22/12/23

Seat Number | | | | | | |

DAGDU-31

BP-801ET : Biostatistics and Research Methodology

Total Pages : 3]

Time: 3 Hours **Max. Marks : 75**

Instructions to candidates:

1. Do not write anything on question paper except Seat No.
2. All questions are compulsory.
3. Figures to right indicate full marks.
4. Students should noPte, no supplement will be provided.
5. Graph or diagram should be drawn with the black ink pen or black HB pencil.
6. Calculator is allowed.
7. Statistical table is allowed.

1. Answer the following. **20**

i) Karl Pearson's coefficient of correlation is also known as....
   (a) Product moment correlation (b) Result moment correlation
   (c) Both (a) and (b) (d) None of these

ii) The basic relationship between X & Y in regression is given by.....
   (a) X=b+bX (b) Y= b+bX
   (c) X= a+X (d) Y= a+ bX

iii) Which among the following is properties and features of response methodology?
   (a) Orthogonality (b) Rotatability
   (c) Uniformity (d) All of

iv) Simple linear regression is a statistical method that allows us to summarize and study relationships between continuous (quantitative) variables
   (a) One (b) Two
   (c) Three (d) Four

v) .....is process discovering new knowledge.
   (a) Null Hypothesis (b) Alternative Hypothesis
   (c) Parametric test (d) Research

vi) ..... is a pictorial diagram that shows how total amount is divided between levels of a categorical variables.
   (a) Pie chart (b) Bar graph
   (c) Line graph (d) Scatter diagram

vii) When 'n' is very large and p or q is very small then binomial distribution tends to
   (a) Normal distribution (b) Poison's distribution
   (c) Binomial distribution (d) All of these

viii) Find X when Y=0.730 Y=0.1558X + 0.0424
   (a) 5.4134 (b) 4.685
   (c) 4.4134 (d) 5.65

ix) Power of study is used to measure
(a) Sample size (b) data
(c) experiment (d) results

x) Biostatistics is the application of statistics to a wide range of topics in.....
(a) Statistics (b) Biology
(c) Both (a) and (b) (d) None of these

xi) A technique to measure the closeness of the relationship between two variables is called
(a) Probability distribution (b) Mean
(c) Mode (d) Correlation

xii) .....is arranging experiments to make high order interactions to be indistinguishable from blocks.
(a) Blocking (b) Confounding
(c) Hypothesis (d) Regression

xiii) The median of the data 1, 4, 2, 5, 0:
(a) 1 (b) 4
(c) 2 (d) 5

xiv) .....is a measure of the amount of variation or how spread out numbers in a set of values.
(a) Standard Deviation (b) Coefficient of Correlation
(c) Variance (d) Regression

xv) Blocking is a technique for dealing with .....nuisance variables
(a) Uncontrollable (b) Unbearable
(c) Bearable (d) Controllable

xvi) ...is a set of advanced DoE technique, helps researcher to better understand and optimize experimental responses.
(a) Response surface design (b) Optimization designs
(c) Factorial designs (d) All of above

xvii) One Variable at a time while keeping other constant means...
(a) OFAT (b) OVATKOC
(c) OVAT (d) OFATKOC

xviii) The value that occurs with the greatest frequency or count in data set is called....
(a) Mean (b) Mode
(c) Range (d) Median

xix) which among the following is not a type of research ?
(a) Qualitative (b) Empirical
(c) Analytical (d) None of these

xx) Tests whether matched pair samples are drawn from populations with different mean ranks is known as.....
(a) Sigma test (b) Wilcoxon signed-rank test
(c) Median test (d) Friedman test

2. **Attempt any TWO of the following** **20**

i) What are the parametric tests ? explain the following a) one sample t-test b) one-way ANOVA test

ii) Explain the term plagiarism ? what are the types of plagiarism ? what are the reasons for plagiarism ? How to avoid plagiarism?

iii) What is sampling and give its objective? explain probability & non-probability sampling techniques

3. **Attempt any SEVEN of the following** **35**

i) What is clinical study? elaborate various types .

ii) What are optimization techniques? What are the advantages of optimization and discuss classical method of optimization.

iii) Find the mean, mode and median of tablet hardness data obtained from a production batch. The obtained data is 8,5,7,8,9 and 11.

iv) Write a note on Hypothesis.

v) Write a note on :

a) Wilcoxon rank sum method

b) Poisson probability

vi) Elaborate on factorial design with their advantages? Add a note on 2^2-design

vii) From the following data state the equation of two lines of regression (coefficient of correlation is 0.8)

variables	Mean	S.D.
X	40	4
Y	25	6

viii) What is research design? what are different research designs?

ix) Write a note on blocking and confounding