Note: Answer all of the following questions and each question is worth 20 points.

Q1/ A/ Define the following statistical terms briefly:

Quantitative variable, Descriptive statistics. Sample, Statistics and Population

B/ What are the benefits of (SE)?

Q2/ The following data represent the effect of (4) levels of Phosphorus fertilizer on the number of active nodules/broad bean plant using pot experiment with (3) replicates, test the effect of phosphorus at level of significance = 0.01, f tabulated = 7.591 and then complete the ANOVA table.

Phosphorus levels	R1	R2	R3
$t_1=0$	3	4	2
$t_2=2$	4	5	6
$t_3=4$	7	6	5
$t_4=6$	8	9	6

Q3/ Answer only one question (A or B)

   A) A geneticist took a random sample of 300 men to study whether there is association between father and son regarding boldness. He obtained the following results.

	Son	
Father	Bold	Not
Bold	85	59
Not	65	91

Using α = 5% test whether there is association between father and son regarding boldness. If tabulated chi square values for that question is 3.84.

   B) Suppose we have a sample of 120 plants, where 32 of them were diseased: (88 non-diseased and 32 diseased). Test the following hypothesis:
   Ho: p = 70 %
   Ha: p ≠ 70 %

Q4/ The following data represents the weight gain (kg) of (5) Local lambs: (9,8,6,5,7)

if you know $\sum xi = 35$, $\sum (Xi - \bar{X})2 = 6$, $\sqrt{2,5} = 1.58$

     A- Calculate mean, median and mode?

     B- Calculate Range, Standard error (SE), Coefficient of variation (CV) then interpret the result?

Q5/ The blood pressure of six students were determined before and after examination then the results were as follows: Did the exam effect on student's blood pressure?

Student	X_1 (Before)	X_2(After)
1	10	12
2	11	13
3	12	14
4	11	10
5	13	12
6	15	11

Note: Tabulated-t at level of significance 0.01 = 2.571.

Q6/a. Mention reasons for focusing on biostatistics.

   b. Mention the types of variables

Q7/ Frome the following data

 Xi= 3, 5, 7, 9, 11   Yi= 2, 4, 6, 8, 10

   find the following.

1-$\sum xi^2=$ 2-$(\sum yi)^2=$ 3- $\overline{Me}$ 4- $\overline{Mo}$

5- $\dfrac{\sum xiyi}{4}$

Q8 /The following data represents the carcass weight (kg) of (6) Karadi ewes: (35, 34, 40, 38, 37, 32)

Xi	35	34	40	38	37	32

   if you know $\sum xi = 216$, $\sum (Xi - \square X)^2 = 42$, $\sqrt{8,4} = 2.89$

     A- Calculate mean, median and mode?

     C- Calculate Range, Standard error (SE), Coefficient of variation (CV) then interpret the result?

Best Wishes
Committee of Statistics Lecturers