Register No.:   ....   Name: ....

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

THIRD SEMESTER B.TECH DEGREE EXAMINATION (R,S), DECEMBER 2023
CIVIL ENGINEERING
(2020 SCHEME)

Course Code :   **20CET205**

Course Name: **Surveying and Geomatics**

Max. Marks :   **100**   **Duration: 3 Hours**

PART A
(Answer all questions. Each question carries 3 marks)

1. Differentiate plan and map.
2. Due to the presence of the pond as in figure, the chain line AB cannot be laid across. How will you proceed to continue the line?
3. Enumerate the conditions in which Simpson's rule is applied for area computation.
4. Describe satellite station.
5. Explain most probable error and residual error.
6. Explain law of accidental errors with a graph.
7. Describe the need for providing curves.
8. Explain the principle of EDM.
9. Describe vector and raster data models.
10. Enumerate any three GIS operations.

PART B
(Answer one full question from each module, each question carries 14 marks)

MODULE I

11. a) Explain the method of direct ranging with rod. (5)
    b) The results of reciprocal levelling between stations A and B 250 m apart, on opposite sides of a wide river were as follows:
       Level at A: Reading on A -1.399 m   Reading on B - 2.518 m   (9)
       Level at B: Reading on B -1.332 m   Reading on A - 0.524 m
       Find the true difference of level between the stations.

OR

12. a) Explain the method of orientation of plane table by back sighting with a neat sketch. (7)
    b) Enumerate any five characteristics of contours. (7)

MODULE II

13 The altitudes of two proposed stations A and B, 100 km apart are 420 m and 700 m respectively. The intervening obstruction situated at C, 70 km apart from A has an elevation of 478 m. Ascertain if A and B are inter visible and if necessary find by how much B should be raised so that the line of sight must nowhere be less than 3 m above the surface of the ground. (14)

OR

14. a) A railway embankment 12 m wide with side slope 1.5 : 1 is to be calculated for its volume earth work. Assuming the ground to be level in a direction transverse to the centre line, calculate the volume contained in a 180 m length, with the centre heights at 30 m intervals being 0.6, 1.2, 1.8, 1.5, 1.2, 0.9 and 0.6 m using Prismoidal rule and Trapezoidal rule (8)

b) Enumerate the characteristics of Mass diagram. (6)

MODULE III

15. Explain the different methods of balancing the traverse. (14)

OR

16. a) The following lengths, latitudes and departures are obtained for a closed traverse ABCDEFA. Adjust the traverse by Bowditch's method.

	Length	Latitudes	Departures
AB	183.79	0	+183.79
BC	160.02	+128.72	+98.05
CD	226.77	+177.76	-10.85
DE	172.52	-76.66	-154.44
EF	177.09	-177.09	0.00
FA	53.95	-52.43	+13.08

(9)

b) Enumerate the different laws of weights. (5)

MODULE IV

17. a) Two straights meeting at a chainage of 976.90 m at an intersection angle of 22.9566^0 and are to be connected by a simple curve of radius 202.22 m. Set out the curve using Rankine's method. (10)

b) Enumerate the fundamental features of a Total station. (4)

OR

18. a) Describe the advantages and uses of Total station. (8)

b) Explain reverse curve with the help of a figure. (6)

MODULE V

19. a) Describe the spectral reflectance of soil, vegetation and water. (6)
    b) Explain any one method of GPS kinematic survey. (8)

OR

20. a) Explain the various map projection methods. (10)
    b) Describe active and passive remote sensing. (4)

****