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Reg No.:_____

Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER B.TECH DEGREE EXAMINATION(R&S), DECEMBER 2019
Course Code: CE207
Course Name: SURVEYING

Max. Marks: 100

Duration: 3 Hours

PART A
Answer any two full questions, each carries 15 marks.

Marks

1 a What are general principles of survey? Differentiate between plane and geodetic survey   8

   b Explain the principle of levelling with neat sketch.   4

   c Define i) base line, ii)Check line iii) Tie line   3

2 a What is the necessity of ranging survey lines. Describe how you would range a chain line between two points which are not visible.   7.5

   b Explain the process of profile levelling and cross sectional levelling   7.5

3 a What is reciprocal levelling? How it is accomplished? In reciprocal levelling between two stations A and B the level was set up near A and the staff readings on A and B were 2.645 and 3.220 m respectively. The level was then moved and set up near B, the respective staff readings on A and B were 1.085 and 1.665. Find the true difference in level between A and B.   7.5

   b) The following bearings were taken in running a compass survey.   7.5

Line	Fore Bearing	Back bearing
AB	124°30'	304°30'
BC	68°15'	246°0'
CD	310°30'	135°15'
DA	200°15'	174°45'

At what stations do you suspect local attraction? Find the correct bearings of the lines and also compute the included angle.

PART B
Answer any two full questions, each carries 15 marks

4	a	State Simpson's rule and Trapezoidal rule for computation of area. A series of offsets were taken at 3m intervals in the following order from a chain line to a curved boundary 2.16, 1.53, 1.80, 1.98, 1.80, 1.59, 1.80, 2.52, 2.43, 2.40, 2.58, 2.70, 2.91, and 3.06 meters. Find the area between the chain line, curved boundary and the end offsets by Simpson's rule and trapezoidal rule.	7.5
	b	Describe the methods of computation of volume by i) Average end formula and ii) Prismoidal formula	7.5
5	a	What is transit theodolite and what are the temporary adjustments in Theodolite?	7.5
	b	The altitudes of two proposed stations A and B, 80 km apart are respectively 225m and 550 m. The intervening obstructions situated at C, 40 km from A has an elevation of 285m. Ascertain if A and B are intervisible. And if necessary find how much B should be raised so that the line of sight must nowhere be less than 3m above the surface of the ground.	7.5
6	a	Explain the terms; i) Satellite stations ii) reduction to centre ii) Opaque Signals	7.5
	b	Determine the volume of the reservoir enclosed by the contour lines from the data given below using both prismoidal and trapezoidal formula.	7.5

Contour level (m)	Area enclosed by the contour line (m^2)
100	200
105	300
110	500
115	750
120	1000
125	1500
130	2000

PART C
Answer any two full questions, each carries 20 marks

7	a	Explain the terms (i) Celestial sphere ii) Astronomical Triangle iii) Declination iv) Hour Angle v) Altitude	10
	b	Explain any five laws of weights.	5
	c	Explain the advantages of total station survey	5
8	a	Define modulation and explain the different methods of modulations	5
	b	Explain the principle of EDM	5
	c	The following are the condition equations of different weights. Construct the normal equations for x, y and z.	10

$4x + 2y + z - 11 = 0$, wt:3
$3x + 3y + 2z - 9 = 0$, wt:2
$5x + y + 3z - 16 = 0$, wt:4

9	a	Define the term 'most probable value' and explain the various methods to determine it.	12
	b	What are the fundamental parameters required in Total Station surveying?	8