Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S3 (S,FE) (FT/WP) / S1 (PT) Examination November/December 2025 (2019 Scheme)

Course Code: CET205

Course Name: SURVEYING & GEOMATICS

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions. Each question carries 3 marks Marks

1	Explain (i) digital level (ii) Auto level	(3)
2	What are the different methods of orientation adopted in surveying?	(3)
3	Define mass diagram. Describe its characteristics.	(3)
4	What is meant by a satellite station and reduction to centre?	(3)
5	With the help of sketches, define latitude, departure and closing error.	(3)
6	Write short note on weight of an observation.	(3)
7	List out the angular methods of setting out simple curves.	(3)
8	With sketches, explain the different types of circular curves.	(3)
9	What is multispectral scanning?	(3)
10	Explain (i) spatial data (ii) attribute data	(3)

PART B

Answer any one full question from each module. Each question carries 14 marks

Module 1

11a) What are the characteristics of contour? Explain with sketches. (6)

b) The following bearings were observed with a compass. Mention which stations were affected by local attraction and determine the corrected bearings (8)

Line	Fore Bearing	Back Bearing
AB	124°30'	304°30'
BC	68°15'	246°0'
CD	310°30'	135°15'
DA	200°15'	17°45'

12 What are the different sources of errors in levelling? How are they eliminated? (14)

Module 2

13a) Explain (i) Mid-ordinate rule (ii) Average ordinate rule. (6)

b) From an eccentric station S, 20 metres to the west of the main station B, the following angles were measured. ∠BSC = 58°32'45", ∠CSA = 49°31'27". The stations S and C are to the opposite sides of line AB. Calculate the correct angle ABC if the lengths AB and BC are 1500 m and 1820 m respectively. (8)

14a) The following perpendicular offsets were taken at 15 m intervals from a survey line to an irregular boundary line: (7)

2.60, 3.95, 4.20, 2.85, 5.75, 3.60, 4.85, 5.25, 3.50

Calculate the area enclosed between the survey line, the irregular boundary line, and the first and last offsets by (a) Average ordinate rule (b) Trapezoidal rule and (c) Simpson's rule

b) Describe the principles of stadia and tangential tacheometry. (7)

Module 3

15a) Explain how to work out the omitted measurements of a traverse for the case when length and bearing of one side has been omitted. (6)

b) Define the term 'most probable value' and explain the method of least squares. (8)

16a) Find the most probable values of the angles A and B from the following observations at a station O. (8)

A = 11°52'37.5" weight:3

B = 49°27'51.5" weight:2

A + B = 61°20'32.6" weight:4

b) Explain (i) Bowditch method (ii) Transit method (6)

Module 4

17a) Explain the working of a total station. (6)

b) With help of neat sketch, illustrate what is transition curve. Also explain the elements of a transition curve? (8)

18a) Two tangents intersect at chainage 1250m. The angle of intersection is 150°. Calculate the tangent length, curve length, chainage of tangent points and deflection angles for setting out a curve of radius 250m.Use Rankine's method. The peg intervals may be taken as 20m. (9)

b) Discuss in detail the concept of EDM. (5)

Module 5

19a)	What is meant by resolution? Explain various types of resolution.	(9)
b)	What are the applications of GPS?	(5)
20a)	Differentiate between geographic and projected co-ordinate systems.	(6)
b)	Explain satellite ranging.	(8)

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