



BRAINWARE UNIVERSITY

Term End Examination 2021 - 22

Programme – Bachelor of Technology in Computer Science & Engineering- Data Science

Course Name – Probability and Statistics

Course Code - BSCD201

(Semester II)

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 third moment about mean is zero then the distribution is:
- | | |
|----------------|----------------------|
| a) Mesokurtic | b) Positively Skewed |
| c) Symmetrical | d) Negatively Skewed |
- (2) For Mesokurtic curve of the distribution, β_2 is
- | | |
|---------|---------|
| a) 0 | b) <3 |
| c) >3 | d) $=3$ |
- (3) The number of accidents in a city during 2010 is
- | | |
|-------------------------|------------------------|
| a) Discrete variable | b) Continuous variable |
| c) Qualitative variable | d) Constant |
- (4) The variance of first n natural numbers is
- | | |
|---------------------|-------------------------|
| a) $n^2 - 1$ | b) $\frac{n^2 - 1}{10}$ |
| c) $\frac{n^2}{12}$ | d) $\frac{n^2 - 1}{12}$ |
- (5) The correlation coefficient is used to determine:
- | | |
|--|--|
| a) A specific value of the y-variable given a specific value of the x-variable | b) A specific value of the x-variable given a specific value of the y-variable |
| c) The strength of the relationship between the x and y variables. | d) None of these |
- (6) The mean of a distribution is 14 and the standard deviation is 5. What is the value of the coefficient of variation?
- | | |
|----------|----------|
| a) 60.4% | b) 48.3% |
| c) 35.7% | d) 27.8% |
- (7) The middle value of an ordered array of numbers is the
- | | |
|---------|---------|
| a) Mode | b) Mean |
|---------|---------|

- c) Median
- d) Mid-point
- (8) If the coefficient of determination is equal to 1, then the correlation coefficient
- a) Must be equal to 1
- b) Can be either -1 or +1
- c) Can be any value between -1 and +1
- d) Must be -1
- (9) The most frequently occurring value of a data set is called the
- a) Mean
- b) Median
- c) Mode
- d) Variance
- (10) The value of any regression coefficient is zero, then two variables are
- a) Dependent
- b) Independent
- c) Correlated
- d) None of these.
- (11) When regression line passes through the origin then
- a) Regression coefficient is zero
- b) Correlation is zero
- c) Intercept is zero
- d) Association is zero
- (12) The sum of the deviations about the mean is always:
- a) Range
- b) Zero
- c) Total Standard Deviation
- d) Positive
- (13) **When b_{xy} is positive, then b_{yx} will be**
- a) Positive
- b) Negative
- c) Zero
- d) One
- (14) The data which have already been collected by someone are called
- a) Raw data
- b) Array data
- c) Secondary data
- d) Fictitious data
- (15) Type of cumulative frequency distribution in which class intervals are added in top to bottom order is classified as:
- a) variation distribution
- b) less than type distribution
- c) more than type distribution
- d) marginal distribution
- (16) 'less than type distribution' and 'more than type distribution' are types of
- a) class distribution
- b) cumulative class distribution
- c) cumulative frequency distribution
- d) upper limit distribution
- (17) Types of frequency distribution are
- a) 3
- b) 4
- c) 5
- d) 2
- (18) Total of frequency up to an upper class limit or boundary is known as
- a) average frequency
- b) cumulative frequency
- c) frequency distribution
- d) frequency polygon
- (19) A bar chart constructed in which area of each bar is proportional to number of items in each group is known as
- a) pi chart
- b) histogram
- c) frequency distribution table
- d) polygon
- (20) The sum of frequencies for all classes will always equal
- a) 1
- b) the number of elements in data set
- c) the number of classes
- d) a number between 0 to 1
- (21) The sum of the relative frequencies for all classes will always equal
- a) the sample size
- b) the number of classes
- c) one
- d) larger than the sample size
- (22)

The following data show the number of hours worked by 200 statisticians

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

The class width for this distribution is

- a) 9
b) 10
c) 11
d) Varies from class to class
- (23)

The following data show the number of hours worked by 200 statisticians

<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
- (24)

The following data show the number of hours worked by 200 statisticians

<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) 120
c) 110
d) 160
- (25) The grouped data is also called
- a) Raw Data
b) Primary Data
c) Secondary data
d) Qualitative data

- (26) Which of these represent qualitative data?
- a) Height of a student
 b) Liking or disliking of (500) persons of a product
 c) The income of a government servant in a city
 d) Yield from a wheat plot
- (27) Which of the following is not based on all the observations?
- a) Mean
 b) Median
 c) Mode
 d) None of these
- (28) Which of the following is a measure of central tendency?
- a) Percentile
 b) Quartile
 c) Standard Deviation
 d) Mode
- (29) In a week the prices of a bag of rice were 350, 280, 340, 290, 320, 310, 300. The range is
- a) 60
 b) 70
 c) 90
 d) 100
- (30) Relation between A.M, G.M and H.M
- a) $A.M > G.M > H.M$
 b) $A.M = G.M = H.M$
 c) $A.M < G.M < H.M$
 d) None of these
- (31) In a Binomial (n,p) distribution, if its mean and variance are 2 and $16/9$ respectively, then the values of n and p are:
- a) $18, 1/9$
 b) $16, 1/9$
 c) $16, 1/8$
 d) $18, 1/8$
- (32) The distribution for which mean and variance are equal is
- a) Poisson
 b) Normal
 c) Binomial
 d) Exponential

(33)

For the distribution

X	3	5	7	9
f_i	$\frac{1}{2}$	$\frac{1}{5}$	$\frac{1}{7}$	$\frac{11}{70}$

if $Y=3X+1$ then $P(Y=22)$ is

- a) $1/2$
 b) $1/5$
 c) $3/10$
 d) $1/7$
- (34) How many outcomes are possible if 3 new employees are to be selected from a group of 5 applicants?
- a) 10
 b) 12
 c) 15
 d) 30
- (35) The variance of a random variable x is
- a) $\{E(x)\}^2$
 b) $E(x^2)$
 c) $E(x^2) - \{E(x)\}^2$
 d) **None of these**
- (36) A bag of 45 marbles contains 20 red, 15 blue, and 10 yellow. What is the probability of randomly selecting 12 from the bag and having 3 red, 4 blue, and 5 yellow.
- a) 0.0
 b) 0.0587
 c) 0.0923
 d) 0.0136

- (37) The mean of the binomial distribution is
- less than the variance
 - equal to its variance
 - greater than its variance
 - greater than or equal to its variance
- (38) A set of all possible outcomes of an experiment is called
- Combination
 - Sample point
 - Sample space
 - Compound event
- (39) A coin is tossed .The events $\{H\}$, $\{T\}$ are
- mutually exclusive
 - independent events
 - dependent events
 - both mutually exclusive and dependent event
- (40) If $P(A) = \frac{1}{3}$, $P(B) = \frac{1}{4}$, $P(A \cup B) = \frac{1}{2}$, then $P(B/A)$ is
- $\frac{3}{4}$
 - $\frac{4}{3}$
 - $\frac{1}{4}$
 - $\frac{1}{3}$
- (41) If for a random variable X , $Var(X) = 1$, then $Var(2X + 3)$ is
- 1
 - 2
 - 4
 - None of these
- (42) The probability $P(a \leq X \leq b)$ (where $F(x)$ is the distribution function of the random variable X) is defined by
- $F(b) - F(a)$
 - $F(b) + F(a)$
 - $F(a) - F(b)$
 - $F(a)F(b)$
- (43) The mean and standard deviation of a Binomial distribution are respectively 4 and $\sqrt{\frac{8}{3}}$. The values of n and p are (where n and p are the parameters of the probability distribution)
- 11, $\frac{3}{4}$
 - 12, $\frac{2}{7}$
 - 12, $\frac{1}{3}$
 - 11, $\frac{4}{3}$
- (44) Two even A and B are mutually exclusive if
- $P(A \cup B) = P(A)P(B)$
 - $P(A \cap B) = P(A)P(B)$
 - $P(A \cap B) = 0$
 - None of these
- (45) If $P(A) = 0.2$, $P(B) = 0.4$, $P(A \cup B) = 0.6$ then A and B are
- mutually exclusive
 - independent
 - exhaustive
 - complement of each other
- (46) The probability of any event A satisfies
- $P(A) \geq 1$
 - $P(A) < 0$
 - $0 \leq P(A) \leq 1$
 - none of these.
- (47) Three coins are tossed at random. Then the probability that there will be at least one head is
- $\frac{3}{8}$
 - $\frac{7}{8}$
 - $\frac{2}{9}$
 - $\frac{5}{8}$
- (48) One card is drawn from a pack of 52 cards. The probability which is either king or queen is

c) $-\mu$

d) $-\mu^2$

(59) $\text{Var}(2X+3)=?$

a) $2\text{Var}(X)$

b) $4\text{Var}(X)$

c) $2\text{Var}(X)+3$

d) None of these

(60) The standard deviation is always _____ than the mean deviation

a) Less

b) Greater

c) equal

d) none of these