

PART – B

(5 x 16 = 80 Marks)

Q.No.

Questions

Marks KL CO

11. a)

- i. A group of 10 rats fed on diet A and another group of 8 rats fed on diet B. recorded the following increase in weight

8 K3 CO1

Diet A:	5	6	8	1	12	4	3	9	6	10
Diet B:	2	3	6	8	10	1	2	8	-	-

Find the variances are significantly different.

- ii. A random sample of 10 boys has the following IQ's 70,83,88,95,98,100,101,107,110 and 120. Do these data support the assumption of a population mean IQ of 100 at 5% level of Significance.

8 K3 CO1

(OR)

- b) i. The following data gives the number of aircraft accidents that occurred during the various days of a week. Find whether the accidents are uniformly distributed over the week.

8 K3 CO1

Days:	Sun	Mon	Tue	Wed	Thu	Fri	Sat
No. of accidents:	14	16	8	12	11	9	14

- ii. A sample of 900 members has a mean 3.4cm and standard deviation 2.61cm. Is the sample from a large population of mean 3.25cms and standard deviation of 2.61cms?

8 K3 CO1

12. a) A company appoints 4 salesmen A,B,C and D and observes their sales in 3 seasons summer, winter and monsoon. The figures are given in the following table:

16 K4 CO2

Season	Salesmen				Total
	A	B	C	D	
Summer	36	36	21	35	128
Winter	28	29	31	32	120
Monsoon	26	28	29	29	112
Total	90	93	81	96	360

Test for analysis of Variances.

(OR)

- b) A variable trial was conducted on wheat with 4 varieties in a Latin square design. The plan of the experiment and per plot yield are given below:

C25 B23 A20 D20
A19 D19 C21 B18
B19 A14 D17 C20
D17 C20 B21 A15. Analyze the data.

13. a) i. Find the Newton's Raphson formula to find the reciprocal of a given number N and hence find the value of $1/26$ correct to 4 decimal places. 8 K3 CO3

- ii. Solve the following equations by Gauss Seidal method 8 K3 CO3
 $4x + 2y + z = 14; x + 5y - z = 10; x + y + 8z = 20$

(OR)

- b) i. Make use of Power method to find the largest eigen value and corresponding eigenvector of the matrix $\begin{pmatrix} 1 & 6 & 1 \\ 1 & 2 & 0 \\ 0 & 0 & 3 \end{pmatrix}$ 8 K3 CO3

- ii. Solve the following equations by Gauss Jacobi's method 8 K3 CO3
 $30x - 2y + 3z = 75, x + 17y - 2z = 48, x + y + 9z = 15.$

14. a) i. By dividing the range into ten equal parts, evaluate $\int_0^\pi \sin x \, dx$ by Simpson's rule. 8 K5 CO4

- ii. From the data given below, find y at $x = 84$

x	40	50	60	70	80	90
y	184	204	226	250	276	304

8 K3 CO4

(OR)

- b) i. Evaluate $\int_1^{1.4} \int_2^{2.4} \frac{dx dy}{xy}$ using Simpson's rule. Verify your result by actual integration. 8 K5 CO4

- ii. Using divided difference formula, find the polynomial $f(x)$ and hence find $f(6)$ from the following data. 8 K3 CO4

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

15. a) Make use Runge-Kutta method of order 4, to find y for $x = 0.1, 0.2, 0.3$ given that $\frac{dy}{dx} = xy + y^2$, $y(0)=1$ and also find the solution of $y(0.4)$ using Milne's method. 16 K3 CO5

(OR)

- b) i. Make use of Milne's method to find $y(4.4)$ given 8 K3 CO5
 $5xy' + y^2 - 2 = 0$ given $y(4) = 1$, $y(4.1) = 1.0049$,
 $y(4.2) = 1.0097$ and $y(4.3) = 1.0143$.
- ii. Make use of Taylor series method, to find y at $x = 0.1$ given $\frac{dy}{dx} =$ 8 K3 CO5
 $x^2 - y$ $y(0) = 1$.
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