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| Venue Name | Bharat Institute of Technology |
| Exam Date | 10/08/2022 |
| Exam Time | 9:00 AM - 11:00 AM |
| Subject | Paper 3 Statistics |

Section : Statistics

Q.1 For the production data

| | | | | | | |
|--------------|----|----|----|----|----|----|
| Year : | 1 | 2 | 3 | 4 | 5 | 6 |
| Production : | 25 | 95 | 55 | 94 | 25 | 75 |

the third 3-year simple moving average is:

- Ans
- 1. 57
 - 2. 59
 - 3. 58
 - 4. 56

Question Type : MCQ
 Question ID : 26433083845
 Status : Answered
 Chosen Option : 2

Q.2 For the frequency distribution of income (in lakh) of the employees in factory

| | | | | |
|-------------|-----------|-----------|-----------|-----------|
| Class : | 1.5 - 2.5 | 2.5 - 3.5 | 3.5 - 4.5 | 4.5 - 5.5 |
| Frequency : | 1 | 3 | 4 | 2 |

the value of mode is

- Ans
- 1. 3.933
 - 2. 3.333
 - 3. 3.833
 - 4. 3.533

Question Type : MCQ
 Question ID : 26433083876
 Status : Answered
 Chosen Option : 3

Q.3 The mean and median of the distribution is 12 and 15. Then the mode equals to:

- Ans
- 1. 21
 - 2. 24
 - 3. 15
 - 4. 18

Question Type : MCQ
 Question ID : 26433083781
 Status : Answered
 Chosen Option : 1

Q.4 Which option is incorrect?

Ans 1.

For k treatments and N observations, the degree of freedom of variation between group is $k - 1$

2.

mean sum of square of total = mean sum of square of treatment + mean sum of square of error

3.

sum of square of total = sum of square of treatment + sum of square of error

4.

For k treatments and N observations, the degree of freedom of variation within group is $N - k$

Question Type : MCQ

Question ID : 26433083924

Status : Answered

Chosen Option : 3

Q.5 In a two-way ANOVA table

| Sources of Variation | Degree of Freedom | Sum of squares | Mean sum of squares | F |
|----------------------|-------------------|----------------|---------------------|-------|
| Due to Level A | 2 | 294 | 147 | F_A |
| Due to Level B | 2 | 6 | 3 | F_B |
| Due to error | 4 | 12 | 3 | |
| Total | x | 312 | | |

the value of x , F_A , F_B are:

Ans 1. (8,49,3)

2. (9,49,3)

3. (8,49,1)

4. (9,49,1)

Question Type : MCQ

Question ID : 26433083861

Status : Answered

Chosen Option : 3

Q.6 If the first quartile of data set 8,10,8,7,9 is 7.5, then the value of quartile deviation is

Ans 1. 7.5

2. 2.5

3. 1.0

4. 9.5

Question Type : MCQ

Question ID : 26433083882

Status : Answered

Chosen Option : 1

Q.7 For two items, tea (1 kg) and sugar (1 kg), the prices in the year 2019 were ₹100 and ₹50, respectively, whereas the prices in the year 2020 were ₹125 and ₹60, respectively. The value of Laspeyres price index is:

- Ans**
- 1. 120.33
 - 2. 122.33
 - 3. 125.33
 - 4. 123.33

Question Type : **MCQ**
Question ID : **26433083841**
Status : **Answered**
Chosen Option : **3**

Q.8 For the frequency distribution of X , number of grammatical mistakes per line is as follows.

X : 0 2 4
 $p(x)$: 0.5 0.3 0.2

The third factorial moment of X is:

- Ans**
- 1. 4.8
 - 2. 2.8
 - 3. 3.6
 - 4. 3.2

Question Type : **MCQ**
Question ID : **26433083795**
Status : **Answered**
Chosen Option : **1**

Q.9 The fair dice is rolled 15 times and face value are noted

Face value : 1 2 3 4 5 6
of times : 3 0 4 2 5 1

The empirical probability of getting a number greater than 4 when a dice is rolled, is

- Ans**
- 1. 0
 - 2. $1/2$
 - 3. 1
 - 4. $2/5$

Question Type : **MCQ**
Question ID : **26433083912**
Status : **Answered**
Chosen Option : **2**

Q.10 The interquartile range excludes _____ of the values.

- Ans**
- 1. 100%
 - 2. 75%
 - 3. 25%
 - 4. 50%

Question Type : **MCQ**
Question ID : **26433083809**
Status : **Answered**
Chosen Option : **3**

Q.11 If the third quartile of the following data set 7,10,7,8,9 is 9.5, then the value of quartile deviation is:

- Ans
- 1. 4.25
 - 2. 1.25
 - 3. 2.75
 - 4. 7.00

Question Type : MCQ
Question ID : 26433083783
Status : Answered
Chosen Option : 4

Q.12 Two random variables X and Y are said to be independent if:

- Ans
- 1. $E(XY)=XE(Y)$
 - 2. $E(XY)=E(X) E(Y)$
 - 3. $E(XY)=E(X) + E(Y)$
 - 4. $E(XY)=YE(X)$

Question Type : MCQ
Question ID : 26433083767
Status : Answered
Chosen Option : 3

Q.13

For the cumulative distribution function $F(x) = \begin{cases} 0; x < -1 \\ \frac{1}{2}(x+1)^2; -1 \leq x < 0 \\ 1 - \frac{(1-x)^2}{2}; 0 \leq x < 1 \\ 1 \cdot 1 < x < \infty \end{cases}$,

the upper quartile point is

- Ans
- 1. $1 - \sqrt{0.25}$
 - 2. $1 + \sqrt{0.25}$
 - 3. $1 + \sqrt{0.5}$
 - 4. $1 - \sqrt{0.5}$

Question Type : MCQ
Question ID : 26433083920
Status : Answered
Chosen Option : 1

Q.14 The mode of the given data set is 12. The sum of the frequencies on both sides of mode are 16. The skewness:

- Ans
- 1. equals to -1
 - 2. does not exist
 - 3. equals to ± 1
 - 4. equals to 1

Question Type : MCQ
Question ID : 26433083785
Status : Answered
Chosen Option : 3

Q.15 If the first, fifth and ninth decile of frequency distribution x_i/f_i are 3,10,16, respectively, then Kelly's coefficient of skewness is:

Ans

- 1. $-\frac{4}{13}$
- 2. $-\frac{2}{13}$
- 3. $-\frac{1}{13}$
- 4. $-\frac{3}{13}$

Question Type : **MCQ**
Question ID : **26433083797**
Status : **Answered**
Chosen Option : **3**

Q.16 The deseasonalised time-series data will have only trend (T), cyclical (C) and irregular (I) components and is expressed as:

Ans

- 1. $\frac{T \cdot I}{C} \times 100$
- 2. $\frac{C \cdot I}{T} \times 100$
- 3. $(T \cdot C \cdot I) \times 100$
- 4. $\frac{T \cdot C}{I} \times 100$

Question Type : **MCQ**
Question ID : **26433083849**
Status : **Answered**
Chosen Option : **2**

Q.17 If $P(A) = 0.4; P(B|A) = 0.05; P(C|A) = 0.04; P(B|A \cap C) = 0.09; P(C|A \cap B) = 0.07$, then the probability of occurrence of all events equals to:

Ans

- 1. 0.0014
- 2. 0.014
- 3. Given information is incomplete
- 4. 0.14

Question Type : **MCQ**
Question ID : **26433083817**
Status : **Answered**
Chosen Option : **2**

Q.18 Using the method of semi-averages, secular trend is measured when:

- Ans
- 1. time series comprises even number of values
 - 2. trend is symmetric about the mean
 - 3. time series is based on annual values
 - 4. trend is linear

Question Type : MCQ
Question ID : 26433083946
Status : Answered
Chosen Option : 2

Q.19 If the population skewness of the observations 8,6,3,1,2,5 is 0.233, then the population skewness of 16,12,6,2,4,10 is:

- Ans
- 1. 0.1165
 - 2. 0.932
 - 3. 0.233
 - 4. 0.466

Question Type : MCQ
Question ID : 26433083791
Status : Answered
Chosen Option : 2

Q.20 X_1 and X_2 represent number of occurrences of event A and B that follow Poisson distribution with mean rate λ_1 and λ_2 . If Y_1 and Y_2 are inter-occurrence times of event A and B, then $\min(Y_1, Y_2)$ follows

- Ans
- 1. Exponential distribution with mean rate $(\lambda_1 + \lambda_2)$
 - 2. Poisson distribution with mean rate $(\lambda_1 + \lambda_2)$
 - 3. Exponential distribution with mean rate $\min(\lambda_1, \lambda_2)$
 - 4. Poisson distribution with mean rate $|\lambda_1 - \lambda_2|$

Question Type : MCQ
Question ID : 26433083862
Status : Answered
Chosen Option : 2

Q.21 If r_p be partial correlation computed on sample $r_{AB.C}$ computed from sample of size n , the test statistic for significance testing is

- Ans
- 1. $t = \frac{r_p \sqrt{n-v}}{\sqrt{1+r_p^2}}$
 - 2. $t = \frac{r_p \sqrt{n+v}}{\sqrt{1+r_p^2}}$
 - 3. $t = \frac{r_p \sqrt{n-v}}{\sqrt{1-r_p^2}}$
 - 4. $t = \frac{r_p \sqrt{n+v}}{\sqrt{1-r_p^2}}$

Question Type : MCQ
Question ID : 26433083930
Status : Answered
Chosen Option : 2

Q.22 The mean deviation and coefficient of mean deviation of 5 observations are 1.2 and 0.4. If the sum of the first four terms is 10, then the fifth term is equal to:

- Ans
- 1. 4.5
 - 2. 5.5
 - 3. 4
 - 4. 5

Question Type : **MCQ**
Question ID : **26433083811**
Status : **Answered**
Chosen Option : **3**

Q.23 Identify, from the following, the moment used as a measure of skewness?

- Ans
- 1. First moment
 - 2. Fourth moment
 - 3. Third moment
 - 4. Second moment

Question Type : **MCQ**
Question ID : **26433083884**
Status : **Answered**
Chosen Option : **3**

Q.24 If the difference between the rank of the 4 observations are 2.5, 0.5, -1.5, -1.5, then Spearman's rank correlation coefficient equals to:

- Ans
- 1. -0.2
 - 2. 0.1
 - 3. -0.1
 - 4. 0.2

Question Type : **MCQ**
Question ID : **26433083831**
Status : **Answered**
Chosen Option : **2**

Q.25 From standard pack of 52 cards, 3 cards are drawn at random without replacement. The probability of drawing a king, a queen and a jack in order is

- Ans
- 1. $\frac{4}{16575}$
 - 2. $\frac{16}{16575}$
 - 3. $\frac{8}{16575}$
 - 4. $\frac{32}{16575}$

Question Type : **MCQ**
Question ID : **26433083916**
Status : **Answered**
Chosen Option : **2**

Q.26 The grouped data for the observations are

Class : 1-3 3-5 5-7

Frequency : 2 1 2

The population skewness

Ans 1. is zero

2. is negative

3. is positive

4. cannot be computed

Question Type : MCQ

Question ID : 26433083902

Status : Answered

Chosen Option : 2

Q.27 For the ANOVA, which option is wrong?

Ans 1. Total sum of square = Total variation in data

2. $F = \frac{\text{Mean sum of square within group}}{\text{Mean sum of square between group}}$

3.

Total degree of freedom = between degree of freedom + within degree of freedom

4.

Mean sum of square between group = $\frac{\text{sum of square between group}}{\text{degree of freedom between group}}$

Question Type : MCQ

Question ID : 26433083922

Status : Answered

Chosen Option : 3

Q.28 For the distribution

X : -1 0 1

p(x) : 0.3 0.5 0.2

the third factorial moment is

Ans 1. -0.3

2. 0.3

3. 1.8

4. -1.8

Question Type : MCQ

Question ID : 26433083894

Status : Answered

Chosen Option : 2

Q.29 Which one is not non-probability sample method

- Ans
- 1. Cluster sampling
 - 2. Snowball sampling
 - 3. Quota sampling
 - 4. Purposive sampling

Question Type : MCQ
Question ID : 26433083948
Status : Answered
Chosen Option : 2

Q.30 The median of the following observations 10,11,9,12,10,10,12,10,9,11 is:

- Ans
- 1. 8
 - 2. 10
 - 3. 9
 - 4. 11

Question Type : MCQ
Question ID : 26433083805
Status : Answered
Chosen Option : 2

Q.31 For completely randomised design for k treatments and n observations, y_{ij} = response from the j^{th} unit receiving i^{th} treatment, $\sum_i \sum_j y_{ij} = y_{..}$ and $\sum_j y_{ij} = y_{i.}$. Which of the following options is correct?

- Ans
- 1. $\sum_{i=1}^k \sum_{j=1}^{n_i} (y_{ij} - \bar{y}_{i.})^2$ represents sum of squares of due to error
 - 2. $\sum_{i=1}^k (\bar{y}_{i.} - \bar{y}_{..})^2$ represents sum of squares due to treatments
 - 3. $\sum_{i=1}^k \sum_{j=1}^{n_i} (y_{ij} - \bar{y}_{..})^2$ represents total sum of squares
 - 4. $\sum_{i=1}^k n_i (\bar{y}_{i.} - \bar{y}_{..})^2$ represents sum of squares due to treatments

Question Type : MCQ
Question ID : 26433083827
Status : Answered
Chosen Option : 2

Q.32 Which one is not basis of classification of data?

- Ans
- 1. Geological classification
 - 2. Geographical classification
 - 3. Qualitative classification
 - 4. Temporal classification

Question Type : MCQ
Question ID : 26433083906
Status : Answered
Chosen Option : 4

Q.33 If first, second, and third moment about origin are 1, 6, and 15 respectively, then Karl Pearson beta coefficient of skewness β_1 is

- Ans**
- 1. $\frac{1}{625}$
 - 2. $\frac{1}{25}$
 - 3. $\frac{1}{125}$
 - 4. $\frac{1}{5}$

Question Type : **MCQ**
Question ID : **26433083900**
Status : **Answered**
Chosen Option : **3**

Q.34 The value of k so that following is probability mass function

| | | | | | | |
|------------|----|----|----|----|----|---|
| X : | -2 | -1 | 0 | 1 | 2 | 3 |
| P(X = x) : | 2k | 3k | 4k | 3k | 2k | k |

is

- Ans**
- 1. $\frac{2}{15}$
 - 2. $\frac{1}{14}$
 - 3. $\frac{1}{16}$
 - 4. $\frac{1}{15}$

Question Type : **MCQ**
Question ID : **26433083918**
Status : **Answered**
Chosen Option : **2**

Q.35 A physical instructor claims that the mean weight of students in school is greater than 82 kg with standard deviation 20. If a sample of size 81 students is selected with mean weight of 90. The test statistic equals to

- Ans**
- 1. $z = 3.0$
 - 2. $z = 3.6$
 - 3. $z = 2.4$
 - 4. $z = 3.2$

Question Type : **MCQ**
Question ID : **26433083952**
Status : **Answered**
Chosen Option : **3**

Q.36 For the data set

x : 1 2 3 4

y : 4 5 3 2

the regression coefficient b_{yx} (y on x) equals to:

- Ans
- 1. -0.86
 - 2. 0.8
 - 3. 0.86
 - 4. -0.8

Question Type : MCQ
Question ID : 26433083835
Status : Answered
Chosen Option : 3

Q.37 Which of the following options is correct when data is classified on the basis of attributes?

- Ans
- 1. Qualitative classification
 - 2. Geographical classification
 - 3. Geological classification
 - 4. Temporal classification

Question Type : MCQ
Question ID : 26433083807
Status : Answered
Chosen Option : 1

Q.38 The sixth decile (D_6) of 5,3,2,6,8,4 is:

- Ans
- 1. 5.25
 - 2. 5.30
 - 3. 5.15
 - 4. 5.20

Question Type : MCQ
Question ID : 26433083779
Status : Answered
Chosen Option : 2

Q.39 For the two variables X and Y , the following observations are tabulated.

X : 3 4 4

Y : 10 10 9

The Spearman's correlation coefficient is:

- Ans
- 1. -0.125
 - 2. -0.120
 - 3. -0.100
 - 4. -0.110

Question Type : MCQ
Question ID : 26433083833
Status : Answered
Chosen Option : 3

Q.40 The median of following observations 8,9,7,10,8,8,10,8,7,9 is

- Ans
- 1. 8.2
 - 2. 8.0
 - 3. 8.4
 - 4. 8.5

Question Type : MCQ
Question ID : 26433083904
Status : Answered
Chosen Option : 2

Q.41 Which of the following options is INCORRECT?

- Ans
- 1. For k treatments and N observations, the degree of freedom of variation within groups is $N - k$
 - 2. For k treatments and N observations, the degree of freedom of total variation is $N - 1$
 - 3. For k treatments and N observations, the degree of freedom of the ratio of mean sum of square of treatments and residual mean sum is $N - 1$ and $k - 1$
 - 4. For k treatments and N observations, the degree of freedom of variation between groups is $k - 1$

Question Type : MCQ
Question ID : 26433083825
Status : Answered
Chosen Option : 3

Q.42 The standard error of the given data 15,5,12,10,20,4 is

- Ans
- 1. $\frac{\sqrt{45}}{3}$
 - 2. $\frac{\sqrt{43}}{3}$
 - 3. $\frac{\sqrt{46}}{3}$
 - 4. $\frac{\sqrt{44}}{3}$

Question Type : MCQ
Question ID : 26433083950
Status : Answered
Chosen Option : 2

Q.43 Which option is incorrect for the component of time series?

Ans 1.

Shifts in the level of a time series that cannot be explained are referred to as seasonal cycles

2.

A trend is a gradual upward or downward shift in the level of the series

3. A sudden, temporary shift is referred as pulse

4.

A non-seasonal cycle is a repetitive, possibly unpredictable, pattern in the series values

Question Type : MCQ

Question ID : 26433083944

Status : Answered

Chosen Option : 2

Q.44 If Z follows standard normal distribution with mean 0 and variance 1, then Z^2 follows:

Ans 1. Chebyshev distribution with degree of freedom 1

2. beta distribution with $\alpha = 1$ and $\beta = 1$

3. normal distribution with mean 0 and variance 1

4. gamma distribution with $\alpha = 1$ and $\beta = 1$

Question Type : MCQ

Question ID : 26433083763

Status : Answered

Chosen Option : 2

Q.45 For the price-quantity chart

| Good | Base year (2000) | | Current year (2020) | |
|------|------------------|---------------|---------------------|---------------|
| | Quantity | Price (in \$) | Quantity | Price (in \$) |
| 1 | 20 | 20 | 30 | 50 |
| 2 | 40 | 30 | 50 | 60 |
| 3 | 60 | 40 | 70 | 70 |

the Laspeyres price index for current year is

Ans 1. 180

2. 188

3. 190

4. 184

Question Type : MCQ

Question ID : 26433083960

Status : Answered

Chosen Option : 3

Q.46 Which of the following statements is INCORRECT?

Ans 1.

Collecting primary data is not quite expensive both, in the terms of time and money.

2. Primary data are original.

3. Primary data are those that are collected for the first time.

4. Primary data are more reliable and suitable.

Question Type : MCQ

Question ID : 26433083773

Status : Answered

Chosen Option : 1

Q.47 If the first, second, and third moment about the origin are 2, 8, and 18 respectively, then third moment about mean is

Ans 1. -14

2. -12

3. 12

4. 14

Question Type : MCQ

Question ID : 26433083892

Status : Answered

Chosen Option : 2

Q.48 For the following frequency distribution

Class : 3-5 5-7 7-9 9-11

Frequency : 1 4 2 1

the value of mode is:

Ans 1. 6.25

2. 6.00

3. 6.20

4. 6.40

Question Type : MCQ

Question ID : 26433083777

Status : Answered

Chosen Option : 3

Q.49 For frequency distribution presentation, which option is wrong?

Ans 1.

In a histogram, a bar is centered above each score (or class interval) so that the height of the bar corresponds to the frequency

2.

Bar graph presents score categories that are measured from a nominal or an ordinal scale

3.

The smooth curve emphasizes the fact that the distribution is not showing the exact frequency for each category.

4.

In polygon, an additional line is not drawn at each end to bring the graph back to a zero frequency

Question Type : MCQ

Question ID : 26433083908

Status : Answered

Chosen Option : 3

Q.50 If the population kurtosis of the observations 16,12,6,2,4,10 is 1.7414, then population kurtosis of the 8,6,3,1,2,5 is

- Ans
- 1. 0.8707
 - 2. 0.43535
 - 3. 3.4828
 - 4. 1.7414

Question Type : **MCQ**
Question ID : **26433083890**
Status : **Answered**
Chosen Option : **2**

Q.51 The mean and median of the distribution are 10 and 12 respectively, then the mode equals to

- Ans
- 1. 20
 - 2. 16
 - 3. 14
 - 4. 18

Question Type : **MCQ**
Question ID : **26433083880**
Status : **Answered**
Chosen Option : **3**

Q.52 If mean and mode of the distribution is 32 and 21, then the distribution:

- Ans
- 1. is negatively skewed
 - 2. is not skewed
 - 3. cannot be determined
 - 4. is positively skewed

Question Type : **MCQ**
Question ID : **26433083799**
Status : **Answered**
Chosen Option : **3**

Q.53 The probability of getting a total of 7 on two dice thrown together is:

- Ans
- 1. $\frac{6}{36}$
 - 2. $\frac{5}{36}$
 - 3. $\frac{8}{36}$
 - 4. $\frac{7}{36}$

Question Type : **MCQ**
Question ID : **26433083813**
Status : **Answered**
Chosen Option : **1**

Q.54 Recession in industry is associated with the:

- Ans
- 1. cyclical component
 - 2. trend
 - 3. irregular component
 - 4. seasonal component

Question Type : MCQ
Question ID : 26433083847
Status : Answered
Chosen Option : 3

Q.55 Two data sets of sizes 6 and 9 have standard deviation 3 and 4, respectively, and arithmetic means 4 and 4, respectively.
The standard deviation of combined data set of size 15 is:

- Ans
- 1. $\sqrt{\frac{72}{5}}$
 - 2. $\sqrt{\frac{66}{5}}$
 - 3. $\sqrt{\frac{70}{5}}$
 - 4. $\sqrt{\frac{68}{5}}$

Question Type : MCQ
Question ID : 26433083787
Status : Answered
Chosen Option : 3

Q.56 If each observation in a data set for number of employees in different divisions is doubled then the coefficient of quartile deviation:

- Ans
- 1. is also doubled
 - 2. is fourtimes of the original
 - 3. is halved
 - 4. remains same

Question Type : MCQ
Question ID : 26433083789
Status : Answered
Chosen Option : 2

Q.57 If each observation is halved then the coefficient of quartile deviation

- Ans
- 1. remains same
 - 2. is also halved
 - 3. is one-fourth of original
 - 4. is doubled

Question Type : MCQ
Question ID : 26433083888
Status : Answered
Chosen Option : 2

Q.58 If the sum of lower and upper quartiles is 6 and quartile deviation is 1.5, then the value of coefficient of quartile deviation is

- Ans**
- 1. 0.6
 - 2. 0.4
 - 3. 0.7
 - 4. 0.5

Question Type : **MCQ**
Question ID : **26433083910**
Status : **Answered**
Chosen Option : **2**

Q.59 If mean and median of the distribution are 12 and 21, then the distribution

- Ans**
- 1. is not skewed
 - 2. is negatively skewed
 - 3. can't be determined for its skewness
 - 4. is positively skewed

Question Type : **MCQ**
Question ID : **26433083898**
Status : **Answered**
Chosen Option : **2**

Q.60 Fundamental principles of design of experiment are

- (I) Randomization
- (II) Replication
- (III) Local control

Which option is correct?

- Ans**
- 1. Only (II) and (III)
 - 2. Only (I) and (III)
 - 3. All (I), (II), and (III)
 - 4. Only (I) and (II)

Question Type : **MCQ**
Question ID : **26433083928**
Status : **Answered**
Chosen Option : **3**

Q.61 Which option is WRONG?

Ans 1.

Secondary data requires less time and money than primary data

2.

Secondary data is less reliable and less suitable than primary data

3.

Secondary data refer to those data that have already been collected by some other person.

4. Secondary data is original

Question Type : MCQ

Question ID : 26433083872

Status : Answered

Chosen Option : 3

Q.62 If moment generating function of continuous random variable X is $\frac{\lambda}{\lambda-t}$; $t < \lambda$, then $E(X^3)$ equals to:

Ans

1. $\frac{8}{\lambda^3}$

2. $\frac{6}{\lambda^3}$

3. $\frac{4}{\lambda^3}$

4. $\frac{2}{\lambda^3}$

Question Type : MCQ

Question ID : 26433083771

Status : Answered

Chosen Option : 3

Q.63 Which of the following correctly completes the given statement?

Index number helps in:

(I) determining the cost of living

(II) fixing the dearness allowances

(III) reflecting the real income

Ans 1. Only II and III

2. Only I and II

3. All I, II and III

4. Only I and III

Question Type : MCQ

Question ID : 26433083839

Status : Answered

Chosen Option : 3

Q.64 If A, B and C are arbitrary events, then $P(A \cap B \cap C)$ equals to:

- Ans
- 1. $P(A)P(B|A)P(C|A \cap B)$
 - 2. $P(A)P(B)P(C)$
 - 3. $P(A)P(A|B)P(A \cap B|C)$
 - 4. $P(A) + P(B) + P(C)$

Question Type : MCQ
Question ID : 26433083769
Status : Answered
Chosen Option : 3

Q.65 The standard deviation of Y is double of standard deviation of X. The correlation coefficient between X and Y is 0.5. The acute angle between lines of regression is

- Ans
- 1. $\arctan\left(\frac{2}{5}\right)$
 - 2. $\arctan\left(\frac{3}{5}\right)$
 - 3. $\arctan\left(\frac{4}{5}\right)$
 - 4. $\arctan\left(\frac{1}{5}\right)$

Question Type : MCQ
Question ID : 26433083936
Status : Answered
Chosen Option : 2

Q.66 If moment generating function of discrete random variable X is $(q + pe^t)^n$, then $E(X^2)$ equals to

- Ans
- 1. $nq(np + q)$
 - 2. $np(p + nq)$
 - 3. $nq(p + nq)$
 - 4. $np(np + q)$

Question Type : MCQ
Question ID : 26433083870
Status : Answered
Chosen Option : 3

Q.67 For an experiment we have the following data set: $n = 4, \sum X = a, \sum Y = 10, \sum XY = 21, \sum X^2 = 30, \sum Y^2 = 30$. If the correlation coefficient is -0.8 then the value of a is:

- Ans
- 1. 7
 - 2. 10
 - 3. 8
 - 4. 9

Question Type : MCQ
Question ID : 26433083829
Status : Answered
Chosen Option : 2

Q.68 Two data set of sizes 9 and 6 have standard deviation 3 and 4 respectively and arithmetic means 3 and 3 respectively. The standard deviation of combined data set of size 15 is

Ans

- ✓ 1. $\sqrt{\frac{177}{15}}$
- ✗ 2. $\sqrt{\frac{176}{15}}$
- ✗ 3. $\sqrt{\frac{178}{15}}$
- ✗ 4. $\sqrt{\frac{175}{15}}$

Question Type : **MCQ**
Question ID : **26433083886**
Status : **Answered**
Chosen Option : **2**

Q.69 To estimate the average work experience of MBA students at a management institute, five students are selected at random from each type of background, say commerce, science and engineering. This type of sampling is called:

Ans

- ✗ 1. systematic sampling
- ✓ 2. stratified sampling
- ✗ 3. simple random sampling
- ✗ 4. cluster sampling

Question Type : **MCQ**
Question ID : **26433083853**
Status : **Answered**
Chosen Option : **2**

Q.70 The prices (in Rs.) for the commodity ABC,XYZ, MNO, and IJK in base year (2020) are 20, 18, 12, 24 and in current year (2022) are 25, 22, 15, 28 respectively. The value of price index by simple aggregative method is

Ans

- ✗ 1. 111.62
- ✗ 2. 125.62
- ✓ 3. 121.62
- ✗ 4. 115.62

Question Type : **MCQ**
Question ID : **26433083940**
Status : **Answered**
Chosen Option : **2**

Q.71 If the second and third moment about the origin are 8 and 18 and the third moment about mean is -14 , then the first moment about the origin is:

Ans

- ✗ 1. 3
- ✗ 2. 1
- ✗ 3. 1.5
- ✓ 4. 2

Question Type : **MCQ**
Question ID : **26433083793**
Status : **Answered**
Chosen Option : **3**

Q.72 For the ANOVA table

| Source of variations | Sum of squares | Degrees of freedom |
|----------------------|----------------|--------------------|
| Between treatment | 75 | 3 |
| Error | 48 | 16 |
| Total | 123 | 19 |

the F – statistics is

- Ans
- 1. 8.99
 - 2. 8.33
 - 3. 8.60
 - 4. 7.33

Question Type : MCQ
Question ID : 26433083958
Status : Answered
Chosen Option : 2

Q.73 Which is not relative measures of skewness?

- Ans
- 1. $\frac{(Q_3 - Q_2) - (Q_2 - Q_1)}{Q_3 - Q_1}$
 - 2. $\frac{P_{90} - 2P_{50} + P_{10}}{P_{90} - P_{10}}$
 - 3. $\frac{D_9 - 2D_5 + D_1}{D_9 - D_1}$
 - 4. mean – mode

Question Type : MCQ
Question ID : 26433083896
Status : Answered
Chosen Option : 2

Q.74 In a 3 races, 2 genders and 5 in each treatment group for two-way ANOVA, the degree of freedom for source of variation due to interaction, error and total respectively are

- Ans
- 1. (6,24,29)
 - 2. (6,30,30)
 - 3. (2,24,29)
 - 4. (2,24,30)

Question Type : MCQ
Question ID : 26433083926
Status : Answered
Chosen Option : 2

Q.75 The grouped data for the observation are as follows.

Class : 2-4 4-6 6-8

Frequency: 2 1 2

The population skewness:

Ans 1. is negative

2. Data is insufficient

3. is positive

4. is zero

Question Type : MCQ

Question ID : 26433083803

Status : Answered

Chosen Option : 3

Q.76 The arithmetic mean of the following frequency distribution of number of members in family in the society

X : 3 5 6 8 9 10

Frequency : 1 4 2 1 3 2

is

Ans 1. 4.923

2. 6.923

3. 7.923

4. 5.923

Question Type : MCQ

Question ID : 26433083874

Status : Answered

Chosen Option : 2

Q.77 The Pearson's correlation coefficient between following observation

X : 1 2 3 4

Y : 3 4 2 1

is -0.8 . If each observation of X is halved and of Y is doubled, then Pearson's correlation coefficient equals to

Ans 1. -0.82

2. -0.79

3. -0.80

4. -0.81

Question Type : MCQ

Question ID : 26433083932

Status : Answered

Chosen Option : 3

Q.78 If the odds in favour of any random event A are 5 : 6, then the odds against the event are:

Ans 1. 6 : 5

2. 5 : 11

3. 6 : 11

4. 11 : 6

Question Type : MCQ

Question ID : 26433083821

Status : Answered

Chosen Option : 3

Q.79 The purchasing power of money is equal to:

Ans

1. $\frac{1}{(\text{price index number})^2}$

2. $\frac{1}{\text{price index number}}$

3. $\sqrt{\text{price index number}}$

4. $\frac{1}{\sqrt{\text{price index number}}}$

Question Type : MCQ

Question ID : 26433083843

Status : Answered

Chosen Option : 4

Q.80 The arithmetic mean of the following frequency distribution of number of accidents X on week working days is:

X: 2 4 6 8 10 12

Frequency: 3 4 2 1 4 2

Ans

1. 4.625

2. 6.625

3. 7.625

4. 5.625

Question Type : MCQ

Question ID : 26433083775

Status : Answered

Chosen Option : 2

Q.81 The 95% confidence interval of average age of accidents in any city during last year for a sample of size 100 with mean age 34.25 from population of standard deviation 10 is

Ans

1. [32.29, 36.21]

2. [32.29, 36.58]

3. [32.605, 35.895]

4. [31.92, 36.58]

Question Type : MCQ

Question ID : 26433083954

Status : Answered

Chosen Option : 3

Q.82 If r and R denote correlation and multiple correlation coefficient for the data set for X_1, X_2 and X_3 . Which option is correct?

Ans

1. $r_{12} = 0.69, r_{13} = 0.22, r_{23} = 0.23, R_{1,23} = 0.69$

2. $r_{12} = 0.21, r_{13} = 0.22, r_{23} = 0.23, R_{1,23} = 0.20$

3. $r_{12} = 0.24, r_{13} = 0.22, r_{23} = 0.23, R_{1,23} = 0.21$

4. $r_{12} = 0.69, r_{13} = 0.22, r_{23} = 0.23, R_{1,23} = 0.21$

Question Type : MCQ

Question ID : 26433083938

Status : Answered

Chosen Option : 3

Q.83 If X and Y represent waiting time and service time of customers in shopping mall, have joint density

$f(x,y) = kx; 0 \leq y \leq x \leq 1$, then the value of k is

- Ans**
- 1. 1
 - 2. 3
 - 3. 4
 - 4. 2

Question Type : **MCQ**
Question ID : **26433083864**
Status : **Answered**
Chosen Option : **3**

Q.84 The value of a and b so that the following is probability mass function

| | | | |
|--------------|------|------|------|
| $X :$ | 0 | 1 | 2 |
| $P(X = x) :$ | $3a$ | $3b$ | $4b$ |

with mean 1.1, is:

- Ans**
- 1. (0.2,0.2)
 - 2. (0.1,0.1)
 - 3. (0.1,0.2)
 - 4. (0.2,0.1)

Question Type : **MCQ**
Question ID : **26433083819**
Status : **Answered**
Chosen Option : **2**

Q.85 For the variables X and Y , we collect 4 observations with $\sum x = 10, \sum y = 14, \sum x^2 = 30, \sum y^2 = 54, \sum xy = 31$. The regression line y on x is

- Ans**
- 1. $y = -0.8x - 5.5$
 - 2. $y = 0.8x - 5.5$
 - 3. $y = -0.8x + 5.5$
 - 4. $y = 0.8x + 5.5$

Question Type : **MCQ**
Question ID : **26433083934**
Status : **Answered**
Chosen Option : **2**

Q.86 For the random variable X with probability density function $f(x) = \frac{(x-3)^2}{5}$; $x = 3, 4, 5$, the variance of X is:

- Ans**
- 1. $\frac{2}{25}$
 - 2. $\frac{2}{5}$
 - 3. $\frac{4}{5}$
 - 4. $\frac{4}{25}$

Question Type : **MCQ**
Question ID : **26433083765**
Status : **Answered**
Chosen Option : **2**

Q.87 If A and B are mutually exclusive, the general addition rule is:

- Ans**
- 1. $P(A \cup B) = P(A) + P(B)$
 - 2. $P(A + B) = P(A) + P(B)$
 - 3. $P(A \cup B) = P(A) + P(B) + P(A \cap B)$
 - 4. $P(A \cap B) = 0$

Question Type : **MCQ**
Question ID : **26433083815**
Status : **Answered**
Chosen Option : **1**

Q.88 If random variable X follows binomial distribution with parameter n and p with mean 15 and variance 10, then the value of mode is

- Ans**
- 1. $\frac{47}{3}$
 - 2. $\frac{48}{3}$
 - 3. $\frac{49}{3}$
 - 4. $\frac{46}{3}$

Question Type : **MCQ**
Question ID : **26433083866**
Status : **Answered**
Chosen Option : **2**

Q.89 If the mean and variance of a binomial distribution are 5 and 4, respectively, then the value of n is:

- Ans**
- 1. 25
 - 2. 10
 - 3. 15
 - 4. 20

Question Type : **MCQ**
Question ID : **26433083868**
Status : **Answered**
Chosen Option : **4**

Q.90 If the first, second and third moment about origin are 2, 8 and 14, respectively, then Karl Pearson gamma coefficient of skewness γ_1 is:

- Ans**
- 1. -2.25
 - 2. 0.25
 - 3. -0.25
 - 4. -1.25

Question Type : **MCQ**
Question ID : **26433083801**
Status : **Answered**
Chosen Option : **2**

Q.91 If A and B are mutually exclusive events such that $P(A)P(B) > 0$, then which option is correct?

- Ans**
- 1. A and B are independent
 - 2. A and B are not independent
 - 3. $A \subset B$
 - 4. $B \subset A$

Question Type : **MCQ**
Question ID : **26433083914**
Status : **Answered**
Chosen Option : **2**

Q.92 For the ANOVA table

| Source of variations | Sum of squares | Degrees of freedom |
|----------------------|----------------|--------------------|
| Between treatment | 45 | 3 |
| Error | 32 | 16 |
| Total | 99 | 19 |

the F – statistics is:

- Ans**
- 1. 7.2
 - 2. 7.3
 - 3. 7.5
 - 4. 7.4

Question Type : **MCQ**
Question ID : **26433083859**
Status : **Answered**
Chosen Option : **2**

Q.93 A random sample of size 225 is drawn from the population of mean μ and standard deviation σ . The sample mean follows the distribution with mean 100 and standard distribution $4/3$. The value of μ and σ are:

- Ans**
- 1. (100, 18)
 - 2. (100, 15)
 - 3. (100, 24)
 - 4. (100, 20)

Question Type : **MCQ**
Question ID : **26433083855**
Status : **Answered**
Chosen Option : **3**

Q.94 Which of the following is an example of using a sample to make inference about a population?

- Ans**
- 1. Assembly elections
 - 2. Statistics of a cricket player in one-day matches
 - 3. Census
 - 4. Pre-election poll by media

Question Type : **MCQ**
Question ID : **26433083851**
Status : **Answered**
Chosen Option : **2**

Q.95 The seventh decile (D_7) of data set 4,3,7,10,9,1 is

- Ans**
- 1. 8.9
 - 2. 8.8
 - 3. 8.6
 - 4. 8.7

Question Type : **MCQ**
Question ID : **26433083878**
Status : **Answered**
Chosen Option : **2**

Q.96 For the ANOVA, which of the following options is INCORRECT?

Ans 1. Null hypothesis $H_0: \mu_1 = \mu_2 = \dots = \mu_n$

2. F -ratio belongs to $[-\infty, \infty]$

3.

Alternative hypothesis H_1 : At least one population mean is different from one another

4.

Variances are compared in F ratio to determine mean differences are significantly bigger than chance

Question Type : **MCQ**
Question ID : **26433083823**
Status : **Answered**
Chosen Option : **3**

Q.97 For the variables X, Y and Z , $r_{XY} = 0.80, r_{XZ} = 0.64$, and $r_{YZ} = 0.79$, the square of multiple correlation coefficient $R_{X,YZ}^2$ is:

- Ans**
- 1. 0.43
 - 2. 0.33
 - 3. 0.53
 - 4. 0.64

Question Type : **MCQ**
Question ID : **26433083837**
Status : **Answered**
Chosen Option : **2**

Q.98 Which of the following is the most relevant for deriving a point estimate?

- Ans**
- 1. Population size
 - 2. Sample size
 - 3. Variability in the population
 - 4. Confidence desired

Question Type : **MCQ**
Question ID : **26433083956**
Status : **Answered**
Chosen Option : **3**

Q.99 If price-quantity are related for base year (0) and current year (1) are $\sum p_0 q_0 = 260, \sum p_1 q_0 = 395, \sum p_0 q_1 = 264, \sum p_1 q_1 = 422$, then Marshall Edgeworth price index equals to

- Ans**
- 1. 145.92
 - 2. 155.92
 - 3. 165.92
 - 4. 175.92

Question Type : **MCQ**
Question ID : **26433083942**
Status : **Answered**
Chosen Option : **3**

Q.100 For the distribution with unknown θ

$$f(x, \theta) = \begin{cases} \frac{1}{\theta}; & 0 \leq x \leq \theta \\ 0; & \text{elsewhere} \end{cases}$$

We set the testing of hypothesis $H_0: \theta = 1$ vs $H_1: \theta = 2$. When the critical region $X \geq 0.4$, the value of probability of type-II error is:

- Ans**
- 1. 0.30
 - 2. 0.24
 - 3. 0.25
 - 4. 0.20

Question Type : **MCQ**
Question ID : **26433083857**
Status : **Answered**
Chosen Option : **2**