Mid-West University
Examinations Management Office
End Semester Examinations-2080

Bachelor level/ B.Sc /6th Semester
Time: 3 hours
Subject :Biostatistics (BIOSTAT465)

Full Marks: 100
Pass Marks: 50

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 questions [6×5=30]

1) Define Bio- Statistics. Write down needs and nature of data for biological studies. [1+4]

2) Define partial and multiple correlation coefficient. The simple correlation coefficient of three variables weight (x_1), height (x_2) and age (x_3) are as follows: r_{12}=0.65, r_{13}= 0.42 and r_{13}= 0.48. Calculate $r_{12.3}$ and $R_{1.23}$ [2+3]

3) Define the term Random experiment, mutually exclusive event and independent event. Suppose that 3 percent of the people in a population of adults have attempted suicide, it is also known that 20 percent of the population are living below the poverty line. If these events are independent, what is the probability that a person selected at random from the population will have attempted suicide and be living below the poverty line? [2+3]

4) Define binomial distribution. Also write down its properties. [1+4]

5) Define the term sample, sampling and population. Write down the procedure selecting sample by using simple random sampling method. [3+2]

6) what is testing of hypothesis? Write down the applications of t-test and chi-square test. [1+4]

Group B

Attempt any seven questions [7×10=70]

7) Describe different scale of measurement. Also explain needs and important of classification. [5+5]

8) Discuss on selections of an appropriate average. From the given data below, find mean and standard deviation. The weight of tea bag in each of 100 packets of a certain brand was measured in grams. [4+6]

Weight (gm)	8-8.5	8.5-9	9-9.5	9.5-10	10-10.5	10.5-11
No. of packets	15	22	30	18	10	5

9) Distinguish between Skewness and Kurtosos. First four moments of a distribution about the value 4 of the variable are -1.5, 17, -30 and 108. Calculate mean, variance, γ_1 and β_2. Also interpret nature of distribution. [3+7]

10) What is regression analysis? Discuss on its uses in your field of study. The following table gives normal weight first six months of life.

Age in month	0	2	3	5	6
Weight	5	7	8	10	12

Estimate the weight of a baby at the age of 7 months. Also find coefficient of determination interpret its value. [1+2+5+2]

11) Explain discrete and continuous random variables with example. What are the main features of a normal distribution? In a certain pediatric population, systolic blood pressure is normally distributed with mean 115 mm Hg and standard deviation 10 mm Hg. Find the probability that a randomly selected child from this population will have [2+3+5]

   a) A systolic blood pressure greater than 125 mm Hg.

   b) A systolic blood pressure less than 125 mm Hg.

12) Define types of errors in testing of hypothesis. 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? [3+7]

13) The following table shows the yield of the crops of four different types of land in which three different types of fertilizers are used.

Types of fertilizers	Types of land			
	A	B	C	D
I	18	16	23	13
II	25	22	15	28
III	28	18	22	17

Test 5% level of significance whether there is significance difference in average yield of crop due to

i) Four different types of land.

ii) Three different types of fertilizers.　　　　　　　　　　　[10]

14) What do you understand by causes of variation in SQC? Describe the uses of statistical quality control (SQC) in industrial research.　　　　[4+6]

THE END