MA-6452 Statistics and Numerical Methods

Important 2Mark Questions

Unit I

1. In the past the standard derivation of weights of certain 1135 gm. Packages filled by a machine was 7.1 grams. A random sample of 20 packages showed a standard derivation of 9.1 grams. Is the apparent increase in variability significant at 0.05 level of significance?
2. Machinist is making engine parts with are diameters of 0.7 inch. A random sample of 10 parts shows a mean diameter of 0.742 inch with a standard deviation of 0.040 inch. Compute the statistic to test the work is meeting the specification.

Unit II

1. The following table gives the number of refrigerators sold by 4 salesmen in 3 months May, June, July.

Month	salesman
May	50 40 48 39
June	46 48 50 45
July	39 44 40 39

   In this a significant difference in the sales made by 4 salesmen?

   Is this a significance difference in the sales during different months?

2. A farmer wishes to test the effects of four different fertilizers A, B, C, D on the yield of wheat. In order to eliminate sources of error due to variability in soil fertility he uses the fertilizers in a Latin square arrangement as indicated below where the number indicate yields in kilograms per unit area. Perform an analysis of various to determine if there is a significant difference between the fertilizers at 0.01 level of significance.

A18	C21	D25	B11
D22	B12	A15	C19
B15	A20	C23	D24
C22	D21	B10	A17

Unit III

1. Solve the system of equations by Gauss elimination method x + 2y + z = 3, 2x + 3y + 3z = 10, 3x- y + = 13.
2. Find the Newton-Raphson method, the real root of 3x-$\cos x - 1 = 0$ correct to 4 decimal places.

Unit IV

1. From the following table find f(x) using Newton's interpolation formula

X:	1	2	7	8
f(x):	1	5	5	4

2. Find the third divided differences with arguments a, b, c, d of the function $\frac{1}{x}$.

Unit V

1. Apply fourth order R-K method to find y(0, 2) given y' = x + y, y(0) = 1.
2. Apply the fourth order Runge-Kutta method to find an approximate value of y when x = 0.2, given that y'= x + y, y(0) = 1. Correct to 4 decimal places