

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**FIFTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2017**

**Course Code: CE307**  
**Course Name: GEOMATICS (CE)**

Max. Marks: 100

Duration: 3 Hours

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

Marks

- 1 a) Compare fast needle method and loose needle method of traverse surveying. (3)
- b) What is meant by closing error? How will you distribute the angular error of closure? (6)
- c) The following are the lengths and magnetic bearings of the sides of a traverse ABCD. Find the error of closure. (6)

Line	Length ( metres)	Bearing
AB	470	340°52'
BC	640	85°40'
CD	430	170°40'
DE	560	265°12'

- 2 a) Explain any two methods of setting out simple curves. (4)
- b) Explain the determination of length of transition curve by arbitrary gradient method and time rate method. (4)
- c) The following data refer to a compound circular curve which deflects to the right Total deflection angle 95°, Degree of the first curve 4°, degree of the second curve 6°, Point of intersection of two straight is at 915m. Determine the chainages of the tangent points and point of compound curvature, given that the latter point is 126m from the point of intersection at an external angle of 290° from the first tangent. (7)
- 3 a) Explain the method of balancing of closed traverse by Transit Rule. (3)
- b) What are the field checks in a closed traverse and in an open traverse? (4)
- c) Two tangents intersect at chainage 60 + 60, the deflection angle being 52°30'. Calculate the necessary data for setting out a curve of 20 chains radius to connect the two tangents if it is intended to set out the curve by offsets from chords. Take peg interval equals to 20 m and length of chain as 20 metres. (8)

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

- 4 a) Explain the components of GPS and the working principle. (10)
- b) Explain the principle of position determination by satellite ranging. (5)
- 5 a) Explain static and rapid static methods of GPS survey. (10)
- b) What is meant by visibility diagram? Illustrate with sketch. (5)

- 6 a) List the errors in GPS ranging. Explain any two in detail. (8)  
b) What is meant by DGPS? Explain code based and carrier based DGPS techniques. (7)

**PART C**

*Answer any two full questions, each carries 20 marks.*

- 7 a) What is meant by multispectral scanning? Explain along track and across track scanning. (10)  
b) Describe the principle of remote sensing. Explain passive and active remote sensing. (10)
- 8 a) Write short notes on: (6)  
i) Spatial data ii) Attribute data  
b) Explain geographic coordinate system and projected coordinated system. (8)  
c) Explain Mercator projection. Write down its properties and limitations (6)
- 9 a) What is meant by spectral reflectance? Explain the reflectance characteristics of vegetation, soil and water with the help of spectral reflectance curve. (10)  
b) List down the types of map projection according to projection surface. Explain any two with sketches. (10)

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