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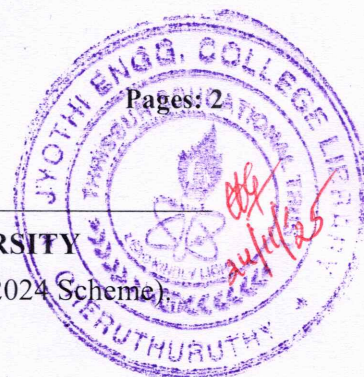
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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

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) $25^{\circ}35'$, ii) $160^{\circ}22'$, iii) $215^{\circ}12'$ | CO1 | (3) |
| | b) | What is magnetic declination? If the magnetic bearing of a line is $45^{\circ}24'$. Calculate the true bearing if the magnetic declination is $4^{\circ}18'$ | 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 so 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 CO3 (6)
- $x = 76^{\circ}42'46.2''$ with weight 4
- $x + y = 134^{\circ}36'30.6''$ with weight 3
- $y + z = 185^{\circ}35'24.8''$ with weight 2
- $x + y + z = 262^{\circ}18'10.4''$ with weight 1
- Calculate the most probable value.
- 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)
