

II B. TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, MARCH - 2022
SURVEYING
(Civil Engineering)

Time : 3 Hours

Max. Marks : 60

Note : Answer ONE question from each unit (5 × 12 = 60 Marks)

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**UNIT-I**

1. a) What are the principles of surveying? Explain them briefly. [6M]  
 b) Explain the working and use of the following: [6M]  
 (i) Open cross staff (ii) Optical square and Prism square  
 (OR)

2. a) Explain the various sources and nature of errors in chain survey. [5M]  
 b) A line measured with steel tape which was exactly 30m at a temperature of 24°C and a pull of 12Kg. The measured length was 1580m. The temperature during measurement was 30°C and a pull applied was 15Kg. Find the true length of the line, if the cross sectional area of the tape was 0.025 cm<sup>2</sup>. The coefficient of thermal expansion of the material of the tape per °C is 3.5×10<sup>-6</sup> and the modulus of elasticity of the material of the tape is 2.1×10<sup>6</sup> kg/cm<sup>2</sup>. [7M]

**UNIT-II**

3. a) Differentiate between prismatic compass and surveyor's compass. [7M]  
 b) Convert the whole circle bearing into reduced bearing: 50°, 176°, 210°, 232°, 310°. [5M]

(OR)

4. a) The following bearings were observed with a compass: [7M]

| Line | F.B      | B.B      |
|------|----------|----------|
| AB   | S52°30'E | N52°30'W |
| BC   | S60°00'E | N60°40'W |
| CD   | N05°20'E | S07°30'W |
| DA   | S85°00'W | N83°30'E |

- At what stations do you suspect local attraction? Find the corrected bearings.  
 b) What is meant by balancing a traverse? State the various rules used to do this. [5M]

**UNIT-III**

5. a) What are the different types of leveling staffs? Explain them [5M]  
 b) The following consecutive readings were taken with a level and a 5 meter staff on a continuously sloping ground at a common interval of 20 meters. 0.385 ; 1.030 ; 1.925 ; 2.825 ; 3.730 ; 4.685 ; 0.625 ; 2.005 ; 3.1101 ; 4.485 the R.L of the first point was 208.125 m. Rule out a page of level book and enter the readings. Calculate the R.L. of the points by rise and fall method. [7M]

(OR)

6. a) Define Contours. What are the characteristics of contours? [6M]  
b) Explain the errors in levelling? [6M]

## UNIT-IV

7. a) Explain the following [6M]  
(i) Face right and face left observations,  
(ii) Transiting and swinging the telescope,  
(iii) Telescope normal and inverted.  
b) What are the instruments used in tacheometric surveying? [6M]

(OR)

8. a) Define tacheometry. What are the various methods employed in tacheometric survey? [5M]  
b) Name the two methods of measuring horizontal angles using a theodolite. [7M]  
Discuss any method in detail

## UNIT-V

9. a) What is prismoid? Derive the prismoidal formula. [10M]  
b) What is GIS? [2M]

(OR)

10. a) Write about the various elements of a simple circular curve. [8M]  
b) What are the advantages of EDM's when compared to other instruments? [4M]

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