

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**THIRD SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 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) Define local attraction. Which are the different methods of eliminating local attraction in a closed traverse? (5)  | (5)  |
|   | b) The following consecutive readings were taken with a level and 5m levelling staff on a continuously sloping ground at a common interval of 20 m, :0.385, 1.030,1.925,2.825,3.730,4.685,0.625,2.005,3.110,4.485. Prepare a page of field book and calculate the reduced level of points if first reading was taken on a bench mark of RL 208.125 m. (10) | (10) |
| 2 | a) Define bearing. Which are the different systems of designating bearings? (4)  | (4)  |
|   | b) Distinguish between dip and declination, isogonic and agonic lines. (5)   | (5)  |
|   | c) The magnetic bearing of a line AB is S 28 <sup>0</sup> 30'E. Find the true bearing if declination is 7 <sup>0</sup> 30' W (6)   | (6)  |
| 3 | a) Explain the different methods of orientation in plane table survey. (6)   | (6)  |
|   | b) Define contour. Which are the different methods of locating contour? (9)  | (9)  |

**PART B**

*Answer any two full questions, each carries 15 marks.*

- |   |  |      |
|---|--|------|
| 4 | a) Explain repetition method of measurement of horizontal angle. (5)   | (5)  |
|   | b) Two triangulation stations A and B are 60 km apart and have elevation 240 m and 280 m respectively. Find minimum height of signal required at B so that line of sight may not pass near the ground than 2 m. The intervening ground has an elevation of 200 m. (10) | (10) |
| 5 | a) Define mass diagram. What are its uses? (5)   | (5)  |
|   | b) Explain the different steps in triangulation survey. (10)   | (10) |
| 6 | a) Explain prismoidal rule for calculating volume of a plot. (5)   | (5)  |
|   | b) A railway embankment is 10 m wide with side slope 1.5 (H) : 1 (V). Assuming the ground to be levelled in a direction transverse to centre line, calculate the (10)  | (10) |

volume contained in a length of 120 m, the centre height at 20 m interval being in metres 2.2, 3.7, 3.8, 4.0, 3.8, 2.8, 2.5 using trapezoidal and prismoidal formulae.

### PART C

*Answer any two full questions, each carries 20 marks.*

- 7 a) Explain the principle of least squares. (5)  
 b) Explain the principle of EDM measurement. (5)  
 c) The following are the mean values observed in the measurement of three angles A, B, C at one station, Calculate the most probable value. (10)
- |                                |           |
|--------------------------------|-----------|
| $A = 76^{\circ}42'46.2''$      | weight 4  |
| $A+B = 134^{\circ}36'32.6''$   | weight 3  |
| $B+C = 185^{\circ}35'24.8''$   | weight 2  |
| $A+B+C = 262^{\circ}18'10.4''$ | weight 1. |
- 8 a) Define celestial horizon, hour angle, Zenith, Nadir, celestial equator. (10)  
 b) Explain the operation of total station. (10)
- 9 a) Explain different types of EDM instruments. Which are the different types of modulation of electromagnetic waves? (10)  
 b) Form the normal equation for x, y, z in the following equation (10)
- |                |          |
|----------------|----------|
| $3x+3y+z-4=0$  | weight 2 |
| $x+2y+2z-6=0$  | weight 3 |
| $5x+y+4z-21=0$ | weight 1 |

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