

Please check that this question paper contains 9 questions and 2 printed pages within first ten minutes.

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Uni. Roll No. ....

Program: B.Tech. (Batch 2018 onward)

MORNING

Semester: 3rd

Name of Subject: Surveying & Geomatics

13 JUN 2023

Subject Code: PCCE-101

Paper ID: 16020

Scientific calculator is Allowed

Detail of allowed codes/charts/tables etc. : Not Applicable

Time Allowed: **03 Hours**

Max. Marks: **60**

NOTE:

- 1) Parts A and B are compulsory
- 2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
- 3) Any missing data may be assumed appropriately

**Part – A**

**[Marks: 02 each]**

Q1.

- a) Write a note on Stereoscopic vision.
- b) Define Ranging; Minimum how many ranging rods are required to range a line?
- c) Define one cycle in case of electromagnetic waves.
- d) What is transition curve? Where is such a curve provided?
- e) Mention various corrections applied to a measured base line alongwith their nature and magnitude.
- f) What are the various types of Bench Mark? Explain.

**Part – B**

**[Marks: 04 each]**

Q2. The following bearings were observed at a place where local attraction was suspected. Find the corrected bearing of the lines.

Line	Fore Bearing	Back Bearing
AB	S45°30'E	N45°30'W
BC	S60°0'E	N60°40'W
CD	S5°30'E	N3°20'W
DA	N83°30'W	S85°0'E

Q3. Explain the working of DGPS system.

Q4. Explain the interaction mechanism of EM radiation with earth's surface, stating the basic interaction equation.

- Q5. The following consecutive readings were taken with a level and the instrument have been moved after third, sixth and eighth reading: 2.228, 1.606, 0.988, 2.090, 2.864, 1.262, 0.602, 1.982, 1.044, 2.684 m. Enter the above readings in a page of level book and calculate R.L. of points if first reading was taken on a bench mark of 432.384 m.
- Q6. What are the different methods of contouring? Describe any method along with sketch.
- Q7. What is orientation? What are the methods of orientation? Describe the methods with a sketch.

**Part – C****[Marks: 12 each]**

- Q8. The following records are obtained in a traverse survey, where the length and bearing of the last line were not recorded: Compute the length and bearing of line DA.

Line	Length (m)	Bearing
AB	75.50	30°24'
BC	180.50	110°36'
CD	60.25	210°30'
DA	?	?

OR

The following observations were made with a tacheometer fitted with an anallatic lens, the staff held vertically. Constant of the tacheometer is 100, RI of BM = 255.750 m. Calculate the R.L. of B and distance between A & B.

Inst. Stn.	H.I. (m)	Staff held at	Vertical angle	Staff reading (m)		
				Bottom	Center	Top
P	1.255	B.M.	-4°20'	1.325	1.825	2.325
P	1.255	A	+6°30'	0.850	1.600	2.350
B	1.450	A	-7°24'	1.715	2.315	2.915

- Q9. Explain the working procedure of Total Station and drone based LADAR equipment along with their features, detailed application and errors in working.

OR

- a) A line AB on a terrain having an average elevation of 400m above m.s.l. It appears to be 8.72 cm on a photograph for which focal length is 24cm. The same line measures 2.18cm on a map having scale of 1:40,000. Calculate the flying altitude of the aircraft, above m.s.l.
- b) The scale of an aerial photo is 1 cm = 160 m, the size of photograph is 20cm X 20cm. If the longitudinal and side lap are 65% & 35% respectively, determine the number of photographs required to cover an area of 232 sq.km.

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