

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

Third Semester B.Tech Degree (S,FE) Examination December 2020 (2015 Scheme)

**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 is local attraction? How can you detect and correct it if the bearings are affected by local attraction. (7)
- b) The following bearings were observed on a compass traversing. At what stations do you suspect local attraction? Find the corrected bearings. (8)

Line	FB	BB
AB	44°40'	225°20'
BC	96°20'	274°18'
CD	30°40'	212°02'
DA	320°12'	140°12'

- 2 a) Explain principle of resection with a sketch. (7)
- b) The following is the page of a level field book. Fill the missing readings and calculate the levels of the stations and apply usual checks (8)

Station	B.S	I.S	F.S	Rise	Fall	RL	Remarks
1	3.250					----	
2	1.880		-----		0.600	----	
3		2.250			----	----	
4	-----		1.920	----		----	
5		2.540			0.015		
6	-----		-----	1.000			
7	1.175		2.115		----	225.305	
8		1.625			----	----	
9	-----		1.895		0.270	----	
10			1.255		0.750		
Sum	11.450						

- 3 a) Explain profile levelling with a sketch. (7)  
 b) Explain any two methods of contouring? Illustrate with sketches. (8)

**PART B**

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

- 4 a) Explain methods to calculate area using (7)  
 i) latitude and meridian distance and  
 ii) latitude and double meridian distance.
- b) From an eccentric station S, 12 m to the west of main station B, the following angles were measured.  $\angle BSC = 72^\circ 20' 28''$ ,  $\angle CSA = 52^\circ 30' 20''$ . The stations S and C are to the opposite sides of the line AB. Calculate the correct angle ABC if the lengths of AB and BC are 520 and 480 m respectively. (8)
- 5 a) What are the uses of Mass haul diagram? How do you construct it? (7)  
 b) A railway embankment is 16 m wide at formation level, with side slope of 2 to 1. Assuming the ground to be level transverse to the centre line, calculate the volume contained in a length of 100 m, the centre heights at 20 m intervals being in m : 2.0, 4.5, 4.0, 3.5, 2.5, 1.5 m respectively. Use trapezoidal rule. (8)
- 6 a) Explain different triangulation figures with sketches. (7)  
 b) Distance between two proposed stations A and B in a triangulation is 110 km. Elevation of station A is 300 m while that of B is 600 m. There is point C between A and B at a distance 50 km from A and is having an elevation of 238 m. Ascertain whether A and B are intervisible. If not, find the minimum height of tower required at B so that B is visible from A with a minimum clearance of 2.5 m above the surface of the ground. (8)

**PART C**

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

- 7 a) State any five laws of weights of observation with examples. (10)  
 b) The angles of a triangle A,B,C are: (10)  
 $A=77^\circ 14' 10''$                       weight 4  
 $B=49^\circ 40' 35''$                       weight 3  
 $C=53^\circ 04' 52''$                       weight 2

Find the most probable value of the method angles A, B and C using normal equation.

- 8 a) What is the principle of total station? What are the advantages? (6)
- b) (i) Celestial sphere (14)
- (ii) Celestial horizon
- (iii) Observers meridian
- (iv) Vertical circle
- (v) Prime vertical
- (vi) Hour circle
- (vii) Declination circle
- 9 a) Explain distomat. (6)
- b) Explain with an example, the method of normal equation to find unknown quantities of observations of given weight. (14)

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