Problem statement Examples for ANAVO

One-Way Classification:

1. Three types of fertilizers are used on three groups of plants for 5 weeks. We want to check if there is a difference in the mean growth of each group. Using the data given below apply a one way ANOVA test at 0.05 significant level.

Fertilizer 1	Fertilizer 2	Fertilizer 3
6	8	13
8	12	9
4	9	11
5	11	8
3	6	7
4	8	12

2. A trial was run to check the effects of different diets. Positive numbers indicate weight loss and negative numbers indicate weight gain. Check if there is an average difference in the weight of people following different diets using an ANOVA Table.

Low Fat	Low Calorie	Low Protein	Low Carbohydrate
8	2	3	2
9	4	5	2
6	3	4	-1
7	5	2	0
3	1	3	3

3. Determine if there is a difference in the mean daily calcium intake for people with normal bone density, osteopenia, and osteoporosis at a 0.05 alpha level. The data was recorded as follows:

Normal Density	Osteopenia	Osteoporosis
1200	1000	890
1000	1100	650
980	700	1100
900	800	900
750	500	400
800	700	350

4. Three different kinds of food are tested on three groups of rats for 5 weeks. The objective is to check the difference in mean weight (in grams) of the rats per week. Apply one-way ANOVA using a 0.05 significance level to the following data:

Food I	Food II	Food III
8	4	11
12	5	8
19	4	7
8	6	13
6	9	7
11	7	9

5. Calculate the ANOVA coefficient for the following data:

Plant	Number	Average span	s
Hibiscus	5	12	2
Marigold	5	16	1
Rose	5	20	4

Two-Way Classification:

1. A reputed marketing agency in India has three different training programs for its salesmen. The three programs are Method – A, B, C. To assess the success of the programs, 4 salesmen from each of the programs were sent to the field. Their performances in terms of sales are given in the following table.

Salesmen	Methods		
	A	B	C
1	4	6	2
2	6	10	6
3	5	7	4
4	7	5	4

2. The illness caused by a virus in a city concerning some restaurant inspectors is not consistent with their evaluations of cleanliness of restaurants. In order to investigate this possibility, the director has five restaurant inspectors to grade the cleanliness of three restaurants. Carry out two-way ANOVA at 5% level of significance.

Inspectors	Restaurants		
	I	II	III
1	71	55	84
2	65	57	86
3	70	65	77
4	72	69	70
5	76	64	85

3. Solve using Two-way ANOVA method

Observation	A	B	C
1	10,8,7,9,6	7,4,3,2	11,9,10,9,11
2	1,2,1,4,2	6,7,6,5	4,3,6,4,3
3	3,2,3,3,4	2,1,2,3	5,6,4,5,5

4. Solve using Two-way ANOVA method

Observation	A	B	C	D	E	F
1	1200	1000	980	900	750	800
2	1000	1100	700	800	500	700
3	890	650	1100	900	400	350

5. Solve using Two-way ANOVA method

Observation	A	B	C
1	1,4,0,7	13,5,7,15	9,16,18,13
2	15,6,10,13	6,18,9,15	14,7,6,13