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Name.....

Reg. No.....

THIRD SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION DECEMBER 2010

CE 09 305/PTCE 09 304—SURVEYING—I

Time : Three Hours

Maximum : 70 Marks

Part A

I. (a) What is the difference between a plan and a map ?

(b) What is resection method in plane table surveying and how is it different from other methods ?

(c) Distinguish between Datum and Level surface.

(d) What is the method adopted to determine high accuracy horizontal angle measurement using a theodolite ?

(e) Distinguish between Compound curve and Reverse curve.

(5 × 2 = 10 marks)

Part B

II. (a) Describe, with a neat sketch, how it is possible to measure the distance between two points A and B using chain/tape, if the region between A and B is obstructed by intervening high ground or small hillocks. Mention the method used.

(b) The bearing of the side AB of a regular pentagon ABCDE was found to be 54°. Compute the bearings of the remaining sides if the pentagon is run clockwise.

(c) Describe the Trial and Error method for determining the position of the instrument station.

(d) The following staff readings were observed in sequence : 1.324, 2.605, 1.385, 0.638, 1.655, 1.085, 2.125 and 1.555. The instrument was shifted after the third and sixth readings. The third reading was taken to an arbitrary bench mark of elevation 75,000. Find the reduced levels of all the other points, using Height of collimation method.

(e) Explain the importance of Traversing in surveying and how is it done using a theodolite.

(f) What are the elements of a simple curve, that are necessary for setting it on the ground ? Explain with a suitable diagram.

(4 × 5 = 20 marks)

Part C

III. (a) Explain the likely errors in chain surveying and the precautions that should be taken to eliminate them.

Or

(b) Explain at least *one* method each to continue and measure the distance between points on either side of the obstacle in the case of (a) Pond and (b) River.

(10 marks)

Turn over

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IV. (a) The following bearings were observed in traversing, with a compass in an area where local attraction was suspected. Find the amounts of local attraction at different stations and correct the bearings of the lines.

Line		*F.B.*	*B.B.*
AB	...	80°30'	260°30'
BC	...	351°15'	173°00'
CD	...	32°15'	208°00'
DE	...	106°15'	287°45'
EF	...	99°00'	280°00'
FG	...	209°30'	29°30'

Or

(b) How do you obtain the position of the station occupied by plane table, given the plotted position of two points ? Describe the procedure in detail.

(10 marks)

V. (a) A page of an old level had been damaged by white ants and the readings marked " × " are missing. Find the missing readings with the help of available readings.

B.S	I.S	F.S	H.I	R.L	Remarks
×			×	209.510	B.M
	1.675			×	
	×			210.425	
	3.355			209.080	
0.840		×	209.520	×	C.P
	×			208.275	
	×			210.635	Underside of bridge girder
×		2.630	×	×	×
	×			206.040	
	1.920			205.895	
		×		205.690	

Or

(b) Explain the direct method of contouring. Explain the advantages and disadvantages of these methods.

(10 marks)

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VI. (a) Find the lengths of lines RS and ST of a traverse PQRSTP from the data given below :

Line	PQ	QR	RS	ST	TP
Length (m)	201.54	189.68	?	?	256.83
Bearing	62°42'	154°54'	202°32'	281°44'	22°

Or

(b) Two straight roads intersect at an angle of 60° 30' at chainage 3030m. The maximum speed of vehicles is 120 kmph. The centrifugal ratio is ¼ and the rate of change of radial acceleration is to be 0.2 m/sec^3. Find the chainages of the points at the beginning and the end of the transition curves ; and the junctions of transition curve and circular curve. Consider the transition curve to be True spiral.

(10 marks)

(4 × 10 = 40 marks)

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