DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination – Winter 2018

Course: B. Tech in Civil Engineering **Sem: III**

Subject Name: Surveying-I **Subject Code: BTCVC304**

Max Marks: 60 **Date: 07/12/2018** **Duration: 3 Hr.**

Instructions to the Students:

1. *Solve **ANY FIVE** questions out of the following.*
2. *The level question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	Give the conventional symbols for the following:	**CO2**	**06**
	1) North line , Chain line 2) Main station, Traverse station 3) River, Canal 4) Road Bridge, Boundary line 5) Jungle, Wire fencing 6) Railway line (double), Open well		
B)	What is Well-Conditioned triangle? Explain clearly why it is preferred instead of an Ill-conditioned triangle.	**CO1**	**06**
C)	What is Cross Staff? List down the types of Cross staff. Describe the construction and use of an Open Cross staff with a sketch.	**CO1**	**06**
Q.2	**Solve Any Two of the following.**		**12**
A)	i) The fore bearings of the lines AB, BC, CD, DE are $45^{0}30'$, $120^{0}15'$, $200^{0}30'$, $280^{0}45'$ respectively. Find angles $<B$, $<C$, $<D$. ii) A traverse is done by three stations A, B and C in clockwise order in the form of equilateral triangle. If the bearing of AB is $80^{0}30'$, find the bearings of the other sides.	**CO1**	**06**
B)	The following are the observed bearings of the lines of a traverse ABCDEA with a compass in a place where local attraction was suspected. Find correct bearings of the lines by calculating interior angles.	**CO1**	**06**

Line	FB	BB
AB	$191^{0}00'$	$13^{0}00'$
BC	$39^{0}30'$	$222^{0}30'$
CD	$22^{0}15'$	$200^{0}30'$
DE	$242^{0}45'$	$62^{0}45'$
EA	$330^{0}15'$	$147^{0}00'$

C) Followings are the bearings observed while traversing with a compass, an area where local attraction was suspected. Find the correct bearings of the lines and also the true bearings, if the magnetic declination is 09^0 W. CO1 06

Line	FB	BB
AB	$60^0 00'$	$240^0 00'$
BC	$139^0 30'$	$317^0 00'$
CD	$215^0 15'$	$36^0 30'$
DE	$208^0 00'$	$29^0 00'$
EA	$318^0 30'$	$138^0 45'$

Q. 3 Solve Any One of the following. 12

A) Write short note on: CO1 12

i) Reconnaissance Survey
ii) Preliminary Survey
iii) Location Survey
iv) Layout
v) Difference between Summit curve & Valley curve
vi) Factors responsible for selection of good alignment for a road

B) Explain: CO1 12

i) Curve ranging
ii) Definition of curve
iii) Objectives behind provision of curves
iv) Construction survey for Waterways

Q.4 Solve Any Two of the following. 12

A) What is the Principle of Plane Tabling? Explain all accessories of Plane table with neat figures. CO2 06

B) List down the methods of plane tabling. Explain procedure of any two methods with neat figures. CO2 06

C) Write down the advantages and disadvantages of plane tabling. CO2 06

Q. 5 Solve Any Two of the following. 12

A) i) Draw neat labeled diagram of Dumpy level. CO3 06

ii) Write down the object and uses of leveling.

iii) Write down definitions of:- 1) Line of Collimation 2) Change Point

B) i) An observer standing on the deck of a ship sees a light house. The top of light house is 35m above the sea level and the height of the observer is 6m above sea level. Find the distance between observer and light house. CO1, CO3 06

ii) In leveling between two points A and B on the opposite sides of a river, the level was set up near A and the staff readings on A and B were 2.645m and 3.230m respectively. The level was then moved and set up near B, the respective readings on A and B was 1.085m and 1.665m. Find the true difference of level between A and B

iii) A bench mark with reduced level 155.305m has been established at the floor of a room. It is required to find out the RL of the underside of the roof(R) of the room using spirit leveling. The back sight to the bench mark has been observed as 0.575m (staff held inverted). Calculate the RL(m) of R. CO3 06

C) Define the term contour line. Explain the characteristics of contour lines with neat figures. 12

Q.6 Solve Any One of the following. 12

A) i) Draw neat labeled diagram of Transit Theodolite.

ii) A flag post of height 2m was erected on top of a building. Find the RL of the top of the flag post, if the vertical angles to the bottom and top of it were measured using Theodolite as 7^0 and 10^0 respectively. A staff reading of 1.245m was taken over a bench mark of +150.000m with vertical angle of $0^0 0' 0''$.

iii) Explain Balancing of traverse and rules of distributing errors. 12

B) The length and bearing of lines of a closed traverse ABCDA are as under.

Line	Length	WCB
AB	250	130^0
BC	600	42^0
CD	100	317^0
DA	635.46	$235^0 40'$

Calculate latitude and departure. Apply correction to latitude and departure. Find out closing error. Use Bowditch rule.

*** End ***