Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
B.Tech Degree S5 (S, FE) / S5 (PT) (S, FE) Examination December 2023 (2015 Scheme)

Course Code: CE307

Course Name: GEOMATICS

Max. Marks: 100   Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks.   Marks

1	a)	Differentiate an open traverse and a closed traverse.	(3)
	b)	Explain axis method for balancing a traverse with a neat sketch	(6)
	c)	The following are the lengths and magnetic bearings of the sides of a traverse ABCDEA. Determine the closing error and its direction.	(6)

Line	Length (m)	Bearing
AB	130	S 88° E
BC	158	S 6° E
CD	145	S 40° W
DE	308	N 81° W
EA	337	N 48° E

2	a)	Enumerate the functions of Transition Curves.	(3)
	b)	Mark the elements of a compound curve on a neat sketch and write down the relationship between the different elements.	(5)
	c)	The following data was obtained for a compound curve.	(7)

$\Delta 1 = 60° 30'$

$\Delta 2 = 40° 24'$

$R1 = 500$ m

$R2 = 700$ m

Chainage at PI = 2406 m

Find the chainage of tangent points and the point of compound curvature.

3	a)	Compare fast needle method and loose needle method of traverse surveying.	(4)
	b)	Explain the method of balancing of closed traverse by Transit Rule.	(3)

c) The chainage of point of intersection of two straights is 1200 m. The deflection (8) angle is 40°. Compute the data required to set out a 400m radius curve by the method of offsets from chord produced. Take the length of chain to be 30 m.

PART B
Answer any two full questions, each carries 15 marks.

4 a) Describe GNSS and briefly explain any one of its types. (4)

b) Write two points to differentiate code phase measurements and carrier phase measurements. (4)

c) Explain the principle of position determination by satellite ranging. (7)

5 a) Explain the principle of DGPS (5)

b) Illustrate visibility diagram with a neat sketch. (5)

c) What are the steps involved in the field operations of GPS survey. (5)

6 a) List down the components of GPS and explain the functions of each component. (8)

b) Write a short note on Data Processing and Report Preparation in GPS surveying. (7)

PART C
Answer any two full questions, each carries 20 marks.

7 a) Differentiate active and passive remote sensing. (4)

b) With a neat sketch, explain spectral reflectance of vegetation. (6)

c) Explain along track and across track scanning with figures. (10)

8 a) Enumerate the components of GIS (5)

b) Explain Mercator projection. Write down its properties and limitations (7)

c) Compare the vector and raster data representations with suitable sketches. (8)

9 a) Write a short note on the EM energy interactions with atmosphere and earth. (10)

b) Explain Geographic and Projected coordinate systems. (5)

c) Explain any one type of map projection according to developable surface (5)

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