Exam Date & Time: 11-Jul-2022 (10:00 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

Biostatistics and Research Methodology [PHA-BP801T]

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

I Multiple Choice Questions (MCQs)

Answer all the questions.   Section Duration: 30 mins

1) Which one among the followings is the best source for literature in research   (1)

1)	Internet	2)	Conferences	3)	Journals	4)	Symposiums

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

1)	Introduction	2)	Abstract	3)	Results	4)	Materials and Methods

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

1)	ICMJE	2)	WAME	3)	IEEE	4)	STM

4) Who should be the "Corresponding Author" in journal publication?   (1)

1)	PI of the project or the lead person who conceived the idea	2)	Senior-most professor in the department who guided the guides	3)	PhD Guide	4)	PhD Co-Guide

5) Fabrications and falsifications are classified under   (1)

1)	Data-manipulation	2)	Plagiarism	3)	Copyright and other IPRs	4)	Overlapping publications

6) To obtain informed consent, you must do all of the following EXCEPT   (1)

1)	inform participants that their participation is voluntary	2)	forewarn participants about potentially harmful effects	3)	fully disclose your research objectives and hypotheses	4)	inform participants that they may discontinue their participation at any time

7) New indications of an approved drug is identified in: (1)

1)	Clinical trial phase I	2)	Clinical trial phase II	3)	Clinical trial phase III	4)	Clinical trial phase IV

8) Which of the following considerations is LEAST important in determining sample size?   (1)

1)	degree of error tolerated in the sample estimate		2)	size of the population		3)	cost per case		4)	type of sampling design	

9) All are true about randomized control trial except? (1)

1)	Baseline characteristics of intervention and control groups must be similar		2)	Investigator bias can be minimized by double blinding		3)	The sample size depends on the hypothesis tested		4)	Drop outs should be excluded from the analysis	

10) In a randomised controlled trial, the following types of biases are reduced by randomisation: (1)

1)	Ascertainment bias		2)	Selection bias		3)	Recall bias		4)	Publication bias	

11) SPSS is an acronym of the following? (1)

1)	Statistical Predictions for Social Sciences		2)	Sexual Preferences for the Sixties and Seventies		3)	Statistical Package for the Social Sciences		4)	Sexual Performance and SAD Syndrome	

12) Select the correct standard error of mean for standard deviation 10 and if number of samples are 9. (1)

1) 3.33	2) 1.11	3) 0.9	4) 10

13) For given values (4, 12, 13, 4, 12, 12, 6, 4, 6, 4), what is the mode? (1)

1) 13	2) 12	3) 6	4) 4

14) Which one of the following tests can be used to analyse the data having skewed distribution. (1)

1)	Un-Paired t-test		2)	Mann-Whitney U test		3)	ANOVA test		4)	Gaussian test	

15) Select a correct statement: (1)

1)	Variance is used to find the significance level in the Chi-square test		2)	Median is considered to be part of resistant statistics.		3)	Mode is unique.		4)	Standard deviation can describe the deviation of a sample mean from the population mean.	

16) Select an appropriate test from below to analyze haemoglobin values obtained from patients, before and after the treatment with a drug? (1)

1)	Unpaired t-test		2)	Paired t-test		3)	Wilcoxon signed-rank		4)	Kruskal-Wallis test	

					test				

17) Using the Chi-square test, to find the association of four different treatments with survival rates in patients, select a correct statement from below: (1)

1)	Two by two contingency table needed.		2)	Degree of freedom = 3.		3)	If calculated Chi-square value < table Chi-square value, indicates a significant association between the variables.		4)	$X^2 = \Sigma [E-O]^2 \div E$

18) _____ is the ordinal type of data. (1)

1)	Gender	2)	Religion	3)	Pain score	4)	Blood group	

19) For normally distributed data, which is the better estimate of the centre? (1)

1)	Mean	2)	Median	3)	Mode	4)	Range	

20) Following test is used to find differences in more than two treatments and more than two variables. (1)

1)	One way ANOVA	2)	Chi-square test	3)	Friedman Two-Way ANOVA	4)	Kruskal-Wallis test	

II Long Answers

Answer all the questions.

1) Following are the increase in reaction time (s) data obtained from tail flick test after administration of vehicle, pentazocine (standard drug) and the combination drug (Pentazocine + test compound) to respective group of rats.
Vehicle (n=6): 6, 3, 5, 5, 6, 4

Pentazocine (n=5): 9, 10, 6, 8, 9

(10)

Pentazocine + Test compound (n=6): 5, 4, 5, 5, 5, 6

Apply an appropriate statistical test, analyze, infer and report the outcome of the experiment. [Given critical ratio = 7.56 at p=0.01]

2) With examples, define the following terms: A) Correlation, B) Correlation coefficient, C) Regression, D) Regression coefficient, E) Confidence interval

(5)

A)

B) Tabulate the five major differences between t and F distributions. (5)

III Short Answers

Answer all the questions.

1) By applying FINER principles discuss the selection of research topic with an example. (5)

2) Discuss the importance of literature search. Mention one example each for Open Access and a Subscription based databases with with its salient features (3+2). (5)

3) Describe the measures of central tendencies with appropriate examples. (5)

4) Explain the categories of statistical tests used in biostatistics. How do you select an appropriate statistical test for the given data set? (5)

5) With a hypothetical experiment data, explain the procedure of statistical analysis using the Student's un-paired t-test. [if Given table-t value = 2.368] (5)

6) With appropriate examples, explain the types of statistical errors. (5)

7) What are the limitations of using Microsoft Excel as a statistical tool? (5)

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