

Seat No.: _____

SANKALCHAND PATEL UNIVERSITY

Ph.D. COURSE WORK EXAMINATION – NOV/DEC-2017

Subject Name: Research Methodology and Statistics

Subject Code: 1RI3000101

Date: 31/ 01/ 2018

Time: 3 Hrs.

Total Marks: 100

Instructions:

1. Attempt All Questions
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q.1 Select Correct Answer for following MCQs (Any 10) – 02 Marks each

20

- 1 Research is
 - (a) Searching again and again
 - (b) Finding solution to any problem
 - (c) Working in a scientific way to search for truth of any problem
 - (d) None of the above
- 2 A research problem can be defined as a gap or uncertainty in the decision makers' existing body of knowledge which inhibits efficient decision making. Is it true?
 - (a) Yes
 - (b) No
- 3 What is the need of research design?
 - (a) It may result in the desired type of study with useful conclusion
 - (b) It reduces inaccuracy
 - (c) Helps to get optimum efficiency and reliability
 - (d) All of above
- 4 Interviewing all members of a given population is called:
 - (a) a sample
 - (b) a Gallup poll
 - (c) a census
 - (d) a Nielsen audit
- 5 The sampling technique in which every element of the population has an equal, non-zero probability of being selected in a sample is called
 - (a) Probability Sampling
 - (b) Convenience Sampling
 - (c) Purposive Sampling
 - (d) Quota Sampling
- 6 Types of descriptive measures includes
 - (a) measures of skewness
 - (b) measures of dispersion
 - (c) measures of central tendency
 - (d) all of above
- 7 The statement "results are accurate within ± 4 p.p., 95% of the time" refers respectively to:
 - (a) accuracy interval and confidence level
 - (b) confidence level and confidence interval
 - (c) confidence interval and confidence level
 - (d) margin of error and margin of confidence
- 8 According to the text, questionnaires can address events and characteristics taking place when?
 - (a) In the past (retrospective questions)
 - (b) In the present (current time questions)
 - (c) In the future (prospective questions)
 - (d) All of the above
- 9 On which component of his field notes was Mr. Shah focused when he expressed in his notes his thoughts and ideas about what he observed?
 - (a) Reflection
 - (b) Protocol
 - (c) Formal data analysis
 - (d) Description
- 10 If two variables oppose each other then the correlation will be
 - (a) Positive Correlation
 - (b) Zero Correlation
 - (c) Perfect Correlation
 - (d) Negative Correlation

- 11 Any measure indicating the centre of a set of data, arranged in an increasing or decreasing order of magnitude, is called a measure of:
(a) Skewness (b) Symmetry (c) Central tendency (d) Dispersion
- 12 Probability distribution of a statistics is called
(a) Sampling (b) Parameter (c) Data (d) Sampling distribution
- 13 Estimation is of two types:
(a) One sided and two sided (b) Type I and type II
(c) Point estimation and interval estimation (d) Biased and unbiased
- 14 Which of the following is true of the null and alternative hypotheses?
(a) Exactly one hypothesis must be true
(b) both hypotheses must be true
(c) It is possible for both hypotheses to be true
(d) It is possible for neither hypothesis to be true
- 15 In hypothesis testing, type II error is represented by β and the power of the test is $1-\beta$ then
(a) The probability of rejecting H_0 when H_1 is true
(b) The probability of failing to reject H_0 when H_1 is true
(c) The probability of rejecting H_0 when H_0 is true
(d) The probability of failing to reject H_0
- 16 A type I error occurs when:
(a) the null hypothesis is incorrectly accepted when it is false
(b) the null hypothesis is incorrectly rejected when it is true
(c) the sample mean differs from the population mean
(d) the test is biased
- 17 Categorical independent variables are _____. The independent variables must all be categorical (nonmetric) to use ANOVA.
(a) factors (b) covariates (c) parameters (d) items
- 18 Analysis of covariance includes at least one _____ independent variable and at least one _____ independent variable.
(a) categorical; interval (b) ordinal; categorical
(c) metric; interval (d) parametric; interval
- 19 Which one of the following nonparametric methods can be used to test the strength of the relationship between two variables?
(a) Wilcoxon Signed Ranks test (b) Sign test
(c) Kruskal-Wallis test (d) Wilcoxon Rank Sum test
- 20 The Mann-Whitney U test is a counterpart of the _____ to compare the means of two independent populations.
(a) t test (b) ANOVA (c) z test (d) χ^2 test

- Q.2 Answer following Questions (Any Two) 20**
- (A) Explain in details the different steps involved in a research process.
 - (B) What do you mean by 'Sample Design'? What points should be taken into consideration by a researcher in sample design for any research project?
 - (C) What are the important steps of data preparation process? Explain in detail.
 - (D) Discuss about measures of central tendency and how they are useful in any research work.
- Q.3 Answer following Questions (Any Two) 20**
- (A) Explain how sampling and statistical inference are useful for any research work.
 - (B) Explain following terms in brief:
 - (i) Intellectual Property Rights (ii) Copyrights (iii) Patents (iv) Trademarks
 - (C) Distinguish between correlation and regression with the help of an example.
 - (D) What is testing of hypothesis? Explain how it is useful for illustrating a research problem with two examples.
- Q.4 Answer following Questions (Any Two) 20**
- (A) Explain the key features of a technical report with example.
 - (B) A technical report / paper is comprising of following components
Title page, Summary, Table of Contents, Introduction, Middle sections with numbered headings, Conclusions, References, Appendices
Explain any two in detail with example.
 - (C) Explain the terminology (i) bibliography (ii) referencing and (iii) footnotes with example.
 - (D) What is Chi-Square test? Explain the significance in statistical analysis of any research problem.
- Q.5 Answer following Questions 20**
- (A) What is the purpose of research design? Briefly discuss characteristics of good research design using suitable examples from your subject?
 - (B) What makes a good research report?
