

Seat No.: _____

SANKALCHAND PATEL UNIVERSITY

Ph.D. COURSE WORK EXAMINATION – JULY-2019

Subject Name: Research Methodology and Statistics

Subject Code: 1RI3000101

Date: 27/07/ 2019

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

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- 01 Research is
 - (a) Finding Solution to any problem,
 - (b) Working in a scientific way to search for truth of any problem,
 - (c) Searching again and again,
 - (d) None of the above
- 02 Which one is true for standard error (SE)?
 - (a) The SE does not give an idea about the reliability and precision of a sample.
 - (b) There is no relation between size of SE and size of sample.
 - (c) The smaller the SE, the greater the uniformity of sampling distribution and hence, greater is the reliability of sample.
 - (d) The difference between observed and expected frequencies is equal to or more than 3 times the S.E., the difference is supposed to exist as a matter of chance.
- 03 _____ provides rights of reproduction, public performance, recordings, broadcasting and translation or adaption of work.
 - (a) Patent, (b) Industrial Design, (c) Geographical Indication, (d) Copyrights
- 04 If out of 600 people selected randomly for the sample, 120 are found to possess a certain attribute and 480 are such people where the attribute is absent. With such data, the sampling distribution generally takes the form of binomial probability distribution whose mean (μ) is _____.
 - (a) 480, (b) 120, (c) 600, (d) None of these
- 05 _____ which concern with the question of how many items are to be observed and how the information and data gathered are to be analyzed.
 - (a) The statistical design, (b) the operation design,
 - (c) the observational design, (d) the sampling design
- 06 Which one is having significance in measuring the power of a hypothesis test?
 - (a) Probability of Type-I error, (b) The population mean,
 - (c) Probability of Type-II error, (d) Standard error
- 07 Darjeeling Tea is an example of
 - (a) Patent, (b) Copyrights, (c) Geographical Indication, (d) Trade Mark
- 08 While selecting a sampling procedure, researcher must ensure that the procedure causes a relatively small _____ and help to control the _____ in a better way.
 - (a) systematic bias, sampling error, (b) sampling error, systematic bias,
 - (c) sample size, systematic bias, (d) systematic bias, sample size.
- 09 In which test, comparison of a sample variance to a theoretical population variance is used.
 - (a) Chi-Square Test, (b) z-test, (c) t-test, (d) F-test
- 10 It is need to compare method A with method B about its superiority. If it is proceed on the assumption that both methods are equally good, then this assumption is termed as the _____.
 - (a) alternative hypothesis, (b) null hypothesis

- 11 To acquire Ph.D. Program, research publications are require in
 (a) Any journals, (b) Indexed-Journals,
 (c) Only National Journals, (d) Only Conferences.
- 12 As a best practice, bibliography is in _____, while reference is in _____.
 (a) Book, Research Report, (b) Research Report, Research Paper,
 (c) Research Report, Research Report, (d) Research Paper, Book.
- 13 Which one is not a criteria of patentability?
 (a) Innovativeness, (b) Non-obvious, (c) Utility, (d) Any research
- 14 When population standard deviation is not known and the sample is of a small size, which kind of sampling distribution is used?
 (a) F distribution, (b) t-distribution,
 (c) Chi-square distribution, (d) any normal distribution
- 15 From given sample data: 578, 568 598, 572, 570, 590 ,576, 580, 588 find median and mean
 (a) 578, 580, (b) 580, 580, (c) 588, 582, (d) 578, 578
- 16 An estimator should approach the value of population parameter as the sample size become larger and larger. This property is referred to as the property of _____.
 (a) Consistency, (b) sufficiency, (c) efficiency, (d) unbiasedness
- 17 Which is not suitable in a research proposal?
 (a) Justification, (b) Work Plan, (c) Non-recurring budget, (d) Obvious work
- 18 _____ is the expected percentage of times that the actual value will fall within the stated precision limits.
 (a) Confidence level, (b) Precision, (c) Sampling error, (d) Significance level
- 19 Meaning of $H_0 : \mu = \mu_{H_0}$ and $H_a : \mu \neq \mu_{H_0}$ is _____, where, H_0 is null hypothesis, H_a is alternative hypothesis, and μ is population mean.
 (a) Two-sided test, (b) One-sided test,
 (c) Type I and Type II errors, (d) test of hypothesis.
- 20 Which one is not a research funding agency?
 (a) GUJCOST, (b) NAAC (c) SERB, (d) DST

Q.2 Answer following Questions (Any Two)

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- (A) What are the important steps of data preparation process? Explain in details.
- (B) Define Literature survey. Discuss its significant for the success of any research study. Briefly discuss its objective and various source of literature survey.
- (C) Explain collection of data through Questionnaires.
- (D) Define hypothesis testing. Write characteristics of hypothesis.

Q.3 Answer following Questions (Any Two)

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- (A) Briefly explain: Tukey's test, Newman-Keuls test, Dennett's test, and Kruskal-wallis test.
- (B) Explain One-way ANOVA techniques in details.
- (C) Explain briefly (1) Type I and Type II errors, (2) Two-tailed and One-tailed tests.
- (D) Explain chi-Square test in details.

Q.4 Answer following Questions (Any Two)

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- (A) Write short note on sample size determination.
- (B) What are key aspects in cost analysis of the research projects?
- (C) Define and explain difference between z-test and t-test.
- (D) Explain quality research publication. Discuss types of research publications, Impact factor, H- Index, i10-Index.

Q.5 Answer following Questions

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- (A) Discuss the criteria for selecting a research topic and designing a research study. Also discuss problems encountered by researchers in India.
- (B) Define Intellectual property rights. Briefly explain Copyright, Patent and Geographical Indications.
