Code: 20CE3302

## II B.Tech - I Semester –Regular / Supplementary Examinations DECEMBER 2022

## SURVEYING
### (CIVIL ENGINEERING)

Duration: 3 hours                    Max. Marks: 70

Note:  1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

BL – Blooms Level                    CO – Course Outcome

|   |    |   | BL | CO | Max. Marks |
|---|----|---|----|----|------------|
| **UNIT-I** | | | | | |
| 1 | a) | Explain how to range a line with a neat sketch, if the end stations are not intervisible. | L2 | CO1 | 7 M |
|   | b) | In chaining an area containing a pond, two points C and D were selected on either sides of chain station A such that A, C and D points lie on a line. The points B which is on the other side of pond is on the chain line AB. If distances AC, AD, BC and BD are 35 m, 45 m, 100 m, and 95 m respectively, determine the length of the chain line AB and the angles which the inclined line CD makes with the chain line AB. | L3 | CO1 | 7 M |
| **OR** | | | | | |
| 2 | a) | Distinguish between dip and declination, Prismatic Compass and Surveyor's compass. | L2 | CO1 | 6 M |
|   | b) | The following bearings were taken in running a compass survey. | L3 | CO1 | 8 M |

|  |  | Line Fore Bearing Back bearing<br>AB 124°30' 304°30'<br>BC 68°15' 246°0'<br>CD 310°30' 135°15'<br>DA 200°15' 174°45'<br>At what stations do you suspect local attraction? Find the correct bearings of the lines and also compute the included angle. |  |  |  |

### UNIT-II

| 3 | a) | Explain in detail about the method of intersection with a neat sketch. | L2 | CO1 | 7 M |
|---|----|----|----|----|----|
|  | b) | What is the principle of plane table surveying and explain about the instruments used in plane table surveying. | L2 | CO1 | 7 M |

### OR

| 4 | a) | Define contour. What are the different methods of locating contour? Explain any one method in detail. | L2 | CO2 | 6 M |
|---|----|----|----|----|----|
|  | b) | The following consecutive readings were taken with a level and 5m levelling staff on a continuously slopping ground at a common interval of 20 m, : 0.385, 0.030, 1.925, 2.825, 3.730, 4.685, 0.625, 2.005, 3.110, 4.485. Prepare a page of field book and calculate the reduced level of points by rise and fall method, first reading was taken on a bench mark of RL 208.125 m. Also find slope of the ground. | L3 | CO2 | 8 M |

### UNIT-III

| 5 | a) | What is transit theodolite and what are the temporary adjustments in Theodolite? | L2 | CO3 | 7 M |
|---|----|----|----|----|----|
|  | b) | How will you measure horizontal angle using theodolite by repetition method and reiteration method? | L2 | CO3 | 7 M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 6 | a) | Two distances of 20 m and 100 m were accurately measured out and the intercepts on the staff between the outer stadia webs were 0.196 m at the former distance and 0.996m at the latter. Calculate the tacheometric constants. | L3 | CO3 | 6 M |
| | b) | A tacheometer was setup at a station A and the readings on a vertically held staff at B were 2.255, 2.605 and 2.955. The line of sight being at a inclination of $+80^0$ 24'. Another observations on the vertically held staff at B.M gave the readings 1.640, 1.920, and 2.200, the inclination of the line of sight being $+10^0$ 6'. Calculate the horizontal distance between A and B, and the elevation of B if the RL of BM is 418.685 m. The constants of the instruments were 100 and 0.3. | L4 | CO3 | 8 M |

**UNIT-IV**

| | | | | | |
|---|---|---|---|---|---|
| 7 | a) | Explain the procedure of setting of a simple curve by method of chords. | L2 | CO4 | 6 M |
| | b) | Two straights intersect at chainage 2056.44 m and the angle of intersection is $130^0$. If the radius of the simple curve to be introduced is 50 m, set out the curve by offsets from long chord for 5m interval. Find the following: <br> (i) Chainage of the point of commencement <br> (ii) Chainage at point of tangency <br> (iii) Length of the long chord. | L3 | CO4 | 8 M |

**OR**

| 8 | a) | Two straights of a National Highway intersect at a chainage of 1534.5m and at a deflection angle of $36^0$. They are to smoothly joined by a $8^0$ curve. Taking the peg interval at 20m, work out the data required to set out the curve by the deflection angle method. | L4 | CO4 | 8 M |
|---|---|---|---|---|---|
|   | b) | A series of offsets were taken at 3m intervals in the following order from a chain line to a curved boundary 2.16, 1.53, 1.80, 1.98, 1.80, 1.59, 1.80, 2.52, 2.43, 2.40, 2.58, 2.70, 2.91, and 3.06 meters. Find the area between the chain line, curved boundary and the end offsets by Simpson's rule. | L4 | CO4 | 6 M |

### UNIT-V

| 9 | a) | What is triangulation? What is the classification of triangulation system? Briefly explain. | L2 | CO5 | 6 M |
|---|---|---|---|---|---|
|   | b) | Find the R.L of top of a ten storeyed building from the following observations. | L3 | CO5 | 8 M |

| Instrument Station | Reading of B.M | Vertical angle | R.L of station B.M |
|---|---|---|---|
| A | 2.625 m | $19^0$ 48' | 500 m |
| B | 1.510 m | $14^0$ 25' | 500 m |

distance between A and B is 50 m. A, B, B.M and the building are in same vertical plane.

### OR

| 10 | a) | Explain different types of EDM instruments. Which are the different types of modulation of electromagnetic waves? | L2 | CO5 | 7 M |
|---|---|---|---|---|---|
|   | b) | Explain the use of GIS and GPS in civil engineering. | L2 | CO5 | 7 M |