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**Question Paper Code: U3106**

B.E./B.Tech. DEGREE EXAMINATION, NOV 2023

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 required slope correction for a length of 60m along a gradient along a gradient of 1 in 20 is CO2- App  
(a) 7.5 cm                      (b) 75 cm                      (c) 0.75 cm                      (d) 5.50 cm
2. What is the least count of Theodolite? CO1-U  
(a) 20'                      (b) 30"                      (c) 20"                      (d) 1°
3. Among the classification of triangulation system, which possess the highest order? CO1-U  
(a) Primary                      (b) Secondary                      (c) Tertiary                      (d) Quaternary
4. The accuracy of EDM devices are \_\_\_\_\_. CO1- U  
(a) 1 in 10000                      (b) 1 in 100000                      (c) 1 in 10                      (d) 1 in 100
5. Which among the following waves is having less wavelength range? CO1- U  
(a) 0.03mm                      (b) 0.03nm                      (c) 0.03m                      (d) 0.03km

PART – B (5 x 3= 15Marks)

6. Differentiate between plane and geodetic surveying. CO1- U
7. What are the errors are considered in tacheometric surveying? CO1- U
8. Define transition curve. CO1- U
9. What are the accessories used in Total station? CO1- U
10. Define Photogrammetric surveying CO1- U

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 °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<sup>2</sup>. The coefficient of expansion of the material per °c = 3.5 X 10<sup>-6</sup>. Modulus of elasticity (E) = 2.1 X 10<sup>6</sup> Kg/ cm<sup>2</sup>. Weight of the material = 7.8 gms/cm<sup>3</sup>. 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) Illustrate the methods of measuring horizontal angles by using Theodolite survey. Conclude that which one is most precise method? Justify. CO2- App (16)
- Or
- (b) Analyze the principle of stadia tachometry. CO2- App (16)
13. (a) Describe principle of triangulation system and show schematically different sets of triangulation figures. CO1- U (16)
- Or
- (b) Explain various types of curve with neat sketch. CO1- U (16)
14. (a) Explain about Geographical Information System. Where it can be applied in field? CO1- U (16)
- Or
- (b) Explain in detail about the sources of errors in Total station and EDM. CO1- U (16)

15. (a) The distance on a map between two road intersections in flat terrain measures 12.78 cm. The distance between the same two points is 9.25 cm on vertical photograph. If the scale of the map is 1: 24,000, what is the scale of the photograph? CO5-App (16)

Or

- (b) An image of a hilltop is 87.5 mm from the centre of a photograph. The elevation of the hill is 665 meters and the flight altitude 4660 meters from the same datum. How much is the image displaced due to elevation of the hill? CO5-App (16)

