Basavarajeswari Group of Institutions

BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT

(Autonomous Institute under Visvesvaraya Technological University, Belagavi)

USN											Course Code	2	1	C	V	3	2

Third Semester B.E. Degree Examinations, April/May 2023

GEODETIC ENGINEERING

Duration: 3 hrs **Max. Marks: 100**

Note: ***1. Answer any* FIVE *full questions, choosing* ONE *full question from each module.***
2. Missing data, if any, may be suitably assumed

Q. No		*Question*	*Marks*	*(RBTL:CO:PI)*
		MODULE – 1		
1.	**a.**	Define surveying? List the uses of surveying.	**06**	(2 :1 : 1.4.1)
	b.	What is error? Explain the sources of error.	**06**	(2 :1 : 1.2.1)
	c.	Give the classification of surveying based on the instruments used.	**08**	(1 :1 : 1.2.1)
		OR		
2.	**a.**	What is bearing, Explain the types of bearing.	**08**	(2 :1 : 1.3.1)
	b.	The following bearings were observed in running a closed traverse.	**12**	(3 :1 : 2.2.4)

Line	F.B	B.B
AB	75°5'	254°20'
BC	115°20'	296°35'
CD	165°35'	345°35'
DE	224°50'	44°5'
EA	304°50'	125°5'

At what stations do you suspect the local attraction? Determine the correct magnetic bearings. If declination was 5°10'E, what are the true bearings?

		MODULE – 2		
3.	**a.**	Explain Reciprocal Levelling with neat sketch.	**08**	(2 :2 : 1.4.1)
	b.	Define the terms: Back Sight, Fore sight, Change point and Reduced level	**04**	(3 :2 : 2.2.4)
	c.	The following readings were taken with a level and 5m levelling staff on continuously sloping ground at common interval of 20m:0.385; 1.030; 1.925; 2.825; 3.730; 4.685; 0.625; 2.005; 3.110; 4.485. The RL of 1st point was 208.125m. Calculate the RL of all points by Rise and Fall method.	**08**	(3 :2 : 2.2.4)
		OR		
4.	**a.**	What are the characteristics of contour? Explain with sketches.	**08**	(1 :2 : 1.4.1)
	b.	A railway embankment 400 m long is 12 m wide at the formation level and has the side slope 2 to 1. The ground levels at every 100 m along the centre lines are as under: The formation level at zero chainage is 207 m.	**12**	(3 :2 : 2.2.4)

Distance	0	100	200	300	400
R.L	204.8	206.2	207.5	207.2	208.3

The embankment has a rising gradient of 1 in 100. The ground is level across the centre line. Calculate the volume of earthwork.

Note: (**RBTL - Revised Bloom's Taxonomy Level: CO - Course Outcome: PI - Performance Indicator)**

MODULE – 3

5.	**a.**	Explain the temporary adjustments of theodolite.	**08**	(1 :3 : 1.3.1)
	b.	Explain the reiteration method of measuring the horizontal angle using transit theodolite with neat tabular column.	**08**	(2 :3 : 1.4.1)
	c.	Define the following terms with respect to theodolite: Face left observation; The line of sight; Swing; Changing face:	**04**	(1 :3 : 1.3.1)
		OR		
6.	**a.**	Derive the expressions for the horizontal distance, vertical distance and the elevation of elevated object, when the base is accessible and instrument stations are not in the same vertical plane with the object.	**12**	(3 :3 : 1.3.1)
	b.	In order to ascertain the elevation of the top Q of the signal on a hill, observations were made from two instrument stations P and R at a horizontal distance 100 m apart, the stations P and R being in line with Q. The angles of elevation of Q at P and R were 28°42' and 18°6' respectively. The staff readings upon the bench mark of elevation 287.28 m were respectively 2.870 and 3.750 when the instrument was at P and at R, the telescope being horizontal. Determine the elevation of the foot of the signal if the height of the signal above its base is 3 metres.	**08**	(3 :3 : 2.2.4)

MODULE – 4

7.	**a.**	List the different methods of setting out simple circular curve. Explain the linear method of setting out simple curve by the method of offset from chord produced.	**10**	(2 :4 : 1.3.1)
	b.	An arc of 300m of 2° curve connects two straights. Calculate 1) Radius of Curve 2) Central Angle 3) Tangent Length 4) Long Chord 5) Mid ordinate.	**10**	(3 :4 : 2.2.4)
		OR		
8.	**a.**	Explain the different methods of setting compound curve.	**08**	(3 :4 : 2.2.4)
	b.	Two straight lines AB and BC are intersected by a line EF. The angles BEF and BFE are 40°30' and 36°24' respectively. The radius of the first arc is 600 m and the second arc is 800 m. If the chainage of PI is 8248.1 m, find the chainage of the tangent points and the point of compound curvature.	**12**	(3 :4 : 2.2.4)

MODULE – 5

9.	**a.**	Derive an expression for relief displacement on a vertical photograph. List the characteristics of relief displacement.	**12**	(3 :5 : 1.3.1)
	b.	Write short notes on LIDAR and EDM.	**08**	(2 :5 : 1.4.1)
		OR		
10.	**a.**	Explain the repetition method of measuring the horizontal angle using transit theodolite with neat tabular column. List the advantages.	**10**	(2 :5 : 1.4.1)
	b.	What is Total Station? List the advantages and disadvantages of Total Station.	**05**	(3 :5 : 2.2.4)
	c.	Explain the EMR interaction with earth Surface features.	**05**	(2 :5 : 1.4.1)

** ** **

Note: (**RBTL - Revised Bloom's Taxonomy Level: CO - Course Outcome: PI - Performance Indicator)**