Question Paper

MANIPAL ACADEMY OF HIGHER EDUCATION

Biostatistics and Research Methodology [PHA-BP801T -S1]

Marks: 75   **Duration: 180 mins.**

I Multiple Choice Questions (MCQs)

Answer all the questions.   Section Duration: 30 mins

1)   The Graphical Abstract in a journal manuscript means   (1)

- Figure or graph representing the abstract of the manuscript highlighting important methods and output
- Journal would like to increase the visibility by figure or pictorial representation
- Sometimes the abstract figure will be the important figure in the manuscript
- It mainly represents the breakthrough in research.

2)   Which of the following committee/ association guidelines defines authorship criteria?   (1)

- ICMJE
- WAME
- IEE
- STM

3)   Who should be the "Corresponding Author"?   (1)

- Principal investigator (PI) of the project or the lead person who conceived the idea
- Senior-most professor in the department who guided the guides
- PhD Guide
- PhD Co-Guide

4)   In general, which part of the manuscript will not have references cited?   (1)

- Introduction
- Abstract
- Materials and Methods
- Results

5)   What is H-Index?   (1)

- Hirsh's Index and an Author quality parameter.
- Happiness Index and an Author quality parameter.
- Headache Index and an Author quality parameter

Helplessness index and an Author quality parameter.

6)   Which one among the following is the best source for literature in research?   (1)

Journals
Internet
Conference
Symposium

7)   Which of the following suits best for "Ghost Author" as per ICMJE?   (1)

In some instances, he can be a Gift Author
Authors name will not be there in publication
In some instances, he can be a Guest Author
He is like a Ghost and threatens all other authors

8)   Identify the discrete variable   (1)

Blood urea nitrogen
Force of contraction
Marital status
Forced expiratory volume

9)   Choose the ordinal parameter   (1)

Tidal volume
Pain
Blood group
Blood pressure

10)   This test is used to check the normality assumption in parametric tests   (1)

Bartlett's test
F-test
Welch's t-test
Shapiro-Wilk test

11)   Which parameter is not a measure of central tendency?   (1)

 Range
Mode
Median
  Mean

12)   Determine the standard error of mean for a sample size of 15 with a standard deviation of 375.   (1)

  25
 96.84

13)   Choose the parametric test from the options given   (1)

Mann-Whitney U test

Wilcoxon signed-rank test

Student's t-test

Kruskal-Wallis test

14)   In a column bar chart, the height of each rectangular bar   (1)

Is always proportional to the values of the class

Is always equal to the values of the class

Need not be proportional to the values of the class

Need not be equal to the values of the class

15)   In a horizontal bar diagram, the following is plotted on Y-axis   (1)

Data category

Group frequency

Percentage frequency

Number of occurrences of a data category

16)   In a percentage bar diagram, each rectangular block consists of   (1)

Single class representing a single category

Single class representing multiple categories

Multiple classes representing multiple categories

Multiple classes, each representing their respective frequencies.

17)   Which among the following needs an additional key to interpret the data   (1)

Histogram

Ogive Mode

Pictogram

Frequency polygon

18)   All the following are the basic ethical principles of Belmont report EXCEPT   (1)

Respect for persons

Totality of responsibility

Beneficence

  Justice

19)   Which among the following is the gold standard in clinical trials?   (1)

> Randomized trial
>
> Randomized placebo-controlled trial
>
> Randomized, double-blind, placebo-controlled trial
>
> Randomized double-blind placebo-controlled cross-over trial

20)   Identify the case where an impartial witness is needed during the informed consent process.   (1)

> A clinical study involving minor children with literate parents
>
> All studies involve subjects who are defined under vulnerable populations
>
> A study conducted in Mangalore involving adult and illiterate migrant labourers from Tripura.
>
> A study which involves lifesaving intervention in unconscious patients brought to hospitals and where the Ethics committee has already approved such a study

II Long Answers

Answer all the questions.

1)   Three groups of five rats were randomly selected to be placed in a maze with different coloured doors. Response of the animal is the time required to complete the maze with different colour doors, as shown in the data set. Apply an appropriate statistical analysis to check if there is a significant effect due to door colour for the animal to complete the maze.   (10)
Red Door (seconds)- 9, 11, 10, 9, 15
Green Door (seconds)- 20, 21, 23, 17, 30
Black door (seconds)- 6, 5, 8, 14, 7

2)   The heights (cm) and weights (kg) of ten adolescent children are given below (as pairs). Determine if a correlation exists between the marks.   (10)
120, 36; 118, 42; 155, 43; 109, 30; 123, 34; 98, 68; 150, 78; 134, 60; 140, 38; 147, 68

III Short Answers

Answer all the questions.

1)   What is innovation and R&D? How research helps in innovation and R&D?   (5)

2)   Discuss selecting of research question by explaining the pneumonic FINER.   (5)

3)   Discuss the IMRAD.   (5)

4)   Discuss the significance of literature search in research.   (5)

5)   With a neatly labelled schematic representation, compare a normal distribution with a skewed data set.   (5)

6)   Write a short note on hypothesis testing and errors.   (5)

7)   Giving examples, explain how frequency curves can be plotted from a histogram.   (5)

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