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

Question Paper Code: U3106

B.E./B.Tech. DEGREE EXAMINATION, NOV 2022

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. For a well-conditioned triangle, no angle should be less than _____ CO1- U

   (a) 20° (b) 30° (c) 45° (d) 60°

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. Calculate the combined correction for curvature and refraction (in m) for a distance of 2 K m. CO1- U

7. The staff intercepts on a vertically held staff at a distance of 50 m and 200 m were found to be 0.49 m and 1.99 m respectively. Determine the instrument constants. CO1- U

8. What is meant by triangulation? CO1- U

9. What is called anti spoofing? CO5- U

10. Define aerial photogrammetry. CO6- App

PART – C (5 x 16= 80Marks)

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. CO3- 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. CO3- 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) Briefly explain basic concept of photogrammetric surveying. CO5- U (16)

Or

(b) What are the various implementation of remote sensing CO5- U (16)