END SEMESTER/ RETEST EXAMINATION, 2020
Semester: 3rd

Subject code: CT-302

Subject: Surveying-I

Full Marks: 70 = (part A-25 + Part B-45)

Duration: 3 hours

Instructions:

1. *Questions on Part A are compulsory*
2. *Answer any five questions from Part B*

PART-A MARK-25		
Questions no.	Questions	Marks
Question 1	Fill in the blanks:	1x10=10
1(a)	The difference of true meridian and magnetic meridian is called _____.	
1(b)	In levelling the first reading is taken on a levelling staff kept on a _____.	
1(c)	Bearing of a line measured with reference to a magnetic meridian is called _____.	
1(d)	A closed contour lines with one or more higher ones outside it represents a _____.	
1(e)	An imaginary line joining points of equal elevations on earth surface is called _____.	
1(f)	The height of instrument is obtained by adding _____ and _____.	
1(g)	Elimination of parallax is done by focussing the _____ and _____.	
1(h)	The process of setting up the instrument exactly over a point on the ground is called _____.	
1(i)	The two methods of booking and reducing the levels are _____ and _____.	
1(j)	The back bearing of line AB is 164° 45′, its fore bearing is _____.	
Question no.2	Write true or false:	1x10=10
2(a)	Chain surveying can also be used for accurate angular measurements.	
2(b)	In prismatic compass the south direction is marked with 0°.	
2(c)	Parallax is the phenomenon in which the line of sight is parallel with the object.	
2(d)	Local attraction can disturb the magnetic needle from pointing towards north direction.	
2(e)	Focussing the eye-piece of a level makes the cross-hairs clear and distinct.	
2(f)	Surveyor's compass gives the reading in reduced bearing system.	

2(g)	In reduced bearing system, difference between fore bearing and back bearing is always 180°.	
2(h)	In levelling back sight is always taken at a point of known elevation.	
2(i)	In levelling, a station is a point where the level is set up.	
2(j)	Mean sea level cannot be considered as a datum.	
Question no. 3	**Choose the correct answer**	1x5=5
Q 3(a)	If the fore bearing of a line AB is N 67° 55′ 30″ W, its back bearing is	
i) N 247° 55′ 3″ Wii) N 247° 55′ 30″ E iii) S 67° 55′ 30″ W iv) S 67° 55′ 30″ E		
3(b)	If the magnetic bearing and true bearing of a line AB is 52° 35′ and 58° 40′ respectively, the magnetic declination is?	
i) 6° 2′ 0″Eastii)6° 5′ 0″ West iii) 6° 5′ 0″Eastiv) 6° 5′ 30″ West		
3(c)	A 30 m chain was used to measure a line AB which was found to be 242 metres long. The chain was found to be 20 cm too small. What is the actual length of the line AB?	
i) 240.20 mii) 240.39 m iii) 240.29 miv) 240.30 m		
3(d)	A reading is taken on a staff held on a B.M. The staff reading is recorded as 1.250 m and height of instrument is 123.456 m. What is the elevation of B.M.?	
i) 124.706 mii) 124.704 m iii) 122.205 miv) 122.206 m		
3(e)	The advantage of working from whole to part is	
i) requires less timeii) less observations are needed iii) plotting of maps are easier iv) minimise the accumulation of errors		

PART-B, MARK-45		
Question no. 4		
Q4(a)	Differentiate between contour interval and contour gradient.	4
Q4(b)	What is parallax? How will you eliminate parallax in a level?	5
Question no.5		
Q5(a)	Differentiate between Topographical and Cadastral surveying.	4
Q5(b)	A closed traverse ABCDA is formed in the form of a square in anti-clockwise direction. The fore bearings ofline AB is 152°30′, compute the bearings of other lines.	5
Question no. 6		
Q6(a)	Differentiate between magnetic bearing and arbitrary bearing.	4
Q6(b)	In levelling between two points A and B on opposite banks of a river, the level was set up near A, and the staff readings on A and B were 2.214 and 2.987 m respectively. The level was then moved and set up near B and the respective readings on A and B were 1.645 and 2.587 m. What is the true difference of level between A and B?	5
Question no. 7		
Q7(a)	In a closed traverse, the fore bearings of the lines AB, BC, CD and	5

<table>
<tr><td></td><td>DA are 52°30′, 132°20′, 250°30′ and 320°35′ respectively. Find the included angles A, B, C and D.</td><td></td></tr>
<tr><td>Q7(b)</td><td>Differentiate between WCB and RB system.</td><td>4</td></tr>
<tr><td>Question no. 8</td><td></td><td></td></tr>
<tr><td>Q8(a)</td><td>Explain the different sources of error in compass survey.</td><td>5</td></tr>
<tr><td>Q8(b)</td><td>Differentiate between plane and geodetic surveying.</td><td>4</td></tr>
<tr><td>Question no. 9</td><td>The following bearings were taken in running a compass
<table>
<tr><th>Lines</th><th>FB</th><th>BB</th></tr>
<tr><td>AB</td><td>124°30′</td><td>304°30′</td></tr>
<tr><td>BC</td><td>68°15′</td><td>246°0′</td></tr>
<tr><td>CD</td><td>310°30′</td><td>135°15′</td></tr>
<tr><td>DA</td><td>200°15′</td><td>17°45′</td></tr>
</table>
At what stations do you suspect local attraction? Find the correct bearings of the lines and also compute the included angles.</td><td>9</td></tr>
<tr><td>Question no. 10</td><td>The following consecutive readings were taken with a level:
5.23, 6.24, 5.48, 8.16, 9.84, 6.54, 7.23, 8.54, 9.82, 11.20
The level was shifted after 3rd, 5th and 9th readings. The R.L. of the bench mark was 150.456 m.
(a) Enter the readings in a level field book-form and reduce the levels by height of instrument method.
(b) Apply the arithmetic check.</td><td>9</td></tr>
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