

Basavarajeswari Group of Institutions  
**BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT**  
 (Autonomous Institute under Visvesvaraya Technological University, Belagavi)

USN 

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Course Code 

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Third Semester B.E. Degree Examinations, September/October 2024

**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*

<u>Q. No</u>	<u>Question</u>	<u>Marks</u>	<u>(RBTL:CO:PI)</u>																		
<b>MODULE – 1</b>																					
1.	a. Define surveying? List the uses of surveying.	<b>05</b>	(2 : 1 : 1.4.1)																		
	b. Explain the basic principles of surveying with neat sketches.	<b>05</b>	(2 : 1 : 1.2.1)																		
	c. Give the broad classification of surveying.	<b>10</b>	(1 : 1 : 1.2.1)																		
<b>OR</b>																					
2.	a. What is bench mark? Explain the types of bench mark and significances.	<b>08</b>	(2 : 1 : 1.3.1)																		
	b. The following bearings were observed in running a closed traverse.	<b>12</b>	(3 : 1 : 2.2.4)																		
	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="padding: 5px;">Line</th> <th style="padding: 5px;">F.B</th> <th style="padding: 5px;">B.B</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">AB</td> <td style="padding: 5px;">75°5'</td> <td style="padding: 5px;">254°20'</td> </tr> <tr> <td style="padding: 5px;">BC</td> <td style="padding: 5px;">115°20'</td> <td style="padding: 5px;">296°35'</td> </tr> <tr> <td style="padding: 5px;">CD</td> <td style="padding: 5px;">165°35'</td> <td style="padding: 5px;">345°35'</td> </tr> <tr> <td style="padding: 5px;">DE</td> <td style="padding: 5px;">224°50'</td> <td style="padding: 5px;">44°5'</td> </tr> <tr> <td style="padding: 5px;">EA</td> <td style="padding: 5px;">304°50'</td> <td style="padding: 5px;">125°5'</td> </tr> </tbody> </table>	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'		
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	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?																				
<b>MODULE – 2</b>																					
3.	a. The following staff readings were observed successively with a level, the instrument having been moved after 3 <sup>rd</sup> , 6 <sup>th</sup> and 8 <sup>th</sup> readings 2.228; 1.606; 0.988; 2.090; 2.864; 1.262; 0.602; 1.982; 1.044; 2.684 metres. Enter the above readings in a page of a level book and calculate the R.L of points if the first reading was taken with a staff held on a B.M of 432.384 m. Also apply the check.	<b>08</b>	(3 : 2 : 2.2.4)																		
	b. Define the terms:	<b>04</b>	(1 : 2 : 1.4.1)																		
	(i) Back Sight (ii) Fore sight (iii) Change point (iv) Reduced level																				
	c. Explain the temporary adjustments of a dumpy level.	<b>08</b>	(2 : 1 : 1.3.1)																		
<b>OR</b>																					
4.	a. What are the characteristics of contour? Explain with sketches.	<b>08</b>	(1 : 2 : 1.4.1)																		
	b. Discuss the methods for determining areas and volumes by any two methods.	<b>08</b>	(2 : 1 : 1.3.1)																		
	c. Write short notes on contour interval and contour gradient.	<b>04</b>	(1 : 2 : 1.4.1)																		

**MODULE – 3**

5. a. List the applications of theodolite. **06** (1 :3 : 1.3.1)  
b. Explain the reiteration method of measuring the horizontal angle using transit theodolite with neat tabular column and necessary sketch. **10** (2 :3 : 1.4.1)  
c. Define the following terms with respect to theodolite: **04** (1 :3 : 1.3.1)  
(i) Face left observation (ii) The line of sight (iii) Swing (iv) Changing face

**OR**

6. a. Derive the expressions for the horizontal distance, vertical distance and the elevation of elevated object, when the base is inaccessible and instrument stations are in the same vertical plane with the object. **10** (3 :3 : 1.3.1)  
b. A theodolite was setup at a distance of 500m from a tower and the angle of elevation to the top was  $9^{\circ}39'$  while the angle of depression to the foot of the tower was  $2^{\circ}52'$ . The staffs reading on a bench mark of R.L 86.600 was 2.480m. What is the height of tower and R.L of its top and its foot? **10** (3 :3 : 2.2.4)

**MODULE – 4**

7. a. Calculate the elements of a simple circular curve from the following data: **10** (3 :4 : 2.2.4)  
Radius of curve is 300m; angle of intersection  $110^{\circ}$ ; Chainage of P.I 2015.45m.  
b. 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)

**OR**

8. a. Calculate the ordinates at 7.5 m interval for a circular curve given that the length of long chord is 60 m and radius 180 m and prepare the curve table. **10** (2 :4 : 1.3.1)  
b. With neat sketch, explain various elements of a compound curve. **10** (2 :4 : 1.3.1)

**MODULE – 5**

9. a. Explain the repetition method of measuring the horizontal angle using transit theodolite with neat tabular column. List the advantages. **10** (3 :5 : 1.3.1)  
b. Explain the components of GIS with neat figure. **10** (2 :5 : 1.4.1)

**OR**

10. a. What is remote sensing? Explain the idealized remote sensing system and list the applications. **09** (2 :5 : 1.4.1)  
b. What is photogrammetric surveying? List the advantages and disadvantages of total station over other instruments. **04** (3 :5 : 2.2.4)  
c. Write short notes on EDM and Drones. **07** (2 :5 : 1.4.1)

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