Lab Assignment-5

Course: Probability and Statistics

Course code: BMAT202P

Date: 04-03-2026

Answer all the questions using R markdown and upload in VTOP.

1. Analyse and interpret the following statistics concerning output of wheat per field obtained as a result of experiment conducted to test four varieties of wheat Viz., A,B,C and D under a Latin Square Design

C (25)	**B (23)**	**A(20)**	**D (20)**
A (19)	**D (19)**	**C (21)**	**B (18)**
B (19)	**A (14)**	**D (17)**	**C (20)**
D (17)	**C (20)**	**B (21)**	**A (15)**

2. In a factory producing edible oil and marketing its product in 15 kg tins, uses five filling machines. Random samples of the packed tins were taken for each machine A,B,C,D and E were presented below

A	B	C	D	E
14.85	14.28	14.16	15.25	14.60
15.00	14.42	14.15	15.30	14.84
15.25		14.19	15.10	14.82
15.10		14.50	15.35	14.74
14.80			15.00	

Analysis of data to test the Equality of efficiency of machines .

A firm wishes to compare four programs for training workers to perform a certain manual task. Twenty new employees are randomly assigned to the training programs, with 5 in each program. At the end of the training period, a test is conducted to see how quickly trainees can perform the task. The number of times the task is performed per minute is recorded for each trainee

Program 1	Program 2	Program 3	Program 4
9	10	12	9
12	6	14	8
14	9	11	11
11	9	13	7
13	10	11	8

3. Calculate and interpret the above one way ANOVA table.
4. A factory manager wanted to compare the efficiency of four factory workers with respect to cotton spinning. He had four machines .Four workers A,B,C and D were allotted a machine as experimental units. Cotton thread yield(in kg) for each worker was recorded as shown in the layout displayed below. All machines were of the same efficiency.

Blocks	Machines				
I	C(22)	A(14)	B(12)	A(23)	
II	A(16)	B(18)	C(20)	D(25)	
III	A(15)	C(23)	D(28)	B(14)	
IV	A(17)	D(21)	C(19)	B(11)	
V	B(18)	C(20)	A(13)	D(24)	
VI	D(18)	C(21)	A(10)	B(17)	