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Reg. No. : | | | | | | | | | | | | |

Question Paper Code: U3106

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2024

Third Semester

Civil Engineering

21UCE306 - SURVEYING

(Regulations 2021)

Duration: Three hours | Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. The whole circle bearing of a line is 290^0. Its reduced bearing is — CO1 -U

   (a) N 70^0 W (b) N 20^0 W (c) N 20^0 E (d) S 70^0 W

2. The operation consisting of revolving the telescope through 180^e in a vertical plane about its horizontal axis is called _____ — CO1- U

   (a) Transiting (b) Face right (c) Face left (d) Traversing

3. Among the classification of triangulation system, which posses the highest order? — CO1- U

   (a) Primary (b) Secondary (c) Tertiary (d) Quaternary

4. The data obtained from total station can be used in which among the following software directly? — CO5- U

   (a) Primavera (b) STAAD PRO (c) Autodesk Revit (d) Surfer

5. Remote sensing uses which of the following waves in its procedure? — CO1- U

   (a) Electric field (b) Sonar waves

   (c) Gamma- rays (d) Electro-magnetic waves

PART – B (5 x 3= 15 Marks)

6. Define: True meridian and True Bearing — CO1- U

7. What is meant by triangulation? — CO1- U

8. List out the different types of Total stations. — CO1- U

9. What is the basic process of remote sensing? CO5- U

10. Define: True meridian and True Bearing CO6- App

PART – C (5 x 16= 80 Marks)

11. (a) A line was Measured with a steel tape which was exactly 30 m @200 C and at a pull of 10 Kg, the measured length being 1650 m. The temperature during the measurement was 30 ^{0} c and the pull applied was 15 kg. Assuming the tape to be supported @ every 30 m. Analyze errors and calculate the true length if the cross-sectional area of the tape was 0.025 cm^2. The coefficient of expansion of the material per ^{0} c = 3.5 X $10^{\wedge -6}$. Modulus of elasticity (E) = 2.1 X $10^{\wedge 6}$ Kg/ cm^2. Weight of the material = 7.8 gms/cm^3. CO1- Ana (16)

Or

(b) The following staff readings were observed successively with a level, the instrument has been moved after third, sixth and eighth readings: 3.185, 3.845, 2.165, 2.645, 2.780, 0.985, 2.645, 0.430, 1.465, 1.570, 0.790, 1.945, 0.650, 1.340, 0.530 meters. Enter the above readings in a page of a level book & calculate the R.L. of points by Rise & Fall method, if the first reading was taken with a staff held on bench mark of 250.000 m. Analyze the readings with the usual checks. CO1- Ana (16)

12. (a) The height of an embankment of an embankment of formation width 10 m with side slopes 1:5:1 are found to be 2m, 3m and 4m at 0 m, 30 m and 60 m chainages respectively. Determine the volume of the bank in this 60 m length by all methods assuming the ground as level in the transverse direction. CO2- App (16)

Or

(b) Determine the multiplying constants of a tachometer the following observations were taken on a staff held vertically at distances, measured from the instrument. CO2- App (16)

The focal length of the object glass is 20 cm and the distance from

Observation	Horizontal distance	Vertical angle	Staff intercept
1	50	+ 3^0 48$'$	0.500 m
2	100	+ 1^0 06$'$	1.000 m
3	150	+ 0^0 36$'$	1.500 m

the object glass to trunnion axis is 10 cm. The staff is held vertically at all these points. Find the multiplying constant.

13.	(a)	Explain various types of curves with neat sketch.	CO1- U	(16)
		Or		
	(b)	What is meant by triangulation and briefly explain their types .	CO1- U	(16)
14.	(a)	Explain in detail about the sources of errors in Total station and EDM	CO4- U	(16)
		Or		
	(b)	Briefly explain three fundamental segments on which GPS works.	CO4- U	(16)
15.	(a)	Describe in details about photogrammetric surveying and its applications.	CO5- U	(16)
		Or		
	(b)	List the various types of aerial photographs. How would you measure the photo coordinates? Explain.	CO5- U	(16)