Question Paper

Exam Date & Time: 06-Jul-2023 (10:00 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

Biostatistics and Research Methodology [PHA-BP801T -S2]

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

I Multiple Choice Questions (MCQs)

Answer all the questions. Section Duration: 30 mins

1) PICOT abbreviation is generally used for (1)

- Research methodology
- Clinical research question
- Research objectives
- Outcome of the research proposal

2) "Galley Proof" of a manuscript can be (1)

- Manuscript just before final approval by authors
- The preprint of the manuscript before online
- Before the online version of the manuscript
- Before the pagination in the manuscript but after approval from authors

3) Which of the following can be considered post-publication instances? (1)

- Author Declarations
- Authorship conflict
- Archiving of the manuscript
- Open Access Agreement

4) Which of the following can be used for managing the references/ literature (1)

- Mendeley
- Scopus
- Web of sciences
- PubMed

5) Turnitin is a tool to find out (1)

- Textual similarity
- Plagiarism
- Falsification
- Scientific misconduct

6) IMRAD is the abbreviation used for (1)

- Manuscript format for journal
- Research proposal for PhD
- Application for human ethics committee
- Application for animal ethics committee

7) Which of the following database is Open Access? (1)

- Scopus
- PubMed
- Web of Science
- Journal Citation Report

8) Identify the non-parametric test alternative to the t-test. (1)

- Wilcoxon rank-sum test
- ANOVA
- Chi-square test
- Pearson correlation

9) The statistical test "Analysis of Variance" is applied to compare (1)

- Two standard deviations
- More than three means
- Two means
- More than three standard deviations

10) The F-statistic in analysis of variance is computed as: (1)

- Ratio of the means of the two groups
- Difference between the means of the two groups
- Sum of the squared differences between observed and expected frequencies
- Ratio of the variance between groups to the variance within groups

11) Non-parametric test is applied when (1)

- Mean of the distribution of the data is not known
- SD of the distribution of the data is not known
- SE of the distribution of the data is not known
- Mode of the distribution of the data is not known

12) Paired t-test is used when: (1)

- Two groups are independent of each other
- Two groups are matched
- One group has more observations than the other
- The data is not normally distributed

13) For smoking and lung cancer, Chi-square test measures (1)

- Test of association
- Test of proportion
- Goodness of fit
- Linearity test

14) In a chart that presents grouped data with rectangular bars, the height of the bar represents a class (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) Which among the following does not represent a graphical representation of data? (1)

- Frequency polygon
- Ogive
- Evidence pyramid
- Scatter plot

16) A frequency polygon is plotted from (1)

- Vertical bar chart
- Histogram
- Frequency curve
- Ogive

17) A pictogram can represent (1)

- Frequency of a category
- Cumulative frequency of a category
- Continuity of classes
- Grouped data

18) Which among the following is one of the basic ethical principles of Belmont report? (1)

- Essentiality
- Totality of responsibility
- Beneficence
- Non-exploitation

19) Which of the following designs is unethical in a clinical trial involving assessment of two different types of surgeries for a cardiac complication? (1)

- Non-randomized trial
- Randomized double-blind trial
- Randomized placebo-controlled trial
- All of the above

20) Identify the case where a LAR would be sufficient during the informed consent process. (1)

- A clinical study involving minor children who have literate parents.
- A study conducted in Mangalore involving adult and illiterate migrant labourers from Tripura.
- A trial conducted on mentally disabled orphan subjects
- None of the above

II Long Answers

Answer all the questions.

1) Fifteen subjects participated in an exercise program. Following are their systolic blood pressure (SBP) readings measured before and after exercise. (10)
Perform a suitable non-parametric statistical test to assess whether there was a statistically significant benefit for subjects due to exercise. Tabulate your values and interpret your results.
SBP (mmHg) before exercise: 125, 132,138,120, 125, 127, 136, 139, 131, 132, 135, 136, 128, 127, 130
SBP (mmHg) after exercise: 118, 134, 130, 124, 105, 130, 130, 132, 123, 128, 126, 140, 135, 126, 132

2) The heights (cm) and weights (kg) of ten adolescent children are given below (as pairs). (10)
Determine if a correlation exists between the marks.
130, 38; 108, 32; 135, 40; 129, 40; 103, 24; 128, 54; 122, 38; 114, 74; 123, 41; 127, 38

III Short Answers

Answer all the questions.

1) How can research be defined? Discuss the significance of research in the Pharmacy profession. (5)

2) With examples, discuss framing the right objectives for the research protocol. (5)

3) With suitable examples, discuss publication ethics. (5)

4) Explain the Gantt chart. Discuss its importance. (5)

5) Write a short note on Chi-square test. (5)

6) Citing examples, describe commonly used measures of central tendency. (5)

7) What is a vulnerable population in clinical trials? Explain. (5)

-----End-----