KUMARAGURU
college of technology
character is life

B.E DEGREE EXAMINATIONS: NOV/DEC 2023

(Regulation 2018)

Third Semester

CIVIL ENGINEERING

U18CEI3202: Engineering Survey

COURSE OUTCOMES

CO1: Carry out area and volume measurements for the given land.

CO2: perform angular measurement, elevation, and distance of an object.

CO3: Set out the curves.

CO4: Conduct survey works using total station.

CO5: Apply the concepts of satellite and characteristics of different platforms of GPS surveying.

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions: -
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1. List down the types of chains used in the Survey field.	CO1	[K2]
2. Distinguish between plane and geodetic surveying	CO1	[K2]
3. Write down the purpose of stadia hairs in tacheometric surveying.	CO2	[K2]
4. You are conducting a trigonometrical leveling survey to determine the Height of the pole at point B using only the vertical angle. The distance between the instrument setup at point A and point B is 50 meters. The vertical angle measured at point A to the line of sight to point B is 20 degrees. The instrument's height (HI) is 1.5 meters and assumed the BM is 100. Calculate the Height of the pole.	CO2	[K3]
5. How do tides impact hydrographic surveying, and why is it essential for surveyors to consider tidal variations?	CO3	[K2]
6. Sketch simple, compound, and reverse curves.	CO3	[K2]
7. Illustrate the principle of Electronic Distance Measurement.	CO4	[K2]
8. How to achieve accuracy in Total Station?	CO4	[K2]
9. Distinguish between triangulation and Trilateration	CO5	[K2]
10. Illustrate the application of Remote Sensing in civil engineering.	CO5	[K3]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11. a) The following bearings were observed in a running closed compass traverse. Compute the interior angles and correct them for observational errors. Assuming the observed bearing of the line CD to be correct adjust the bearing of the remaining sides. 8 CO1 [K2]

Line	Fore bearing	Back bearing
AB	80°10'	259°0'
BC	120°20'	301°50'
CD	170°50'	350°50'
DE	230°10'	49°30'
EA	310°20'	130°15'

   b) The following staff readings were observed successively with a level the instrument having been moved after third, seventh and eighth readings: 2.228, 1.606, 0.988, 2.090, 2.864, 1.262, 0.602, 1.982, 1.044, 2.684 meters Enter the above readings in a page of a level book and calculate the R.L of points if the first reading was taken with a staff held on a benchmark of 432.384 m. 8 CO1 [K2]

12. a) Derive the equation for the Vertical and Horizontal distance between the object and the station by stadia tacheometric method for the following cases:
   a) Staff vertical: Line of sight at angle of elevation and line of site at angle of depression
   b) Staff Normal: Line of sight at angle of elevation and line of site at angle of depression 8 CO2 [K2]

   b) The top (Q) of a chimney was sighted from two stations P and R at very different levels, the stations P and R being in line with the top of the chimney. The angle of elevation from P to the top of the chimney was 38°21' and that from R to the top of the chimney was 21°18'. The angle of elevation from R to a vane 2m above the foot of the staff held at P was 15°11'. The heights of instruments at P and R were 1.87m and 1.64m respectively. The horizontal distance between P and R was 127m and the RL of R was 112.78m. Find the RL of the top of the chimney and the horizontal distance from P to the chimney. 8 CO2 [K3]

13. a) Illustrate the methods of setting out simple curve 8 CO3 [K2]

   b) Explain different methods of locating soundings 8 CO3 [K2]

14. a) Illustrate the parts of total station with neat a sketch 8 CO4 [K2]

   b) Explain basic principle and classification of Total Station with advantages 8 CO4 [K2]

15. a) Write short notes on (a) Photogrammetry (b) Remote Sensing 8 CO5 [K2]

   b) Explain the various segments comprising the functioning of GPS with neat sketches. 8 CO5 [K2]

16. a) A railway embankment 400m long is 12 m wide at the formation level and has a side slope 2 to 1. The ground levels at every 100m along the center line are as under: 8 CO1 [K3]

Distance	0	100	200	300	400
R.L.	204.8	206.2	207.5	207.2	208.3

   The formation level at zero chainage is 207.00 and the embankment has a rising gradient of 1 in 100. The ground is level across the center line. Calculate the volume of earthwork.

   b) Discuss about the different parts of transit theodolite with neat sketch 8 CO2 [K2]

****