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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S3 (R) (FT/WP) Examination November 2025 (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		Define true bearing and Magnetic bearing.	CO1	(2)
2		Define simple levelling and differential levelling.	CO1	(2)
3		Write the formula for volume by trapezoidal rule and prismoidal rule.	CO2	(2)
4		List the main type of triangulation figures.	CO2	(2)
5		Define principles of least squares.	CO3	(2)
6		What is GNSS (Global Navigation Satellite System)	CO4	(2)
7		Differentiate between active and passive sensors.	CO4	(2)
8		List the main components of GIS.	CO4	(2)

PART B

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

Module -1

9	a)	Convert the following whole circle bearing to quadrantal bearing i)$25^0 35'$, ii) $160^0 22'$,iii) $215^0 12'$	CO1	(3)
	b)	What is magnetic declination? If the magnetic bearing of a line is $45^0 24'$. Calculate the true bearing if the magnetic declination is $4^0 18'$	CO1	(3)
10	a)	The following staff reading were observed successively with a level, the instrument was moved after third, sixth, and eighth reading: 2.255,1.600, 0.885, 2.080, 2.775, 1.355, 0.505, 1.725, 1.005, 2.685. Enter the reading in a level book and calculate the RL of points if the first reading was taken with a staff held on a bench mark of 430.255m	CO1	(6)

Module -2

11	a)	An embankment is 15m wide with side slope 1.5 to 1. Assuming the ground to be level in a direction transverse to the centre line, calculate the volume contained in a length of 150 meters, the centre height at 25m intervals being in meters 2.5, 3.2, 3.5, 3.8, 2.8, 4.8, 1.5. using trapezoidal and prismoidal rules.	CO2	(6)
12	a)	The altitude of two proposed stations A and B 150 km apart, are respectively 560m and 850m. The intervening obstruction situated at C, 100km from A has an elevation of 421m. Ascertain if A and B are intervisible and if necessary find by how much B should be raised do that the line of sight must nowhere be less than 4m above the surface of the ground.	CO2	(6)

Module -3

13	a)	The following are mean values observed in the measurement of three angles x, y, z at one station $x = 76^0 42' 46.2"$ with weight 4 $x + y = 134^0 36' 30.6"$ with weight 3 $y + z = 185^0 35' 24.8"$ with weight 2 $x + y + z = 262^0 18' 10.4"$ with weight 1 Calculate the most probable value.	CO3	(6)
14	a)	What is satellite ranging and trilateration in GPS? How are distances from satellites used to determine position? Explain with the help of diagram.	CO4	(6)

Module -4

15	a)	Explain any three applications of remote sensing in civil engineering	CO4	(3)
	b)	Define spatial, spectral, and temporal resolution	CO4	(3)
16	a)	Explain the type of data used in GIS.	CO4	(3)
	b)	What are the advantages and limitations of vector data model?	CO4	(3)

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