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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S3 (R, S) / S1 (PT) (S, FE) Examination December 2023 (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	Why is orientation important in surveying?	(3)
2	List the uses of contours.	(3)
3	What is the principle of tangential tacheometry?	(3)
4	What is a satellite station?	(3)
5	What are the checks conducted in a closed traverse?	(3)
6	Differentiate true value and most probable value.	(3)
7	Define a reverse curve and mark its elements on a sketch.	(3)
8	Discuss the capabilities of a total station?	(3)
9	What is multispectral scanning?	(3)
10	How is vector data represented in GIS?	(3)

PART B

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

Module 1

11(a)	Explain the process of ranging a chain line between two points which are not intervisible.	(7)
(b)	The following consecutive readings were taken with a level and 4 m levelling staff on continuously sloping ground at a common interval of 20 m. 0.890, 1.645, 2.165, 2.455, 2.855, 3.185, 3.975, 1.155, 2.185, 2.865, 3.750, 1.025, 1.215, 1.840 and 2.845. The reduced level of the first point is 800.000 m. Rule out a page of level field book and enter the above readings. Calculate the reduced levels and the gradient of the line joining the first and last points.	(7)
12(a)	Explain with sketch any four characteristics of contours.	(5)

(b) The following bearings were taken in a compass traverse survey. Apply correction for interior angles and local attractions and find the corrected interior angles and bearings.

Line	FB	BB
AB	80° 10′	259° 00′
BC	120° 20′	301° 50′
CD	170° 50′	350° 50′
DE	230° 10′	49° 30′
EA	310° 20′	130° 15′

(9)

Module 2

13(a) Enumerate the steps in measuring a horizontal angle by repetition method. (6)

(b) Explain the procedure of finding the area by following methods. (8)

i. Trapezoidal rule ii. Simpson's rule

14(a) Illustrate the steps in the construction of a mass diagram. (5)

(b) Two stations A and B, 160 km apart, are 450 m and 490 m above MSL. The intervening peak at C, 106 km from A has an altitude of 120 m above MSL. If the instrument at A is 8 m above ground level, find the height of signal required at B, so that the line of sight clears C by 3 m. (9)

Module 3

15(a) Explain the method of traversing by fast needle method. (5)

(b) The following values of angle were measured at a station:

$A = 16^0\ 21'\ 16.3''$ weight 1

$B = 18^0\ 13'\ 26.2''$ weight 2

$C = 37^0\ 24'\ 11.7''$ weight 2

$A+B = 34^0\ 34'\ 48.8''$ weight 1

$B+C = 55^0\ 37'\ 38.2''$ weight 1

(9)

Find the most probable value of A, B and C by forming normal equations.

16(a) Discuss any four laws of weight with examples. (5)

(b) A traverse ABCDE was run and the following data was obtained. (9)

Line	Length(m)	Bearing
AB	232	32°12′
BC	148	138°36′
CD	417	202°24′
DE	372	292°00′

If the independent coordinates of A are (500N, 500E), calculate the independent coordinates of all the other stations.

Module 4

17(a) What is the principle of working of an electronic distance meter? (6)

(b) Two tangents intersect at chainage of 2360.5 m, the deflection angle being 50^0 40′. Calculate the necessary data for setting out a curve of 200 m radius to connect two tangents if it is intended to set out the curve by Rankine's method of tangential angles. The peg interval may be taken as 20 m. (8)

18(a) What are the functions of a transition curve? Also list the basic requirements of transition curve. (8)

(b) Discuss the major benefits of using total station in surveying. (6)

Module 5

19(a) What are the methods of kinematic survey? Explain. (8)

(b) Illustrate with example the difference between spatial data and attribute data. (6)

20(a) Sketch the GPS satellite signal structure and explain the signal codes. (7)

(b) With a sketch enumerate the components of remote sensing. (7)

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