Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S3 (S) Examinations (FT/WP) May 2026 (2024 Scheme)

Course Code: PBCET304

Course Name: SURVEYING & GEOMATICS

Max. Marks: 40 Duration: 2 hours 30 minutes

PART A

(Answer all questions. Each question carries 2 marks)

		CO	Marks
1	Describe the common errors encountered in levelling operations.	1	(2)
2	Explain profile levelling and cross sectioning with the help of sketches.	1	(2)
3	What are the different triangulation systems or figures opted in surveying?	2	(2)
4	Explain with sketch any two characteristics of contours.	2	(2)
5	A distance was measured five times, and the values obtained were 45.21 m, 45.25 m, 45.18 m, 45.22 m, and 45.24 m. Calculate the Most Probable Value of the distance.	3	(2)
6	What is GNSS?	4	(2)
7	Discuss electromagnetic energy and electromagnetic spectrum	4	(2)
8	Define spatial resolution	4	(2)

PART B

(Answer any one full question from each module, each question carries 6 marks)

Module -1

9	The following bearings are observed for a closed-traverse.	1	(6)

Line	FB	BB
AB	75°5′	254°20′
BC	115°20′	296°35′
CD	165°35′	345°35′
DE	224°50′	44°5′
EA	304°50′	125°5′

At which stations do you suspect local attraction? Determine the correct magnetic bearing.

10 The following consecutive readings were taken with a dumpy level and 3 m levelling staff. The Reduced Level (R.L.) of the first point is 100.000 m. Staff Readings (in meters):1.850, 0.520, 2.305, 1.555, 0.255, 3.115, 1.670, 2.425 — 1 — (6)

Tasks:

Prepare a level field book.

Calculate the Reduced Levels (R.L.) of all points by the Height of Instrument method.

Apply the usual arithmetic check.

Module -2

11 The following perpendicular offsets (in meters) were taken from a base line to a curved boundary at intervals of 10 meters: — 2 — (6)

0, 4.80, 6.50, 5.20, 7.90, 4.60, 0

Compute the area between the baseline and the curved boundary by:

i) Trapezoidal Rule

ii) Simpson's Rule

12 a) Explain step by step how a mass haul diagram is constructed for a road project. — 2 — (3)

b) What is a satellite station? Explain reduction to centre. — 2 — (3)

Module -3

13	The following are observation equations with different weights. Construct the normal equations and compute the most probable values of x, y, and z. (1) $x + 2y - 4 = 0$, weight = 4 (2) $2x - y + z - 3 = 0$, weight = 3 (3) $3x + y - 2z - 8 = 0$, weight = 2	3	(6)
14	Explain static methods of GPS survey.	4	(6)

Module -4

15	Apply your understanding of multispectral scanning to explain along-track and across-track scanners using neat sketches.	4	(6)
16	Analyse the raster and vector data representation in GIS.	4	(6)

***