P P SAVANI UNIVERSITY

Third Semester of B. Tech. Examination

May 2019

SECV2041 Surveying

25.05.2019, Saturday **Time: 09:00 a.m. To 11:30 a.m.** **Maximum Marks: 60**

Instructions:

1. The question paper comprises of two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

SECTION – I

Q - 1	Answer the following.	**[05]**
(i)	Which plane table do you use in your laboratory?	
(ii)	3-point problem is used for (a) resection (b) orientation (c) both (a) and (b) (d) none	
(iii)	Inaccessible points may be located by the (a) Radiation (b) Intersection (c) Traversing (d) Resection	
(iv)	To measure a vertical angle, instrument should be levelled with respect to (a) level of foot-screws (b) horizontal bubble (c) altitude bubble (d) axis of the telescope	
(v)	What is the relationship between coefficient of curvature and coefficient of refraction?	
Q - 2 (a)	How is equipotential line established?	**[02]**
Q - 2 (b)	How do you check the verticality of a building under construction?	**[03]**

OR

Q - 2 (a)	What are permanent bench marks?	**[02]**
Q - 2 (b)	Briefly explain the procedure to set out centre line of a road using control stations	**[03]**
Q - 3 (a)	What are the advantages and disadvantages of plane table surveying?	**[05]**

OR

Q - 3 (a)	Explain 2-point problem of plane table surveying.	**[05]**
Q - 3 (b)	Prove that error due to eccentricity of Verniers is eliminated by taking both face observations.	**[05]**

OR

Q - 3 (b)	What are the miscellaneous operations generally performed with a theodolite?	**[05]**
Q - 4 (a)	What are fundamental lines and their desired relations in a theodolite?	**[05]**
Q - 4 (b)	Derive an equation to find R.L. of an object when its base is accessible, and the instrument is in same vertical plane.	**[05]**

OR

Q - 4 (b)	Derive an equation for height of an object when base line is horizontal but not in line with the object.	**[05]**

SECTION – II

Q - 1	Answer the following.	**[05]**
(i)	What is the necessary condition to conduct chain or tape surveying?	
(ii)	What is meant by a contour?	
(iii)	Prove that central angle is equal to deflection angle.	
(iv)	What is anallactic lens? Why is it fitted?	
(v)	Find out the total number of turns a micrometer screw had to be moved in subtence method for a staff intercept of 2 m with staff held vertical at a distance of 100 m from the instrument. The vertical angle is 6°00′ and constants of instrument were 1000 and 0.5.	

Q - 2 (a) What is tacheometric surveying? What are the purposes of tacheometric surveying? **[05]**

Q - 2 (b) A compound curve is made up of two arcs of 430 m and 570m. The deflection angle of combined curve is 104° and that of first arc of radius 430 m is 59°. The Chainage of first tangent point is 890.55 m. Find the Chainage of point of intersection, common tangent point and forward tangent point. **[05]**

OR

Q - 2 (b) A compound curve consisting of two simple circular curves of radii 350 m and 500 m is to be laid out between two straights. The angles of intersection between tangents and two straights are 25° and 55°. Calculate various elements of compound curve. **[05]**

Q - 3 (a) Derive equations for elements of simple circular curve. **[05]**

Q - 3 (b) Two straights AI and BI meet at a chainage of 3450 m. A right-handed simple circular curve of 250 m radius joins them. The deflection angle between the two straights is 50°. Tabulate the necessary data to layout the curve by Rankine's method of deflection angles. Take chord interval as 20m. **[05]**

Q - 4 The following perpendicular offsets were taken from a survey line. Calculate the area between the survey line and boundary line using Simpson's Rule & Trapezoidal Rule. **[05]**

Chainage(m)	100	115	130	145	160	170	180	200	220	240
Offset (m)	8.6	9.5	11.7	13.8	11.6	10.5	9.3	8.9	7.4	5.4

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