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Roll No. :

B020314(020)

**B. Tech. (Third Semester) Examination,
Nov.-Dec. 2021**

AICTE (New Scheme)

(Civil Engg. Branch)

PLANE SURVEYING

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt all questions. Part (a) is compulsory and carries 4 marks. Attempt any two parts from (b), (c) and (d) of each question which carry 8 marks each.

Unit-I

1. (a) An observer standing on the deck of a ship just sees a lighthouse. The top of the lighthouse is 45 meters above the sea level and the lights of

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- observer's eye is 8 metres above the sea level. Find the distance of the observer from the lighthouse. 4
- (b) Discuss the effect of curvature and refraction and deduce the expression for each one of them along with the combined correction. 8
- (c) A dumpy level was setup midway between A and B , 80 m apart, the reading on A and B being 1.865 and 1.780 m each. The Dumpy level was then set up at C on BA produced 16 m from A . The staff readings at A and B was 1.620 m and 1.550 m. Calculate the staff readings on A and B to give a horizontal line of sight. 8
- (d) Write short notes on : (any two) 8
- (i) Sensitivity of bubble tube
 - (ii) Reciprocal leveling
 - (iii) Barometric leveling

Unit-II

2. (a) Define the term "Contour Interval" and "Horizontal Equivalent". 4

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- (b) What are different methods of contouring? Describe any methods with sketch. 8
- (c) What are the methods of Contour Interpolation? 8
- (d) Explain with neat sketches : (any two) 8
- (i) Box sextant
 - (ii) Pantograph
 - (iii) Clinometer

Unit-III

3. (a) (i) Define "latitudes" and "departures" in theodolite traversing with respect to co-ordinate systems. 4
- (ii) Explain about the Trunnion axis in Theodolite Surveying. 4
- (b) Write a detail note on permanent adjustments of Theodolite. 8
- (c) Explain how you would measure horizontal angle by repetition method with theodolite. 8
- (d) Give in short notes on : 8
- (i) Face right and face left observation

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(ii) Swinging the telescope

(iii) Transmitting the telescope

Unit-IV

4. (a) (i) How is the plane table survey method different from other methods survey?

(ii) Mention the different methods of orientation. 4

(b) Explain with neat figure, the Bassel's Graphical method, in plane table surveying. 8

(c) Adjust the following traverse table. 8

Line	Included Angles	Length (m)	W.C.B.
AB	73° 31'	66.6	30° 30'
BC	107° 42'	135.7	102° 47' 35"
CD	187° 8'	66.3	95° 39' 12"
DE	77° 30'	76.6	198° 8' 48"
EA	94° 7'	214.3	284° 1' 24"

(d) Explain with neat sketches the methods of radiation & intersection in plane Tabling. 8

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Unit-V

5. (a) What are the uses/applications of a curve? 4

(b) Write the characteristics of a transition curve. 8

(c) What are the elements of a simple curve? Brief them with neat sketch. 8

(d) Two tangents AB and BC intersect at B . Another line DE interest AB and BC at D and E such that $\angle ADE = 150^\circ$ and $\angle DEC = 140^\circ$. The radius of the first curve is 200 m and that of the second is 300 m. The chainage of B is 950 m; calculate all data necessary for setting out the compound curve. 8