Q. P. Code: 27181

Duration: **3 hours** Max Marks: **80**

Note: Attempt **any 4** questions
Figures to the right indicate full marks
Assume data wherever required and mention it clearly

Q1 **Explain any four of the following** **20**

a. Write briefly guide lines for designing an experiment
b. 2^3 Two level factorial Design and analysis
c. Linear Regression Models
d. The One-Half Fraction of the 2^k Design
e. Statistical aspects of conducting tests

Q2 **(i)** A farmer wishes to test te effects of four different fertilizers A, B,C & D on the yield of rice In order to eliminate sources of error due to variability in soil fertility, he uses the fertilizers in a Latin Square arrangement as indicated in te table, where the number indicates yields in kilograms per unit area. Perform an analysis of variance to determine if there is a significant difference between the fertilizers at a) 0.05 and b) 0.01 levels of significance **10**

A 18	C 21	D 25	B 11
D 22	B 12	A 15	C 19
B 15	A 20	C 23	D 24
C 22	D 21	B 10	A 17

(ii) Explain the Addition of center Points to the 2^k Design. **10**

Q3 **(i)** Explain the following experimental design **10**
(a) Complete randomization (b) Randomized blocks (c) Latin squares (d) Graeco-latin Squares

(ii)

A	48	49	50	49
B	47	49	48	48
C	49	51	50	50

10

The above table shows the yields in bushels per acre of a certain variety of wheat grown in a particular type of soil treated with chemicals A,B and C . Find (a) the mean yields for the different treatments, (b) the grand mean for all treatments, (c) the yield variation (d) the variation between treatments (e) the variation within the treatments

Q4 **(i)** Explain in detail the procedure for testing the hypothesis **10**

(ii) Table shows the respective x and y of a sample of 8 variables and their dependent variables Construct the (a) Scatter diagram (b) find the least-square regression line of y on x **10**

x	1	3	4	6	8	9	11	14
Y	1	2	4	4	5	7	8	9

Q5 a. Explain Taguchi's approach to design of experiment **10**

b. Explain Multiple linear regression model **10**

Q6 Write short notes on **(Any Two)**

(i) Explain Statistical aspects of conducting tests **10**

(ii) Explain The One-Half Fraction of the 2^k Design **10**

(iii) Explain Hypothesis Testing in Multiple Regression **10**
