Mid-West University

Examinations Management Office

End Semester Examinations 2081

Bachelor level/ B. Sc./ 5th Semester — Full Marks: 60

Time: 3 hours — Pass Marks: 30

Subject: Biostatics (ELC455)

Candidates are required to give their answer in their own words as far as Practicable. The figures in the margin indicate full marks.

Group –A

Attempt all the questions **[4×6=24]**

1. Explain different data collection method in natural science. **[6]**
2. Construct a less then and more then ogive from the following grouped frequency distribution. **[6]**

Class Interval	2-8	8-12	12-16	16-20	20-24	24-28
Frequency	10	16	40	18	10	3

3. From the given data below, find mean, median and standard deviation. **[2+2+2]**

Marks	0-20	20-40	40-50	60-80	80-100	100-120
No. of students	5	8	16	10	7	4

4. In trying to evaluate the effectiveness of antibiotics in killing bacteria, a research institution complied the following information.

Antibiotics in mg(X)	13	15	14	16	17	10
Bacteria (Y)	5	7	5.6	7.2	8.6	6.2

Fit a regression line of Y on X, also estimate bacteria when antibiotics is 20 mg. **[5+1]**

OR

Two types of drugs were used on 5 and 7 patients for reducing their weight. Drug A was imported and drug B indigenous. The decrease in the weight after using the drugs for six months was as follows.

Drug A	12	13	11	14	10		
Drug B	9	12	14	15	10	9	8

Is there a significant different in the efficiency of two drugs? If not, which drug should you buy?

$t_{0.05,10} = 1.812$

Group –B

Attempt all the questions **[6×4=24]**

5. Discuss on concept of Bio- Statistics. Write down needs and nature of data for biological studies. **[2+1+1]**
6. The average daily wages, standard deviations and number of workers of two factories are given below.

	Factory A	Factory B
Average daily wages	Rs,400	Rs.460
Standard deviation	Rs.12	Rs.10
No. of workers	60	50

Calculate the mean and variance of weekly wage of all the workers taken together. Which factory has grater variability in the distribution of weekly wage. **[2+2]**

7. First four moments of a distribution about the value 4 of the variable are -1.5, 17, -30 and 108. Calculate γ_1 and β_2. Also interpret nature of distribution. [4]
8. Define poisson distribution. Also write down its properties. [1+3]
9. What is testing of hypothesis? Write down hypothesis testing procedure. [1+3]
10. What do you understand by discrete and continuous random variables? Systolic blood pressure is normally distributed with mean 130 mm Hg and standard deviation 12 mm Hg. Find the probability $Z_{0.5} = 1.96$ that a randomly selected person from this population will have a systolic blood pressure greater than 135 mm Hg. [1+3]

OR

Define point and interval estimation. 100 bags of flour are taken from a production line and found to have mean 500 g and standard deviation 2.4g. Calculate 99% confidence interval for the mean weight of a bag of flour produced on this production line. [1+3]

Group –C

Attempt all the questions [6×2=12]

11. How can you have visualized data?
12. List out different methods of sampling.
13. The simple correlation coefficient of three variables weight (x_1), height (x_2) and age (x_3) are as follows: $r_{12}=0.58$, $r_{13}= 0.4$ and $r_{13}= 0.44$. Calculate $r_{12.3}$ and $R_{1.23}$.
14. Find the probability that leap year contains 53 Sundays.
15. Define discrete and continuous random variable.
16. Discuss on uses of ANOVA for data analysis.

. The End