

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE**End Semester Examination – Summer 2019****Course: B. Tech in Civil Engineering****Sem: IV****Subject Name: Surveying-II****Subject Code: BTCVC402****Max Marks: 60****Date: 16/05/2019****Duration: 3 Hr.****Instructions to the Students:**

1. Solve **ANY FIVE** questions out of the following.
2. The level question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

	(Level/CO)	Mark
Q.1 Solve Any Two of the following.		12

- A) a) In tacheometric surveying following observations were taken from station P, upon vertically held staff at Q. The tacheometer is provided with anallatic lens and multiplying constant is 100. Determine the horizontal distance between P & Q. Also determine gradient from P to Q. **CO2 06**

Instrument Station	HI	Staff Station	Vertical angle	Staff Reading	Remark
P	1.50 0	Q	0°00'	1.300, 1.600, 2.200	RL of P = 250.00 m

b) Explain basic principle of EDM instrument with neat labeled diagram.

- B) Explain Anallatic lens in detail with neat labeled diagram. **CO3 06**
- C) a) Explain the theory of Stadia Tacheometry. **CO3 06**
- b) Explain difference between Fixed and Movable Hair method of Tacheometry. **CO3**

Q.2 Solve Any Two of the following. **12**

- A) Define and Explain i) Signals ii) Satellite Station iii) Spherical triangle. **CO3 06**
- B) Define Base line, List down base measuring equipments and write down points to be considered while selecting the base line **CO3 06**
- C) Define Triangulation and Explain Classification of Triangulation System. **CO3 06**



Q. 3 Solve Any One of the following.

12

- A) a) Define i) Vertical circle ii) The Prime Vertical iii) The Longitude iv) The Latitude v) The Declination vi) Hour Circle
b) Explain method of determination of latitude by meridian altitude of Sun or Star with neat labeled diagram.
- B) The meridian altitude of the Sun's lower limb was observed to be $41^{\circ}12'26''$ at a place in longitude $72^{\circ}20'45''$ W to determine the latitude of the place. The Sun was to the south of the zenith. The declination of the sun at GAN on the day of observation was $19^{\circ}38'52''$ N, increasing $7.46''$ per hour and in semi-diameter $16'14'24''$. Determine the Latitude of the place.

CO3

12

CO3

12

Q.4 Solve Any Two of the following.

12

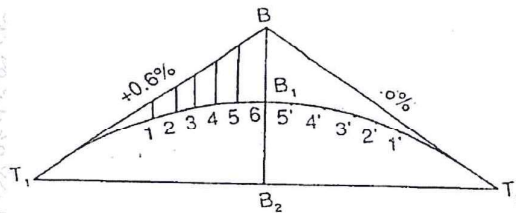
- A) Define Combined Curve. Explain elements of Combined curve with neat labeled diagram.
- B) Calculate the RL of the various pegs on a vertical curve connecting two grades of $+0.6\%$ and -0.6% . The chainage and the RL of intersection point are 550 and 325.50 m respectively. The rate of change of grade is 0.1% per 30 m.

CO1

06

CO2

06



- C) What is Shift? Prove that a transition curve bisects a shift and that a shift bisects a Transition Curve.

CO2

06

Q. 5 Solve Any Two of the following.

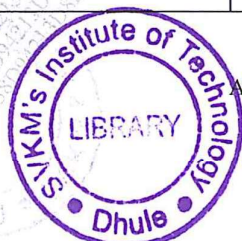
12

- A) a) Two points A and B having elevations of 500m and 300 m respectively above datum appear on the vertical photograph having focal length of 20cm and flying altitude of 2500m above datum. Their correlated photographic co-ordinates are as follows:

CO4

06

Point	Photographic Co-ordinates	
	X(cm)	y(cm)
a	+2.65	+1.36
b	-1.92	+3.65



- b) It is required to do photogrammetric survey over an area of 500 sq.km, scale of photograph 1 in 10000 and photograph format is 230mm X 230mm. Taking longitudinal overlap 60% and side overlap 30%. Calculate the number of photographs required. CO4
- B) a) A line AB measures 11cm on a photograph taken with a camera having focal length of 21.5cm. The same line measures 3 cm on a map drawn to a scale of 1/45000. If the average altitude is 350 m, Calculate the flying height of the aircraft. CO4 06
- b) A line 2350 m long lying at an elevation of 500m measure 10.50 cm on a vertical photograph. The focal length of the camera is 20cm. If the elevation of a point is 1200m. Calculate the scale of photograph. CO4
- C) a) Write down comparison between Map and Aerial Photograph CO4 06
- b) Define: i) Forward overlap ii) Side overlap iii) Relief Displacement
- Q.6 Solve Any One of the following.** 12
- A) a) Write down difference between Aerial photograph and Satellite image. CO4 12
- b) List down and explain types of Platforms in detail.
- B) a) Write down applications of GPS and GIS. CO4 12
- b) Explain key component of GIS.

*** End ***

