A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 96A05

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

Fourth semester

Agriculture Engineering

19UAG405- Surveying and Levelling

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. As per Is Recommendations, the length of each link in 30 m chain must be CO1- U

   (a)10 cm (b) 20 cm (c) 30 cm (d)15 cm

2. The surveys are to fix the boundaries of municipalities are CO1- U

   (a) Cadastral surveys (b) City surveying

   (c) Engineering surveys (d) Military surveys

3. The least count of prismatic compass is the magnetic declination at that point will be CO2- App

   (a)15’ (b) 30’ (c) 2° (d) 20’

4. In plane table surveying the operation which must be carried out is CO1- U

   (a) Resection (b) intersection (c) orientation (d) traversing

5. The height of collimation method is ---- and ---- labour is required as compared to rise and fall method CO1- U

   (a) Rapid ,more (b) Rapid ,less (c) slow,more (d) slow ,less

6. In permanent adjustment of levels ,two peg is done to correct or adjust CO1- U

   (a) Line of collimation (b) level tube

   (c) cross –hair ring (d) cross-hair ring and line of collimation

7. Contour lines cross a ridge or valley line at CO1- U

   (a) 45° (b)90° (c)0° (d) 180°

8. In earthwork computations on a longitudinal profile the diagram prepared to work out the quantity of earthwork is CO1- U

(a) double mass curve (b) mass haul diagram (c) mollier diagram (d) flow net

9. A receiver at GPS calculates the self-time and position basing on the received data from the different CO1- U

(a) satellite (b) radio waves (c) automic clocks (d) none of the above

10 During which year the project on GPS was launched? CO1- U

(a) 1970 (b)1971 (c)1972 (d)1973

PART – B (5 x 2= 10 Marks)

11 How will you correct errors in tape which occurs due to change in temperature? CO1- U

12 Change the following whole circle bearing to reduced bearing: CO2- App

(a) 151° 20’ (b) 332° 40’ (c) 45° 30’ (d) 125° 45’ (e) 222° 40’ (f) 50° 30’

13 List out the personal errors in levelling.. CO1- U

14 How will you analyze the capacity of the reservoir?. CO3- Ana

15 Write down the principles of GPS CO2- App

PART – C (5 x 16= 80 Marks)

16 (a) A 30m steel tape was standardized at $20^{o}C$ and under a pull of 5kg.the tape was used in catenary at a temperature of $25^{o}C$ and under a pull of P kg. The c/s area of the tape is 0.02cm2,and its weight per unit length is22g/m.α is 11 x 10-6per^{o}C and E for steel is 2.1 x 10^{6} kg/cm^{2}.compute the correct horizontal distance ,if P is equal to (i) 5kg(ii) 11kg CO2- App (16)

Or

(b) Describe about direct and indirect ranging with a neat sketch CO1- U (16)

17 (a) The following bearings were taken on a closed compass Traverse — CO2- App — (16)

Line	FB	BB
AB	80° 10’	259°0’
BC	120°20’	301° 50’
CD	170°50’	350°50’
DE	230° 10’	49° 30’
EA	310° 20’	130° 15’

Compute the interior angles and correct them forobservational errors. Assuming the observed bearing of theline CD to be correct. Adjust the bearing of the remainingsides

Or

(b) Explain any two methods of plane table surveying with a neat Sketch. — CO1- U — (16)

18 (a) The following consecutive readings were taken with a level and 5 meter leveling staff on continuously sloping ground at a common interval of 20 metres: 0.385, 1.030, 1.925, 2.825, 3.730, 4.685, 0.625, 2.005, 3.110 and 4.485. The reduced level of the first point was 308.125 m. Calculate the reduced levels of the points by rise and fall method and also the gradient of the line joining the first and the last point. — CO3- App — (16)

Or

(b) Discuss briefly about the methods of leveling with a sketch. — CO1- U — (16)

19 (a) Explain how you would determine the capacity of a reservoir using a contour map — CO1- U — (16)

Or

(b) The following area a series of offsets taken from a chain line to a curved boundary line with offsets intervals of 15m 0,2.62,3.86,5.62,7.85,8.25,4.25,0 compute the area between the cahin and the curved boundary and the end offsets, calculate by simpons and trapezoidal rules. — CO2- App — (16)

20 (a) Explain in detail about various components of a transit theodolite with neat sketches — CO1- U — (16)

Or

(b) Explain the various types of GPS devices and their uses — CO1- U — (16)