



(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0023

Roll No.

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B.Tech**(SEM III) ODD SEMESTER THEORY EXAMINATION 2009-10
SURVEYING-I***Time : 3 Hours]**[Total Marks : 100***Note :** *Attempt all questions.*

- 1 Attempt any **four** parts of the following :
- (a) What do you mean by principles of surveying ? **3**
What are different classifications of surveys ?
 - (b) Discuss briefly the different types and sources **3**
of errors in surveying.
 - (c) Define the following : **3**
 - (i) EDM
 - (ii) Electronic theodolite.
 - (d) The down hill end of the 30 m tape is held **3**
80 cm too low. What is the horizontal length ?
 - (e) Differentiate the following terms : **3**
 - (i) Base line and check line
 - (ii) Main station and tie station
 - (iii) Chainage and offset.
 - (f) What are the different checks in closed traverse **3**
and open traverse ?
- 2 Attempt any **two** parts of the following :
- (a) The following consecutive readings were taken **7**
with a level and a 4.0 m staff on a continuously
sloping ground at a common interval of 30 m.



0.780, 1.535, 1.955, 2.430, 2.985, 3.480, 1.155,
1.960, 2.365, 3.640, 0.935, 1.115, 1.535, 2.085, 2.635, 3.185, 3.735, 4.285, 4.835, 5.385, 5.935, 6.485, 7.035, 7.585, 8.135, 8.685, 9.235, 9.785, 10.335, 10.885, 11.435, 11.985, 12.535, 13.085, 13.635, 14.185, 14.735, 15.285, 15.835, 16.385, 16.935, 17.485, 18.035, 18.585, 19.135, 19.685, 20.235, 20.785, 21.335, 21.885, 22.435, 22.985, 23.535, 24.085, 24.635, 25.185, 25.735, 26.285, 26.835, 27.385, 27.935, 28.485, 29.035, 29.585, 30.135, 30.685, 31.235, 31.785, 32.335, 32.885, 33.435, 33.985, 34.535, 35.085, 35.635, 36.185, 36.735, 37.285, 37.835, 38.385, 38.935, 39.485, 40.035, 40.585, 41.135, 41.685, 42.235, 42.785, 43.335, 43.885, 44.435, 44.985, 45.535, 46.085, 46.635, 47.185, 47.735, 48.285, 48.835, 49.385, 49.935, 50.485, 51.035, 51.585, 52.135, 52.685, 53.235, 53.785, 54.335, 54.885, 55.435, 55.985, 56.535, 57.085, 57.635, 58.185, 58.735, 59.285, 59.835, 60.385, 60.935, 61.485, 62.035, 62.585, 63.135, 63.685, 64.235, 64.785, 65.335, 65.885, 66.435, 66.985, 67.535, 68.085, 68.635, 69.185, 69.735, 70.285, 70.835, 71.385, 71.935, 72.485, 73.035, 73.585, 74.135, 74.685, 75.235, 75.785, 76.335, 76.885, 77.435, 77.985, 78.535, 79.085, 79.635, 80.185, 80.735, 81.285, 81.835, 82.385, 82.935, 83.485, 84.035, 84.585, 85.135, 85.685, 86.235, 86.785, 87.335, 87.885, 88.435, 88.985, 89.535, 90.085, 90.635, 91.185, 91.735, 92.285, 92.835, 93.385, 93.935, 94.485, 95.035, 95.585, 96.135, 96.685, 97.235, 97.785, 98.335, 98.885, 99.435, 99.985, 100.535, 101.085, 101.635, 102.185, 102.735, 103.285, 103.835, 104.385, 104.935, 105.485, 106.035, 106.585, 107.135, 107.685, 108.235, 108.785, 109.335, 109.885, 110.435, 110.985, 111.535, 112.085, 112.635, 113.185, 113.735, 114.285, 114.835, 115.385, 115.935, 116.485, 117.035, 117.585, 118.135, 118.685, 119.235, 119.785, 120.335, 120.885, 121.435, 121.985, 122.535, 123.085, 123.635, 124.185, 124.735, 125.285, 125.835, 126.385, 126.935, 127.485, 128.035, 128.585, 129.135, 129.685, 130.235, 130.785, 131.335, 131.885, 132.435, 132.985, 133.535, 134.085, 134.635, 135.185, 135.735, 136.285, 136.835, 137.385, 137.935, 138.485, 139.035, 139.585, 140.135, 140.685, 141.235, 141.785, 142.335, 142.885, 143.435, 143.985, 144.535, 145.085, 145.635, 146.185, 146.735, 147.285, 147.835, 148.385, 148.935, 149.485, 150.035, 150.585, 151.135, 151.685, 152.235, 152.785, 153.335, 153.885, 154.435, 154.985, 155.535, 156.085, 156.635, 157.185, 157.735, 158.285, 158.835, 159.385, 159.935, 160.485, 161.035, 161.585, 162.135, 162.685, 163.235, 163.785, 164.335, 164.885, 165.435, 165.985, 166.535, 167.085, 167.635, 168.185, 168.735, 169.285, 169.835, 170.385, 170.935, 171.485, 172.035, 172.585, 173.135, 173.685, 174.235, 174.785, 175.335, 175.885, 176.435, 176.985, 177.535, 178.085, 178.635, 179.185, 179.735, 180.285, 180.835, 181.385, 181.935, 182.485, 183.035, 183.585, 184.135, 184.685, 185.235, 185.785, 186.335, 186.885, 187.435, 187.985, 188.535, 189.085, 189.635, 190.185, 190.735, 191.285, 191.835, 192.385, 192.935, 193.485, 194.035, 194.585, 195.135, 195.685, 196.235, 196.785, 197.335, 197.885, 198.435, 198.985, 199.535, 200.085, 200.635, 201.185, 201.735, 202.285, 202.835, 203.385, 203.935, 204.485, 205.035, 205.585, 206.135, 206.685, 207.235, 207.785, 208.335, 208.885, 209.435, 209.985, 210.535, 211.085, 211.635, 212.185, 212.735, 213.285, 213.835, 214.385, 214.935, 215.485, 216.035, 216.585, 217.135, 217.685, 218.235, 218.785, 219.335, 219.885, 220.435, 220.985, 221.535, 222.085, 222.635, 223.185, 223.735, 224.285, 224.835, 225.385, 225.935, 226.485, 227.035, 227.585, 228.135, 228.685, 229.235, 229.785, 230.335, 230.885, 231.435, 231.985, 232.535, 233.085, 233.635, 234.185, 234.735, 235.285, 235.835, 236.385, 236.935, 237.485, 238.035, 238.585, 239.135, 239.685, 240.235, 240.785, 241.335, 241.885, 242.435, 242.985, 243.535, 244.085, 244.635, 245.185, 245.735, 246.285, 246.835, 247.385, 247.935, 248.485, 249.035, 249.585, 250.135, 250.685, 251.235, 251.785, 252.335, 252.885, 253.435, 253.985, 254.535, 255.085, 255.635, 256.185, 256.735, 257.285, 257.835, 258.385, 258.935, 259.485, 260.035, 260.585, 261.135, 261.685, 262.235, 262.785, 263.335, 263.885, 264.435, 264.985, 265.535, 266.085, 266.635, 267.185, 267.735, 268.285, 268.835, 269.385, 269.935, 270.485, 271.035, 271.585, 272.135, 272.685, 273.235, 273.785, 274.335, 274.885, 275.435, 275.985, 276.535, 277.085, 277.635, 278.185, 278.735, 279.285, 279.835, 280.385, 280.935, 281.485, 282.035, 282.585, 283.135, 283.685, 284.235, 284.785, 285.335, 285.885, 286.435, 286.985, 287.535, 288.085, 288.635, 289.185, 289.735, 290.285, 290.835, 291.385, 291.935, 292.485, 293.035, 293.585, 294.135, 294.685, 295.235, 295.785, 296.335, 296.885, 297.435, 297.985, 298.535, 299.085, 299.635, 300.185, 300.735, 301.285, 301.835, 302.385, 302.935, 303.485, 304.035, 304.585, 305.135, 305.685, 306.235, 306.785, 307.335, 307.885, 308.435, 308.985, 309.535, 310.085, 310.635, 311.185, 311.735, 312.285, 312.835, 313.385, 313.935, 314.485, 315.035, 315.585, 316.135, 316.685, 317.235, 317.785, 318.335, 318.885, 319.435, 319.985, 320.535, 321.085, 321.635, 322.185, 322.735, 323.285, 323.835, 324.385, 324.935, 325.485, 326.035, 326.585, 327.135, 327.685, 328.235, 328.785, 329.335, 329.885, 330.435, 330.985, 331.535, 332.085, 332.635, 333.185, 333.735, 334.285, 334.835, 335.385, 335.935, 336.485, 337.035, 337.585, 338.135, 338.685, 339.235, 339.785, 340.335, 340.885, 341.435, 341.985, 342.535, 343.085, 343.635, 344.185, 344.735, 345.285, 345.835, 346.385, 346.935, 347.485, 348.035, 348.585, 349.135, 349.685, 350.235, 350.785, 351.335, 351.885, 352.435, 352.985, 353.535, 354.085, 354.635, 355.185, 355.735, 356.285, 356.835, 357.385, 357.935, 358.485, 359.035, 359.585, 360.135, 360.685, 361.235, 361.785, 362.335, 362.885, 363.435, 363.985, 364.535, 365.085, 365.635, 366.185, 366.735, 367.285, 367.835, 368.385, 368.935, 369.485, 370.035, 370.585, 371.135, 371.685, 372.235, 372.785, 373.335, 373.885, 374.435, 374.985, 375.535, 376.085, 376.635, 377.185, 377.735, 378.285, 378.835, 379.385, 379.935, 380.485, 381.035, 381.585, 382.135, 382.685, 383.235, 383.785, 384.335, 384.885, 385.435, 385.985, 386.535, 387.085, 387.635, 388.185, 388.735, 389.285, 389.835, 390.385, 390.935, 391.485, 392.035, 392.585, 393.135, 393.685, 394.235, 394.785, 395.335, 395.885, 396.435, 396.985, 397.535, 398.085, 398.635, 399.185, 399.735, 400.285, 400.835, 401.385, 401.935, 402.485, 403.035, 403.585, 404.135, 404.685, 405.235, 405.785, 406.335, 406.885, 407.435, 407.985, 408.535, 409.085, 409.635, 410.185, 410.735, 411.285, 411.835, 412.385, 412.935, 413.485, 414.035, 414.585, 415.135, 415.685, 416.235, 416.785, 417.335, 417.885, 418.435, 418.985, 419.535, 420.085, 420.635, 421.185, 421.735, 422.285, 422.835, 423.385, 423.935, 424.485, 425.035, 425.585, 426.135, 426.685, 427.235, 427.785, 428.335, 428.885, 429.435, 429.985, 430.535, 431.085, 431.635, 432.185, 432.735, 433.285, 433.835, 434.385, 434.935, 435.485, 436.035, 436.585, 437.135, 437.685, 438.235, 438.785, 439.335, 439.885, 440.435, 440.985, 441.535, 442.085, 442.635, 443.185, 443.735, 444.285, 444.835, 445.385, 445.935, 446.485, 447.035, 447.585, 448.135, 448.685, 449.235, 449.785, 450.335, 450.885, 451.435, 451.985, 452.535, 453.085, 453.635, 454.185, 454.735, 455.285, 455.835, 456.385, 456.935, 457.485, 458.035, 458.585, 459.135, 459.685, 460.235, 460.785, 461.335, 461.885, 462.435, 462.985, 463.535, 464.085, 464.635, 465.185, 465.735, 466.285, 466.835, 467.385, 467.935, 468.485, 469.035, 469.585, 470.135, 470.685, 471.235, 471.785, 472.335, 472.885, 473.435, 473.985, 474.535, 475.085, 475.635, 476.185, 476.735, 477.285, 477.835, 478.385, 478.935, 479.485, 480.035, 480.585, 481.135, 481.685, 482.235, 482.785, 483.335, 483.885, 484.435, 484.985, 485.535, 486.085, 486.635, 487.185, 487.735, 488.285, 488.835, 489.385, 489.935, 490.485, 491.035, 491.585, 492.135, 492.685, 493.235, 493.785, 494.335, 494.885, 495.435, 495.985, 496.535, 497.085, 497.635, 498.185, 498.735, 499.285, 499.835, 500.385, 500.935, 501.485, 502.035, 502.585, 503.135, 503.685, 504.235, 504.785, 505.335, 505.885, 506.435, 506.985, 507.535, 508.085, 508.635, 509.185, 509.735, 510.285, 510.835, 511.385, 511.935, 512.485, 513.035, 513.585, 514.135, 514.685, 515.235, 515.785, 516.335, 516.885, 517.435, 517.985, 518.535, 519.085, 519.635, 520.185, 520.735, 521.285, 521.835, 522.385, 522.935, 523.485, 524.035, 524.585, 525.135, 525.685, 526.235, 526.785, 527.335, 527.885, 528.435, 528.985, 529.535, 530.085, 530.635, 531.185, 531.735, 532.285, 532.835, 533.385, 533.935, 534.485, 535.035, 535.585, 536.135, 536.685, 537.235, 537.785, 538.335, 538.885, 539.435, 539.985, 540.535, 541.085, 541.635, 542.185, 542.735, 543.285, 543.835, 544.385, 544.935, 545.485, 546.035, 546.585, 547.135, 547.685, 548.235, 548.785, 549.335, 549.885, 550.435, 550.985, 551.535, 552.085, 552.635, 553.185, 553.735, 554.285, 554.835, 555.385, 555.935, 556.485, 557.035, 557.585, 558.135, 558.685, 559.235, 559.785, 560.335, 560.885, 561.435, 561.985, 562.535, 563.085, 563.635, 564.185, 564.735, 565.285, 565.835, 566.385, 566.935, 567.485, 568.035, 568.585, 569.135, 569.685, 570.235, 570.785, 571.335, 571.885, 572.435, 572.985, 573.535, 574.085, 574.635, 575.185, 575.735, 576.285, 576.835, 577.385, 577.935, 578.485, 579.035, 579.585, 580.135, 580.685, 581.235, 581.785, 582.335, 582.885, 583.435, 583.985, 584.535, 585.085, 585.635, 586.185, 586.735, 587.285, 587.835, 588.385, 588.935, 589.485, 590.035, 590.585, 591.135, 591.685, 592.235, 592.785, 593.335, 593.885, 594.435, 594.985, 595.535, 596.085, 596.635, 597.185, 597.735, 598.285, 598.835, 599.385, 599.935, 600.485, 601.035, 601.585, 602.135, 602.685, 603.235, 603.785, 604.335, 604.885, 605.435, 605.985, 606.535, 607.085, 607.635, 608.185, 608.735, 609.285, 609.835, 610.385, 610.935, 611.485, 612.035, 612.585, 613.135, 613.685, 614.235, 614.785, 615.335, 615.885, 616.435, 616.985, 617.535, 618.085, 618.635, 619.185, 619.735, 620.285, 620.835, 621.385, 621.935, 622.485, 623.035, 623.585, 624.135, 624.685, 625.235, 625.785, 626.335, 626.885, 627.435, 627.985, 628.535, 629.085, 629.635, 630.185, 630.735, 631.285, 631.835, 632.385, 632.935, 633.485, 634.035, 634.585, 635.135, 635.685, 636.235, 636.785, 637.335, 637.885, 638.435, 638.985, 639.535, 640.085, 640.635, 641.185, 641.735, 642.285, 642.835, 643.385, 643.935, 644.485, 645.035, 645.585, 646.135, 646.685, 647.235, 647.785, 648.335, 648.885, 649.435, 649.985, 650.535, 651.085, 651.635, 652.185, 652.735, 653.285, 653.835, 654.385, 654.935, 655.485, 656.035, 656.585, 657.135, 657.685, 658.235, 658.785, 659.335, 659.885, 660.435, 660.985, 661.535, 662.085, 662.635, 663.185, 663.735, 664.285, 664.835, 665.385, 665.935, 666.485, 667.035, 667.585, 668.135, 668.685, 669.235, 669.785, 670.335, 670.885, 671.435, 671.985, 672.535, 673.085, 673.635, 674.185, 674.735, 675.285, 675.835, 676.385, 676.935, 677.485, 678.035, 678.585, 679.135, 679.685, 680.235, 680.785, 681.335, 681.885, 682.435, 682.985, 683.535, 684.085, 684.635, 685.185, 685.735, 686.285, 686.835, 687.385, 687.935, 688.485, 689.035, 689.585, 690.135, 690.685, 691.235, 691.785, 692.335, 692.885, 693.435, 693.985, 694.535, 695.085, 695.635, 696.185, 696.735, 697.285, 697.835, 698.385, 698.935, 699.485, 700.035, 700.585, 701.135, 701.685, 702.235, 702.785, 703.335, 703.885, 704.435, 704.985, 705.535, 706.085, 706.635, 707.185, 707.735, 708.285, 708.835, 709.385, 709.935, 710.485, 711.035, 711.585, 712.135, 712.685, 713.235, 713.785, 714.335, 714.885, 715.435, 715.985, 716.535, 717.085, 717.635, 718.185, 718.735, 719.285, 719.835, 720.385, 720.935, 721.485, 722.035, 722.585, 723.135, 723.685, 724.235, 724.785, 725.335, 725.885, 726.435, 726.985, 727.535, 728.085, 728.635, 729.185, 729.735, 730.285, 730.835, 731.385, 731.935, 732.485, 733.035, 733.585, 734.135, 734.685, 735.235, 735.785, 736.335, 736.885, 737.435, 737.985, 738.535, 739.085, 739.635, 740.185, 740.735, 741.285, 741.835, 742.385, 742.935, 743.485, 744.035, 744.585, 745.135, 745.685, 746.235, 746.785, 747.335, 747.885, 748.435, 748.985, 749.535, 750.085, 750.635, 751.185, 751.735, 752.285, 752.835, 753.385, 753.935, 754.485, 755.035, 755.585, 756.135, 756.685, 757.235, 757.785, 758.335, 758.885, 759.435, 759.985, 760.535, 761.085, 761.635, 762.185, 762.735,

- (b) Define vertical curve. What are the types of vertical curves? Find the length of the vertical curve connecting two uniform grades – 0.5 and + 1.0% respectively. The rate of change of grade is 0.05% per 30 m. 6
- (c) What are the essential requirements of a transition curve? Derive an expression for an ideal transition curve. 6

4 Attempt any **four** parts of the following :

- (a) The following are the bearings of the lines of a closed traverse ABCD : 3

<i>Line</i>	<i>Fore Bearing</i>
AB	N 45° 10' E
BC	S 60° 40' E
CD	S 9° 50' W
DA	N 80° 40' W

Calculate the interior angles of the traverse.

- (b) Differentiate between the surveyor compass and prismatic compass. 3
- (c) What are the field checks in : 3
- (i) Closed traverse, and
 - (ii) Open traverse.
- (d) What do you mean by balancing a traverse? State the various rules meant for it. 3
- (e) Define the following : 3
- (i) Bubble line
 - (ii) Compound lens
 - (iii) Automatic lens.
- (f) State the three point problem. Explain how it is solved by the graphical method. 3

