



BRAINWARE UNIVERSITY

Term End Examination 2021 - 22

Programme – Bachelor of Science in Information Technology

Course Name – Inferential Statistics

Course Code - GEBS(AI)401

(Semester IV)

Time allotted : 1 Hrs.15 Min.

Full Marks : 60

[The figure in the margin indicates full marks.]

Group-A

(Multiple Choice Type Question)

1 x 60=60

Choose the correct alternative from the following :

- (1) If the standard deviation of a population is 9, the population variance is:

a) 9	b) 3
c) 21	d) 81
- (2) Largest value is 60 and smallest value is 40 and number of classes desired is 5 then class interval is

a) 20	b) 4
c) 25	d) 15
- (3) When s.d. is known, the hypothesis about population mean is tested by

a) t-test	b) Z-test
c) F-test	d) chi-square
- (4) Subset of selected population is called

a) descriptive portion	b) elementary portion
c) inferential portion	d) sample
- (5) Analysis of variance is a statistical method of comparing the _____ of several populations.

a) mean	b) median
c) mode	d) variance
- (6) The weights of students in a college/ school is a

a) Discrete Variable	b) continuous variable
c) Qualitative variable	d) None of these
- (7) The mean deviation of each samples about mean is:

a) Maximum	b) Zero
c) Minimum	d) Undefined
- (8) The number of independent values in a set of values is called

- a) test statistic
c) level of significance
- b) degrees of freedom
d) level of confidence
- (9) The variance of 5 numbers is 10. If each number is divided by 2, then the variance of new numbers is
- a) 0
c) 5
- b) 20
d) 2.5
- (10) Which of the following is type II error?
- a) The error of accepting H_0 when H_0 is true
c) The error of accepting H_0 when H_0 is false
- b) The error of rejecting H_0 when H_0 is false
d) The error of rejecting H_0 when H_0 is true
- (11) In hypothesis testing $P(\text{Type II Error})=?$
- a) $1 - \alpha$
c) $1 - \beta$
- b) α
d) β
- (12) In descriptive statistics, we study
- a) The description of decision making process
c) How to describe the probability distribution
- b) The methods for organizing, displaying, and describing data
d) None of these
- (13) For testing of hypothesis critical region is also known as
- a) confidence region
c) rejection region
- b) acceptance region
d) None of the mentioned
- (14) If $E(T) = 5\theta + 6$, then the unbiased estimator of θ is
- a) $\frac{1}{5}T - \frac{6}{5}$
c) $\frac{1}{5}T$
- b) $T - \frac{6}{5}$
d) none of these
- (15) The number of accidents in a city during 2010 is
- a) Discrete variable
c) Qualitative variable
- b) Continuous variable
d) Constant
- (16) ----- is used when the alternative hypothesis states that the true value of the parameter specified in the null hypothesis is less than the null hypothesis claims.
- a) right one-tailed test
c) two sided test
- b) left one-tailed test
d) All of the mentioned
- (17) A hypothesis can be classified as:
- a) Null
c) composite
- b) simple
d) all null, simple and composite
- (18) The probability of rejecting the null hypothesis when it is true is called
- a) level of confidence
c) power of the test
- b) level of significance
d) confidence interval
- (19) A statement about a population developed for the purpose of testing is called:
- a) hypothesis
c) level of significance
- b) hypothesis testing
d) test-statistic
- (20) If the correlation coefficient is a positive value, then the slope of the regression line
- a) Must also be positive
- b) May be negative or positive

- a) cumulative frequency distribution
c) class distribution
- b) upper limit distribution
d) cumulative class distribution
- (34) Which of the following is an assumption of one-way ANOVA comparing samples from three or more experimental treatments?
- a) All the response variables within the k populations follow normal distributions.
c) The response variable within each of the k populations has equal variances.
- b) The samples associated with each population are randomly selected and are independent from all other samples.
d) All the response variables within the k populations follow normal distributions, the samples associated with each population are randomly selected and are independent from all other samples, the response variable within each of the k populations has equal variances.
- (35) Total of frequency up to an upper class limit or boundary is known as
- a) average frequency
c) frequency distribution
- b) cumulative frequency
d) frequency polygon
- (36) In a one-way ANOVA, if the computed F value exceeds the critical F value, what decision is made regarding the null hypothesis?
- a) Reject H_0 since there is evidence of a treatment effect.
c) Reject H_0 since there is evidence that all means differ.
- b) Do not reject H_0 since there is no evidence of a difference
d) Do not reject H_0 because a mistake has been made.
- (37) Which of the following statistical concepts is used to test differences in the means for more than two independent populations?
- a) regression analysis
c) ANOVA
- b) multiple analysis
d) none of these
- (38) The sum of frequencies for all classes will always equals to
- a) 1
c) the number of classes
- b) the number of elements in data set
d) a number between 0 to 1
- (39) ANOVA tests use which of the following distributions?
- a) t-distribution
c) Chi-square
- b) F-distribution
d) none of these
- (40) ANOVA was used to test the outcomes of three drug treatments. Each drug was given to 20 individuals. The MSE for this analysis was 16. What is the standard deviation for all 60 individuals sampled for this study?
- a) 6.928
c) 16
- b) 48
d) 4
- (41) If the sample means for each of k treatment groups were identical (yes, this is extremely unlikely), what would be the observed value of the ANOVA test statistic?
- a) 1.0
c) any positive value
- b) 0.0
d) value between 0.0 and 1.0
- (42) When conducting a one-way ANOVA, the _____ the between-treatment variability is when compared to the within-treatment variability, the _____ the value of F-DATA will be tend to be.
- a) smaller, larger
c) larger, larger
- b) smaller, smaller
d) smaller, more random
- (43) You obtained a significant test statistic when comparing three treatments in a one-way

ANOVA. In words, how would you interpret the alternative hypothesis H_A ?

- a) All three treatments have different effects on the mean response.
- b) Exactly two of the three treatments have the same effect on the mean response.
- c) At least two treatments are different from each other in terms of their effect on the mean response.
- d) None of these

(44) If $F\text{-DATA} = 0.9$, the result is statistically significant:

- a) Always
- b) Sometimes
- c) Never
- d) not possible to conclude

(45) If $F\text{-DATA} = 5$, the result is statistically significant

- a) Always
- b) Sometimes
- c) Never
- d) not possible to conclude

(46)

The following data show the number of hours worked by 200 statistics students.

<u>Number of Hours</u>	<u>Students</u>
0 - 9	40
10 - 19	50
20 - 29	70
30 - 39	40

The number of students working 19 hours or less is

- a) 40
- b) 50
- c) 90
- d) cannot be determined without the original data

(47)

The following data show the number of hours worked by 200 statistics students.

<u>Number of Hours</u>	<u>Students</u>
0 - 9	40
10 - 19	50
20 - 29	70
30 - 39	40

The cumulative frequency for the class of 10 - 19

- a) 90
- b) 110
- c) 120
- d) 130

(48) Questionnaire survey method is used to collect

- a) Secondary data
- b) Qualitative variable
- c) Primary data
- d) None of these

(49) The first hand and unorganized form of data is called

- a) Secondary data
c) Organized Data
- b) Primary Data
d) None of these
- (50) The Mann-Whitney U test is preferred to a t-test when
- a) Data are paired
b) Sample sizes are small
- c) The assumption of normality is not met
d) Samples are dependent
- (51) The Wilcoxon signed-rank is used
- a) Only with independent samples
b) Only in matched pairs samples
c) As an alternative to the Kruskal-Wallis test
d) To test for randomness
- (52) The sign test assumes that the samples are
- a) Independent
b) Dependent
c) Have the same mean
d) None of these
- (53) By whom and when were the Bayesian methods applied first?
- a) Smith-Waterman, 1981
b) Agarwal and States, 1996
c) Smith-Waterman, 1996
d) Agarwal and States, 1981
- (54) If the purpose is to calculate the probability of one event AND a second event, the odds scores for the events are _____
- a) added
b) multiplied
c) multiplied and added
d) subtracted
- (55) In a type of probability, analysis is to calculate the odds score for one event OR a second event, or of a series of events. In this case, the odds scores are _____
- a) multiplied
b) subtracted
c) added and multiplied
d) added
- (56) To perform a runs test for randomness the data must be
- a) Qualitative
b) Quantitative
c) Divided into at least two classifications
d) Divided into exactly two classifications
- (57) Zhu (1998) have devised a computer program called the Bayes block aligner which in effect slides _____ sequences along each other to find the _____ ungapped regions or blocks.
- a) two, least scoring
b) two, highest scoring
c) multiple, least scoring
d) multiple, highest scoring
- (58) If a Chi-square goodness of fit test has 6 categories and an $N=30$, then the correct number of degrees of freedom is
- a) 5
b) 6
c) 28
d) 29
- (59) Which of the following is the probability calculus of beliefs, given that beliefs follow certain rules?
- a) Bayesian probability
b) Frequency probability
c) Frequency inference
d) Bayesian inference
- (60) Which of the following can be considered as random variable?
- a) The outcome from the roll of a die
b) The outcome of flip of a coin

c) he outcome of exam

d) All of the mentioned