P P SAVANI UNIVERSITY

Third Semester of B. Tech. Examination

December 2022

SECV2041 Surveying

07.12.2022, Wednesday **Time: 10:00 a.m. To 12:30 p.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	Short Question **(Any Five)**	**[05]**	**CO**	**BTL**
(i)	What is setting out?		**1**	**2**
(ii)	What is Swinging of telescope		**4**	**2**
(iii)	Define normal telescope		**4**	**2**
(iv)	What is Face right of telescope		**4**	**2**
(v)	What is Plain alidade		**1**	**2**
(vi)	What is trigonometric levelling?		**1**	**2**
(vii)	Define great triangle		**1**	**2**
Q - 2 (a)	Explain the temporary adjustment of theodolite	**[05]**	**4**	**3**
Q - 2 (b)	Illustrate closing error of theodolite.	**[05]**	**4**	**1**
	OR			
Q - 2 (a)	State the procedure involved in bringing the bubble in the centre in theodolite.	**[05]**	**4**	**4**
Q - 2 (b)	Describe how you would measure vertical angle using theodolite.	**[05]**	**4**	**3**
Q - 3 (a)	Explain Intersection and resection method of Plane Table surveying.	**[05]**	**1**	**3**
Q - 3 (b)	Elaborate setting up the plane table.	**[05]**	**1**	**3**
	OR			
Q - 3 (a)	Describe suitability of Radiation, Traverse, Intersection and Resection method.	**[05]**	**1**	**1**
Q - 3 (b)	Write instrument, Plotting and personal errors in plane table surveying.	**[05]**	**1**	**1**
Q - 4	Attempt **any one.**	**[05]**		
(i)	Derive: base of the object is assessable in trigonometric levelling		**1**	**2**
(ii)	Explain setting out of center line of tunnel.		**1**	**6**

SECTION – II

Q - 1	Short Question **(Any Five)**	**[05]**		
(i)	Where are reverse curves are provided?		**2**	**2**
(ii)	Where are simple curves are provided?		**2**	**2**
(iii)	Define simple curve.		**2**	**2**
(iv)	Write one main function of superelevation?		**2**	**2**
(v)	List out different types of vertical curves.		**2**	**1**
(vi)	List out different types of Horizontal curves.		**2**	**1**
(vii)	Define Trapezoidal's rule.		**2**	**1**
Q - 2 (a)	6. The following particulars were noted while measuring the area of a figure with Planimeter. (a) IR and FR were 8.652 and 6.798 respectively. (b) The tracing arm was set to the normal scale. (c) The zero of the dial passed the index mark once in the	**[05]**	**1**	**5**

anticlockwise direction. (d) Constant C = 20 (e) Scale of the map is 1 cm=10m (f) the anchor point was inside the figure. Calculate the area of the figure

Q - 2 (b) Determine the values of stadia constants from the following observations **[05] 3 4**

Instrument station	Staff reading on	Distance (m)	Stadia readings	
			Lower	Upper
O	A	150	1.255	2.750
	B	200	1.000	3.000
	C	250	0.750	3.255

OR

Q - 2 (a) Draw a schematic diagram of various methods of computation of area. **[05] 2 2**

Q - 2 (b) What is the difference between theodolite and Tacheometer? **[05] 3 2**

Q - 3 (a) What are the requirements and function of Transition curve? **[05] 3 3**

Q - 3 (b) Describe elements of reverse curve with diagram. **[05] 2 1**

OR

Q - 3 (a) Calculate the sectional area of an embankment 10 m wide, with a side slope of 2:1. The ground is level in a transverse direction to the center line. The central height of the embankment is 2.5 m. **[05] 4 6**

Q - 3 (b) Differentiate between Trapezoidal and Simpson's rule. **[05] 4 2**

Q - 4 Attempt **any one** **[05]**

(i) The following offsets were taken from a chain line to an irregular boundary line at an interval of 10 m: **4 5**

0, 2.5, 3.5, 5.0, 4.6, 3.2, 0 m

Compute the area between the chain line, the irregular boundary line and the end offsets by:

a. The Trapezoidal rule

b. The Simpson's rule

(ii) Explain the theory of Stadia Tacheometry. **3 2**

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CO : Course Outcome Number BTL : Blooms Taxonomy Level

Level of Bloom's Revised Taxonomy in Assessment

1: Remember	2: Understand	3: Apply
4: Analyze	5: Evaluate	6: Create