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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Fourth Semester, B.E. - Civil Engineering

Semester End Examination; July / August - 2022

Advanced Surveying

Time: 3 hrs *Max. Marks: 100*

Course Outcome

The Students will be able to:

CO1: Apply the knowledge of basic surveying to determine distance & elevation by trigonometric levelling

CO2: Analyze different curves for roads and railways

CO3: Interpret surveying data to design curves

CO4: Understand the principles and techniques of modern surveying equipments and their applications

Note: *i) **PART-A** is compulsory. One question from each unit for maximum of 2 marks.*
*ii) **PART-B** Answer any **TWO** sub questions (from a, b, c) from each unit for a Maximum of 18 marks.*

Q. No.	Questions	Marks	BLs	COs	POs
	I: PART - A	**10**			
I a.	Explain the term "Base is inaccessible" in trigonometric levelling.	2	L1	CO1	PO1
b.	What is a Curve? Where and why do we provide curves?	2	L1	CO1	PO1
c.	What is a Transition Curve? List the two functions of a Transition Curve.	2	L1	CO2	PO2
d.	Define "Atmospheric windows" in Remote sensing?	2	L1	CO1	PO1
e.	Define the terms: “Zenith and Nadir" in Astronomical survey.	2	L1	CO3	PO1
	II: PART - B	**90**			
	UNIT - I	**18**			
1 a.	Derive the formula for calculating the elevation of the top of the object when the base is inaccessible, instrument stations in the same vertical plane on the elevated object.	9	L6	CO1	PO12
b.	Find the reduced level of a church spire 'C' from the following observations taken from two stations A and B, 50 m apart. Angle BAC = 60° and Angle ABC = 50° Angle of elevation from A to top of spire = 30º Angle of elevation from B to top of spire = 29º Staff reading from A on BM of RL 20 m = 2.500 m Staff reading from B to same BM = 0.500 m	9	L3	CO1	PO12
c.	Explain working principles of Total station and its salient features.	9	L2	CO4	PO12
	UNIT - II	**18**			
2 a.	Explain the method of setting out of a simple curve by "Offsets from chords produced method".	9	L2	CO2	PO5

Contd…2

b.	Two tangents intersect at the chainage 1190 m, the deflection angle being 36°. Calculate all the data necessary for setting out a circular curve with radius of 300 m by deflection angle method. The peg interval is 30 m.	9	L2	CO2	PO5
c.	A Compound railway curve ABC is to have the radius of arc AB, 500 m and that of BC, 400 m. The intersection point V of the straights is located and intersection angle is observed to be 136°. If the arc AB is to have a length of 180 m. Calculate the distances VA and VC.	9	L3	CO2	PO5
	UNIT - III	**18**			
3 a.	Enumerate the characteristics of Transition Curve. List the various methods computing its length.	9	L4	CO3	PO3
b.	Two parallel railway lines are to be connected by a reverse curve. If the lines are 10m apart, and the maximum distance between tangent points measured parallel to the straight is 50m. find the radius R. if $R_1 = R_2 = R$.	9	L4	CO3	PO3
c.	Define vertical curve. Explain the various types of vertical curve with a neat sketch.	9	L4	CO3	PO3
	UNIT - IV	**18**			
4 a.	Explain the various segments of GPS.	9	L2	CO4	PO4
b.	Explain the electromagnetic energy and electromagnetic spectrum in remote Sensing.	9	L2	CO4	PO4
c.	Explain the applications of Remote sensing.	9	L2	CO4	PO4
	UNIT - V	**18**			
5 a.	Enumerate the areas of GIS applications.	9	L2	CO4	PO4
b.	Enumerate the differences between a topographic map and a thematic map.	9	L3	CO4	PO4
c.	Explain the advantages of GIS.	9	L3	CO4	PO4

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