Hall Ticket Number:

Code No. : 14125

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. (Civil Engg. : CBCS) IV-Semester Main Examinations, January-2021

Surveying II

Time: **2** hours Max. Marks: **60**

*Note: Answer any **NINE** questions from **Part-A** and any **THREE** from **Part-B***

Part-A (9 × 2 = 18 Marks)

Q. No.	Stem of the question	M	L	CO	PO
1.	It is proposed to determine the elevation difference between a point in Vasavi college of engineering and the top of the Golconda fort visible from the college. Mention what procedure you adopt to determine the elevation difference. Also, write the appropriate formula for finding the elevation.	2	3	1	1,5
2.	If angle of elevation from station P to a point Q is $2^0 06'18''$, axis signal correction is 60 seconds, curvature correction is 2'30", refraction correction is 20"and distance between P and Q is 9290 m, what is the elevation difference between P and Q.	2	3	1	1,2,5
3.	What is the angle of deflection if the long chord and the tangent length of a circular curve of radius (R) are equal?	2	3	2	1
4.	Determine the common radius of the reverse curve if the central angles formed by the curves are 85 degrees and 98 degrees.	2	3	2	1,5
5.	Data for a three level section of a road is given below. Represent the data in a neat cross sectional diagram Station 1: Left +0.95 / 5.25; Centre +1.00 / 0; Right +2.55 / 7.50	2	3	3	1,2,5
6.	What is the limitation of Simpsons rule in determination of areas?	2	2	3	1
7.	A line 2200m long lying at an elevation of 500 m measures 10.52 cm on a vertical photograph. The focal length of the camera used is 20 cm. Determine the scale of the photograph for an area having an elevation of 1200m	2	3	4	1,5
8.	What is the principle of Differential GPS?	2	2	4	5
9.	Give examples of spatial data and non spatial data.	2	2	5	5
10.	What is atmospheric window?	2	2	5	5

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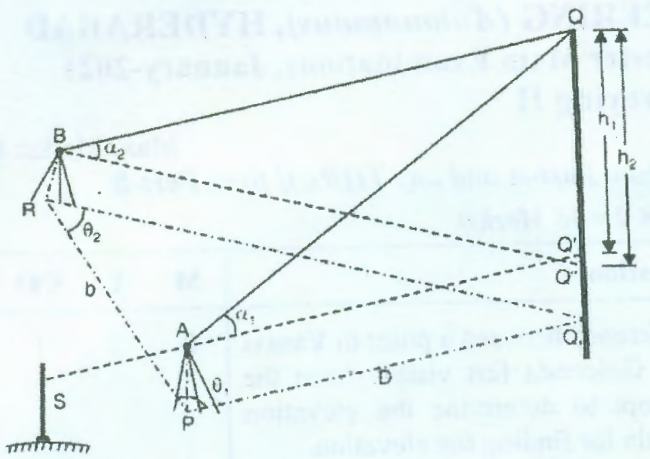
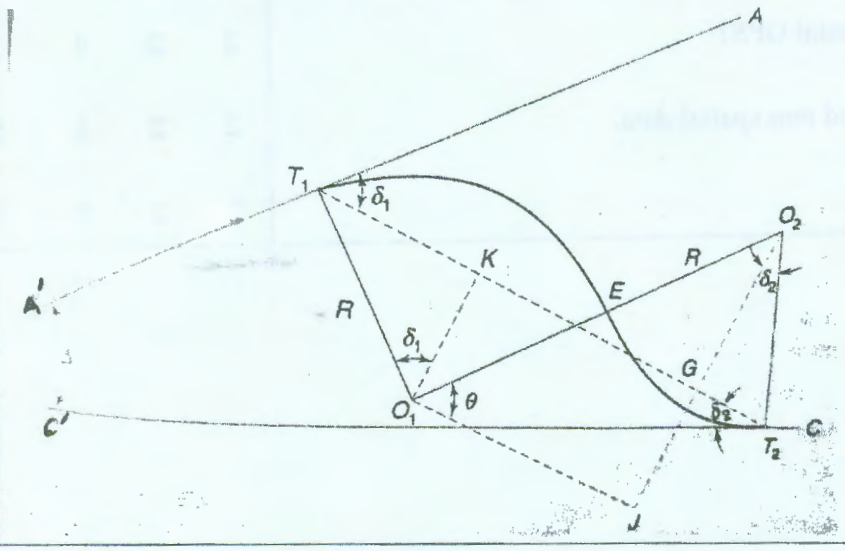
11.	 In the above figure, if RPQ_1 is an equilateral triangle and α_1 and α_2 are equal to 45^0 then the value of the difference between height of instrument axis at A and top of the hill Q will be equal to _____	2	3	1	1,5
12.	The chainage of a point of tangent is 1435 m. If a 20 m chain has been used to layout a simple circular curve of length 400m by the method of deflection distances, the offset required at last chord will be _____	2	3	2	1,2,5
	Part-B (3 × 14 = 42 Marks)				
13. a)	The top (Q) of a chimney was sighted from two stations P and R at very different levels, the stations P and R being in line with the top of chimney. The angle of elevation from P to the top of chimney was $36^012'$ and that from R to the top of chimney was $16^048'$. The angle of elevation from R to a vane 1 m above the foot of the staff held at P was $8^024'$. The heights of instrument at P and R were 1.85 m and 1.65 m respectively. The horizontal distance between P and R was 100m and RL of R was 248.260m. Find the RL of the top of the chimney and the horizontal distance from P to the chimney.	9	3	1	1,2,5
b)	Derive the equation for determination of elevation of a point using tangential method when one angle is angle of elevation and the other angle is angle of depression	5	2	1	1
14. a)	A reverse curve is to be run from a point T_1 and AA' to the point T_2 on CC'(Fig 1 below). Determine the common radius and the lengths of the two parts of the curve, given that T_1T_2 is 720 m and the angles A T_1T_2 and T_1T_2C' are $47^030'$ and $25^012'$ respectively	7	3	2	1,2
					

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b)	Two straights AI and BI meet at a chainage of 3450m. A right handed simple circular curve of 250 m radius joins them. The deflection angle between the two straights is 50 degrees. Tabulate the necessary data to layout the curve by Rankines method of deflection angles. Take the chord interval as 20 meters.	7	3	2	1,2,5
15. a)	The following are the data corresponding to an irregular cross section. The width of the road at formation level is 6m. The side slope is 1:1. The station are taken at 50 m interval	8	3	3	1,2,5

Station	Left		Center	Right	
1	+2.20	+1.75	+1.50	+4.75	+6.40
	5.50	3.00	0	5.25	7.30
2	+3.10	+2.20	+2.00	+5.25	+7.40
	5.25	3.00	0	6.00	8.50

Calculate the volume of earthwork.

b)	The latitudes and departures of the lines of a closed traverse are given below. Calculate the area of the traverse	6	3	3	1,2

Line	Northing	Southing	Easting	Westing
AB		157.2	154.8	
BC	210.5		52.5	
CD	175.4			98.3
DA		228.7		109.0

16. a)	Discuss the sources of error in GPS. What are the problems in using GPS data to determine positioning in India and how is it solved?	8	2	4	1,5
b)	What are UAV's? Present the classification of UAV's and its applications.	6	2	4	1,5
17. a)	What are the basic processes and elements involved in electromagnetic remote sensing of earth resources? Also, give the applications in remote sensing with respect to any specialization in civil engineering.	7	2	5	1,5
b)	What is the purpose of hydrographic surveying? What are the various instruments used in hydrographic surveying? List the various methods of locating sounding. Explain the methods of locating sounding by measurement from both shore and boat.	7	2	5	1
18. a)	If only an angle of elevation is made from P to the elevated point Q, how do you determine the elevation difference 'H' between P and Q. Derive the equation to determine H considering the necessary corrections?	6	2	1	1
b)	It is proposed to set out a curve of radius 100 m with pegs at approximately 10m centres. The deflection angle is 60 degrees. Draw up the data necessary for pegging out the curve by offset from long chord	8	3	2	1,2
19.	Answer any ***two*** of the following:				
a)	Procedure for determination of volumes using spot levels and contours	7	2	3	1,5
b)	GPS segments	7	2	4	1,5
c)	Applications of GIS in civil engineering	7	2	5	1,5,6

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	45
2	Knowledge on application and analysis (Level-3 & 4)	55
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	-

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