

**A**

**Reg. No. :**

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**Question Paper Code: U4A05**

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

Fourth semester

Agriculture Engineering

21UAG405-SURVEYING AND LEVELLING

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The walking step of a man is considered equal to CO1- U  
(a) 80cm                      (b) 90cm                      (c) 100 cm                      (d) 75cm
2. A well-conditioned triangle should not have angles more than CO1- U  
(a) 30°                      (b) 120°                      (c) 45°                      (d) 60°
3. The least count of prismatic compass is the magnetic declination at that point will be CO1- U  
(a) 15°                      (b) 30°                      (c) 2°                      (d) 20°
4. The direction of a line relative to a given meridian is called CO1- U  
(a) Bearing                      (b) Declination                      (c) Angle                      (d) Dip
5. The datum adopted for India is the CO1- U  
(a) MSL at Madras      (b) MSL at Bombay      (c) MSL at Karachi      (d) all of the above
6. What differential leveling is done in order to connect a bench mark to the starting point of the alignment of any road ,railway, canal project it is called? CO1- U  
(a) Profile levelling                      (b) cross-section levelling  
(c) reciprocal levelling                      (d) fly levelling
7. The suitable contour interval for a map with scale 1 : 10000 is CO1- U  
(a) 2 m                      (b) 5m                      (c) 10m                      (d) 20m

8. Two contour lines of different elevations unite to form one line only in the case of CO1- U
- (a) Hills      (b) Vertical cliff      (c) Horizontal cliff      (d) Overhanging Cliff
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. Which is the latest development in a total station? CO1- U
- (a) High resolution      (b) High accuracy      (c) Robotic      (d) Automatic

PART – B (5 x 2= 10Marks)

11. The length of a line measured with a 30m chain was found to be 250 metres. Calculate the length of the line if the chain was 10 cm too long. CO2-App
12. How are centering and levelling done in plane tabling? CO1- U
13. The levelling is carried out to establish the reduced levels of point with respect to the BM at P.the staff readings taken are given below.if RL is +100.00m ,then RL(in m) of Ris CO2-App

Stati on	BS	IS	FS	RL
P	1.655			
Q	- 0.950		- 1.500	
R			0.750	?

14. Calculate the contour interval on a map having the scale of 1:40.000. CO2-App
15. Differentiate between latitude and departure CO1- U

PART – C (5 x 16= 80Marks)

16. (a) The distance between two stations was 1200m when measured with a 20m chain. The same distance when measured with 30 m chain was found to be 1195m.if the 20m chain was 0.05m too long, what was the error in the 30m chain? CO2- App (16)
- Or
- (b) A Chain line PQ intersects a pond. Two points A and B are taken on the chain line on opposite sides of the pond. A Line AC ,250m long is set out on the left of AB and another line AD ,300m long, is set out on the right of AB. points C,B and D are in the same straight line. CB and BD are 100 and 150m long respectively. Calculate the length of AB. CO2 -App (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 for observational errors. Assuming the observed bearing of the line CD to be correct. Adjust the bearing of the remaining sides.

Or

- (b) Explain any three methods of plane table surveying with a neat Sketch. CO2 -App (16)
18. (a) The following readings were observed with a levelling instrument, the instrument was shifted after 5th and 11th reading. 0.585, 1.010, 1.735, 3.295, 3.775(5th) 0.350, 1.300, 1.795, 2.575, 3.375,3.895 (11th), 1.735, 0.635, 1.605 Determine the RLs of various points if the reduced level (RL) of a point on which the first reading was taken is 200.00 gives and applies the check. CO2-App (16)

Or

- (b) The following consecutive readings were taken with a dumpy level along a chain at a common interval of 15m.the first readings was at a chain age of 165m where the RL is 100.The instrument was shifted after the forth and ninth readings. 3.150,20245,1.125,0.860,3.125,2.760,1.835,1.470,1.965,1.225,2.3 90 and 3.035m.mark rules on a page of your notebook in the form of a level book page and enter on it the above readings and find the RL of all the points by The Height of collimation method. CO2-App (16)
19. (a) An embankment of width 10m and side slopes 1.5:1 is required to be made on the ground which is levelled in a direction transverse to the centre line. The centre height at 40 m intervals is as follows 0.90, 1.25, 2.15,2.50,1.85,1.35 and 0.85. Calculate the volume of earthwork to be carried out Informing the embankment. CO2-App (16)

Or

- (b) The following area a series of offsets taken from a chain line to a curved boundary line with offsets intervals of 10m 0,2.62,3.86,5.62,7.85,8.25,4.25,0 compute the area between the chain and the curved boundary and the end offsets, calculate by Simpson's and trapezoidal rules. CO2-App (16)
20. (a) Explain in detail about method of measuring horizontal angle by using theodolite CO1-U (16)
- Or
- (b) List out the features of total station and merits and demerits of total station. CO1-U (16)