LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**B.Sc.** DEGREE EXAMINATION – **CHEMISTRY**

FOURTH SEMESTER – **APRIL 2012**

# MT 4204 / 4201 - ADVANCED MATHS FOR CHEMISTRY

Date : 19-04-2012 Dept. No. Max. : 100 Marks

Time : 1:00 - 4:00

**Part A (Answer ALL the questions) (10x2=20)**

1. Evaluate .
2. Show that.
3. Find .
4. Find.
5. If are the roots of the equation , then show that are the roots of the equation .
6. Find the equation whose roots are the roots of with signs changed.
7. Define Null hypothesis.
8. Write the normal equations for the curve .
9. Solve the system of equations 5*x*-*y*+6=0 & *x*-2*y*+3=0.
10. Write down Newton backward formula.

# Part B (Answer any FIVE questions) (5x8=40)

1. Evaluate and .
2. By changing the order of integration, evaluate .
3. Find the Laplace transform of
4. Solve the equation of which one root is .
5. If, show that.
6. Fit a straight line for the following data.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| X | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Y | 52.5 | 58.7 | 65 | 70.2 | 75.4 | 81.1 | 87.2 | 95.5 | 102.5 | 108.4 |

1. Solve the following equations by Gauss-Seidel method:,, .
2. Find a root of the equation correct to three decimal places by using bisection method.

# Part C (Answer any TWO questions) (2x20=40)

1. (a) Evaluate over the region in the first quadrant bounded by the hyperbolas and and the circles and .

(b) Prove that . (10+10)

1. (a) Find and .

(b) Using Laplace transform solve given that .

(10+10)

1. (a) Solve the equation.

(b) Find the condition that the roots of the equation may be in geometric progression. Hence solve the equation (10+10)

1. (a) Obtain the equations of two lines of regressions for the following data.

X : 65 66 67 67 68 69 70 72

Y : 67 68 65 68 72 72 69 71

(b) Solve the following system of equations , , using Cramer’s rule. (10+10)

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