredian in India is 82° 30′ E. If the standard time at any instant is 20 hours, 24 minutes, 6 seconds, find LMT for two places having longitudes.
   (i) 20° E          (ii) 20° W **(12 Marks)**

## Module-4

7  a. Define the following terms:
   (i) Vertical photograph
   (ii) Flying height
   (iii) Expose station
   (iv) Oblique photograph **(08 Marks)**

   b. A vertical photograph was taken at an altitude of 1200 mt above MSL. Determine the scale of the photograph for terrain lying at elevations of 80 meters and 300 meters, if the focal length of the camera is 15 cm **(12 Marks)**

**OR**

8  a. List the reasons for keeping overlap in photographs. **(06 Marks)**
   b. Describe how mosaic differ from a map. **(04 Marks)**
   c. A section line AB appears to be 10.16 cm on a photograph for which the focal length is 16 cm. The corresponding line measures 2.54 cm on a map which is to a scale of $\frac{1}{50,000}$. The terrain has an average elevation of 200 m above MSL. Calculate the flying altitude at the aircraft, above MSL, when the photograph was taken. **(10 Marks)**

## Module-5

9  a. What is GIS? List the applications of GIS in Civil Engineering. **(10 Marks)**
   b. Explain the basic principle of GPS and its applications in civil engineering. **(10 Marks)**

**OR**

10 a. What is GPS? Explain the working principles of GPS and its uses in surveying. **(10 Marks)**
   b. Define Remote Sensing. Explain the stages of idealized Remote Sensing. **(10 Marks)**

* * * * *