Q.1 The prices (in Rs) of different yarns (per kg) in two consecutive years are as follows.

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Silk</th>
<th>Cotton</th>
<th>Jute</th>
<th>Rayon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price (in 2016)</td>
<td>600</td>
<td>700</td>
<td>400</td>
<td>300</td>
</tr>
<tr>
<td>Price (in 2017)</td>
<td>700</td>
<td>600</td>
<td>480</td>
<td>270</td>
</tr>
</tbody>
</table>

By simple aggregative method, the net price changes in % is:

Ans  ✓: net increase of 2.5% in price.
✓: net increase of 2% in price.
✗: net decrease of 2% in price.
✗: net decrease of 2.5% in price.

Question ID: 558101768
Status: Answered
Chosen Option: 1

Q.2 The average working hours per month of the staff aged over 50 years in a factory were 160 and that of the staff aged under 50 years were 216. The mean working hour per month of all the staff was 700. The ratio of the number of the staff aged over 50 to that of the staff aged under 50 is:

Ans  ✗: 3:1
✗: 2:1
✓: 1:3
✓: 1:4

Question ID: 558101700
Status: Answered
Chosen Option: 4

Q.3 The 4th decile for the given data is:

<table>
<thead>
<tr>
<th>x</th>
<th>f</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>26</td>
</tr>
<tr>
<td>3</td>
<td>59</td>
</tr>
<tr>
<td>4</td>
<td>72</td>
</tr>
<tr>
<td>5</td>
<td>52</td>
</tr>
<tr>
<td>6</td>
<td>29</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
</tr>
</tbody>
</table>

Ans  ✗: 5
✗: 3
✓: 4
✓: 7

Question ID: 558101704
Status: Not Answered
Chosen Option: --

Q.4 The Mean deviation about Median for the given data.

52, 56, 66, 70, 75, 80, 82 is:
Q.5 For a random variable \( X \), the central moments \( (\mu_r) \) of all orders exist. The square of the \((2r+1)^{th}\) moment \( (\mu_{2r+1}^2) \) is:

- More than \( \mu_{2r} \mu_{2r+2} \)
- Less than or equal to \( \mu_{2r} \mu_{2r+2} \)
- More than or equal to \( \mu_{2r} \mu_{2r+2} \)
- Less than \( \mu_{2r} \mu_{2r+2} \)

Q.6 The memory-less property is followed by which of the following continuous distribution:

- Continuous uniform distribution
- Normal distribution
- Gamma distribution
- Exponential distribution

Q.7 If the random sample of size \( n \) is drawn without replacement from a finite population of size \( N \), the correction factor for standard error of sample mean will be:

- \( \frac{N-n}{N-1} \)
- \( \frac{N-n}{N} \)
- \( \frac{N-n}{\sqrt{N-1}} \)
- \( \frac{N-n}{\sqrt{N}} \)

Q.8 The Excess Kurtosis of the Geometric distribution with parameter \( p \) is:

- \( 4 + \frac{p^2}{1-p} \)
- \( 6 - \frac{p^2}{1-p} \)
- \( 6 + \frac{p^2}{1-p} \)
- \( 4 - \frac{p^2}{1-p} \)

Q.9 Let \( \{X_i, i \geq 1\} \) be independent and identically distributed random variables with \( P(X_i = 1) = p = 1 - P(X_i = 0) \), \( S_n = \sum_{i=1}^{n} X_i \). The distribution of \( S_n \) is:

- Geometric distribution with parameter \( p \)
- Bernoulli distribution with parameter \( p \)
Q.10 Which one is parameter from population?

- $\bar{x}$
- $\sigma$
- $S$
- $p$

Q.11 For the given figures of production of a sugar factory, the estimate of the production for 1976 using straight line trend with origin at the year 1972 by the least squares method $\sum x = 0, \sum x^2 = 20, \sum xy = -56$ is:

<table>
<thead>
<tr>
<th>Year</th>
<th>Production (1000 tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1969</td>
<td>78</td>
</tr>
<tr>
<td>1970</td>
<td>87</td>
</tr>
<tr>
<td>1971</td>
<td>95</td>
</tr>
<tr>
<td>1972</td>
<td>91</td>
</tr>
<tr>
<td>1973</td>
<td>96</td>
</tr>
<tr>
<td>1974</td>
<td>80</td>
</tr>
<tr>
<td>1975</td>
<td>90</td>
</tr>
</tbody>
</table>

- 88
- 98
- 96
- 86

Q.12 Which of the following methods is NOT used in computation of a seasonal index for time series?

- Method of averages
- Link relative method
- Moving average method
- Mathematical equations

Q.13 The second and fourth moment about mean for a distribution are 4 and 16 respectively. What is the value of Pearson's coefficient of skewness $\beta_1$?

- 0.875
- 1.125
- 1.25
- 4.5
Q.14  For the study purpose, the mean of the observations is 148 gm and standard deviation is 17.4 gm. Approximately, the coefficient of variation equals to:

Ans: ✗ 11
    ✗ 14
    ✓ 12
    ✓ 13

Question ID: 558101792
Status: Answered
Chosen Option: 3

Q.15  The variance of degenerate random variable is:

Ans: ✓ 0
    ✗ c
    ✗ 1
    ✓ e^c

Question ID: 558101690
Status: Not Answered
Chosen Option: --

Q.16  Statistics is not applicable to ______ observation.

Ans: ✗ classified
    ✗ group
    ✓ individual
    ✗ monotonic

Question ID: 558101698
Status: Answered
Chosen Option: 4

Q.17  The mode (correct to two decimal places) for the given data is:

<table>
<thead>
<tr>
<th>Class-interval</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>6</td>
</tr>
<tr>
<td>10-20</td>
<td>9</td>
</tr>
<tr>
<td>20-30</td>
<td>8</td>
</tr>
<tr>
<td>30-40</td>
<td>14</td>
</tr>
<tr>
<td>40-50</td>
<td>28</td>
</tr>
<tr>
<td>50-60</td>
<td>20</td>
</tr>
<tr>
<td>60-70</td>
<td>11</td>
</tr>
<tr>
<td>70-80</td>
<td>9</td>
</tr>
</tbody>
</table>

Ans: ✗ 39.34
    ✓ 46.36
    ✗ 28
    ✗ 52.54

Question ID: 558101702
Status: Answered
Chosen Option: 2

Q.18  Which of the following is NOT a way of the sampling?

Ans: ✗ Purposive sampling
    ✗ Simple random sampling
    ✓ Unsystematic sampling
    ✗ Stratified sampling

Question ID: 558101778
Status: Not Answered
Chosen Option: --
Q.19  Five persons A, B, C, D and E occupy seats in a row at random. The probability that A and B sit next to each other is:

\[ \frac{1}{5}, \frac{1}{4}, \frac{1}{2}, \frac{5}{6}, \frac{3}{5} \]

Q.20  A Poisson distribution has a double mode at \( x = 1 \) and \( x = 2 \). The probability for \( x = 1 \) or for \( x = 2 \) of these two values is:

\[ 4e^{-2}, e^{-2}, 2e^{-2}, 3e^{-2} \]

Q.21  With reference to index numbers, which of the following statements is true?

1. Always have same value with different methods of construction
2. It is used for the base of planned economy.
3. International comparison is possible.
4. Do not alter with better quality and or obsolescence

Q.22  If a discrete random variable \( X \) follows uniform distribution and assumes only the values \( 0, 1, 2, 3 \), then \( P(X = 14) < 5 \) will be:

\[ \frac{1}{5}, \frac{1}{4}, \frac{1}{2}, \frac{1}{3}, \frac{1}{6} \]

Q.23  Marshall-Edgeworth Index number:

1. does not satisfy only circular test of consistency
2. does not satisfy both factor reversal test and circular test of consistency
3. satisfies factor reversal test and circular test of consistency
4. does not satisfy only factor reversal test

Q.24  The curve obtained by joining the points whose x-coordinates are the upper limits of the class interval and y-coordinates are corresponding cumulative frequencies is called:
Q.25 The probability density function of a random variable \( X \) is \( f(x) = \frac{2}{15} \sin \frac{x}{3}, \frac{\pi}{3} \leq x \leq 5 \). The first quartile of \( X \) is:

\[
\frac{10}{3}
\]

\[
\frac{5}{3}
\]

\[
\frac{1}{5}
\]

\[
\frac{5}{2}
\]

Q.26 60% of the employees of a company are college graduates. Of them, 10% are in sales. Of those who did not graduate from college, 80% are in sales. The probability that an employee selected at random is in sales, is:

\[
\begin{array}{c}
\frac{1}{5} \\
\frac{5}{3} \\
\frac{1}{5} \\
\frac{5}{2}
\end{array}
\]

Q.27 By the method of moving averages, the seasonal index for four quarters equals to:

\[
\frac{\text{Average}}{\text{Grand Average}} \times 100 \\
\frac{\text{Average}}{\text{Grand Average}} \times 4 \\
\frac{\text{Average}}{\text{Grand Average}} \times 10 \\
\frac{\text{Average}}{\text{Grand Average}}
\]

Q.28 If \( r_{12} = 0.80, r_{13} = -0.60 \) and \( r_{13} = -0.56 \), then the square of multiple correlation coefficient (correct to four decimal places) \( R_{123}^2 \) is equal to:

\[
\begin{array}{c}
0.6434 \\
0.7586 \\
-0.436 \\
0.8021
\end{array}
\]

Q.29 If the multiple correlation coefficient of \( X_1 \) on \( X_2 \) and \( X_3 \) is zero, then:

\[
\begin{array}{c}
\neq 0, \neq 0 \\
= 0, \neq 0 \\
\neq 0, \neq 0
\end{array}
\]
\[ r_{12} = 0, r_{13} = 0 \]

**Q.30** The null hypothesis in ANOVA one-way classification, the study of the variances due to \( k \) different sources, is:
- \( H_0: \sigma_1 = \sigma_2 = \cdots = \sigma_k \)
- \( H_0: \text{At least for one pair } \mu_i = \mu_j; i, j = 1, 2, \ldots, k, i \neq j \)
- \( H_0: \text{At least for one pair } \sigma_i = \sigma_j; i, j = 1, 2, \ldots, k, i \neq j \)
- \( H_0: \mu_1 = \mu_2 = \cdots = \mu_k \)

**Q.31** The limits of multiple correlation coefficient \( R_{123} \) are:
- \( \checkmark -1 \) to 1
- \( \checkmark 0 \) to 1
- \( \times -2 \) to 2
- \( \times -1 \) to 0

**Q.32** Second differencing in time series can help to eliminate which trend?
- (I) Quadratic trend
- (II) Linear trend
- (A) Neither (I) nor (II)
- (B) Both (I) and (II)
- (C) Only (I)
- (D) Only (II)

**Q.33** The probability of getting 9 cards of the same suit in one hand at a game of bridge is:
- \( \checkmark \frac{\binom{13}{9} \times \binom{39}{4}}{\binom{52}{13}} \)
- \( \times \frac{\binom{13}{9}}{\binom{52}{13}} \)
- \( \times \frac{\binom{13}{9}}{\binom{52}{13}} \times \frac{4}{13} \)
- \( \times \frac{\binom{13}{9}}{\binom{52}{13}} \times \frac{39}{4} \)
- \( \times \frac{\binom{13}{9}}{\binom{52}{13}} \times \frac{39}{4} \)

**Q.34** Which of the following is NOT an approach for assigning the probability of the event?
- (A) Relative frequency approach
- (B) Personal approach
Q.35. A, B, and C are three mutually exclusive and exhaustive events associated with a random experiment. If \( P(B) = \frac{2}{3} \) \( P(A) \) and \( P(C) = \frac{1}{3} P(B) \) then value of \( P(A) \) is:

\[
\begin{align*}
\checkmark & \quad \frac{1}{13} \\
\xmark & \quad \frac{2}{13} \\
\checkmark & \quad \frac{4}{13} \\
\xmark & \quad \frac{3}{13}
\end{align*}
\]

Question ID: 558101737
Status: Answered
Chosen Option: 2

Q.36. If Laspeyre’s price index of a commodity is 208 and Paasche’s price index of the same commodity is 52, the value of Fisher’s index number will be:

\[
\begin{align*}
\checkmark & \quad 104 \\
\checkmark & \quad 103 \\
\xmark & \quad 105 \\
\xmark & \quad 102
\end{align*}
\]

Question ID: 558101740
Status: Answered
Chosen Option: 3

Q.37. Following two statements are related to regression coefficient

(I) Independent of the change of origin
(II) Independent of the change of scale

\[
\begin{align*}
\xmark & \quad \text{Both (I) and (II) are correct} \\
\checkmark & \quad \text{Only (I) is correct} \\
\xmark & \quad \text{Only (II) is correct} \\
\xmark & \quad \text{Neither (I) nor (II) is correct}
\end{align*}
\]

Question ID: 558101771
Status: Answered
Chosen Option: 1

Q.38. For the recorded observation, the coefficient of variation is 0.2 and the variance is 16. The arithmetic mean is:

\[
\begin{align*}
\xmark & \quad 18 \\
\xmark & \quad 16 \\
\checkmark & \quad 20 \\
\xmark & \quad 14
\end{align*}
\]

Question ID: 558101763
Status: Answered
Chosen Option: 3

Q.39. If \( X \) is a Binomial distribution with parameter \( n \) and \( p \) such that \( np = \lambda \), then \( \lim_{n \to \infty} B(n, n, p) ; x = 0, 1, 2, \ldots \) is equal to:

\[
\begin{align*}
\checkmark & \quad \frac{e^{-\lambda} \lambda^x}{x!} , x = 0, 1, 2, \ldots \\
\xmark & \quad \text{Limit does not exist} \\
\xmark & \quad 0 \\
\xmark & \quad 1
\end{align*}
\]

Question ID: 558101693
Status: Answered
Q.40
The given table shows ANOVA two-way classification to test two types of cloths in fashion trends:

<table>
<thead>
<tr>
<th>Source of Variations</th>
<th>SS</th>
<th>df</th>
<th>MSS</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Varieties A</td>
<td>240</td>
<td>2</td>
<td>120</td>
<td>42.04</td>
</tr>
<tr>
<td>Varieties B</td>
<td>600</td>
<td>3</td>
<td>200</td>
<td>y</td>
</tr>
<tr>
<td>Error</td>
<td>80</td>
<td>11</td>
<td>7.28</td>
<td>3.33</td>
</tr>
<tr>
<td>Total</td>
<td>920</td>
<td>16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The respective values (correct to two decimal places) of (α, β, γ) are:

1. (340, 6, 34.03)
2. (240, 6, 34.03)
3. (340, 6, 113.03)
4. (240, 6, 113.03)

Q.41
The arithmetic mean of marks of the students for the given data is:

<table>
<thead>
<tr>
<th>Marks</th>
<th>No. of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>12</td>
</tr>
<tr>
<td>10-20</td>
<td>18</td>
</tr>
<tr>
<td>20-30</td>
<td>27</td>
</tr>
<tr>
<td>30-40</td>
<td>20</td>
</tr>
<tr>
<td>40-50</td>
<td>17</td>
</tr>
<tr>
<td>50-60</td>
<td>6</td>
</tr>
</tbody>
</table>

1. 38
2. 48
3. 18
4. 28

Q.42
The approximate median of the Poisson distribution with parameter λ is:

1. \(\lambda + \frac{1}{3} + \frac{1}{50\lambda}\)
2. \(\sqrt{\lambda + \frac{1}{3} - \frac{1}{50\lambda}}\)
3. \(\lambda + \frac{1}{3} - \frac{1}{50\lambda}\)
4. \(\lambda + \frac{1}{3} + \frac{1}{50\lambda}\)

Q.43
If \(X_1, X_2, ..., X_n\) is a simple random sample without replacement of size \(n\) from a finite population of \(N\) units with mean \(\mu\) and variance \(\sigma^2\), the covariance of \(X_i, X_j\) will be:

1. \(-\frac{\sigma^2}{N-1}\)
2. \(-\frac{\sigma^2}{n-1}\)
3. \(-\frac{\sigma^2}{n-1}\)
4. \(-\frac{\sigma^2}{n-1}\)
Q.44 Which of the following approaches does multiplicative model have for the component of Time series: Seasonal trend (T), Cyclical fluctuation (C) and irregular movement (I)?

**Ans**
- $T \times S \times C + I$
- $T + S \times C \times I$
- $T \times S \times C \times I$
- $T \times S + C \times I$

**Question ID:** 558101773  
**Status:** Not Answered  
**Chosen Option:** --

Q.45 Let x and y be two variables with variance 1990 and 796 with 11 and 9 number of observations respectively. The value of $F(10, 8)$ at 5% level of significance is:

**Ans**
- 2.1
- 2.5
- 1
- 0.4

**Question ID:** 558101750  
**Status:** Not Answered  
**Chosen Option:** --

Q.46 If arithmetic mean and coefficient of variation of x are 10 and 40 respectively, then the variance of $y = 10 - 2x$ is:

**Ans**
- 32
- 64
- 22
- 16

**Question ID:** 558101707  
**Status:** Not Attempted and Marked For Review  
**Chosen Option:** --

Q.47 Let $MSE$ denote mean sum of squares due to error and $MSA$ denote mean sum of squares due to error. If the null hypothesis of ANOVA for one way classification is not true, then $\frac{MSA}{MSE}$ is:

**Ans**
- equal to $-1$
- more than 1
- equal to 1
- less than 1

**Question ID:** 558101752  
**Status:** Not Answered  
**Chosen Option:** --

Q.48 As per the given data, Laspeyres price index for the year 2006 is:

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Quantities 2005</th>
<th>Quantities 2006</th>
<th>Price per unit 2005</th>
<th>Price per unit 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3</td>
<td>5</td>
<td>2.0</td>
<td>2.5</td>
</tr>
<tr>
<td>B</td>
<td>4</td>
<td>6</td>
<td>2.5</td>
<td>3.0</td>
</tr>
<tr>
<td>C</td>
<td>2</td>
<td>3</td>
<td>3.0</td>
<td>2.5</td>
</tr>
</tbody>
</table>

**Ans**
- 121.36
- 101.36
- 111.36
- 100.36

**Question ID:** 558101769  
**Status:** Answered  
**Chosen Option:** 3

Q.49 If $Z_1, Z_2, ..., Z_n$ are $n$ independent standard normal variates, then $\sum_{i=1}^{n} Z_i^2$ will follow:
1. chi-squared distribution with degree of freedom $2n$
2. $F$ distribution with degree of freedom $(n, n)$
3. chi-squared distribution with degree of freedom $n$
4. $t$ distribution with degree of freedom $n$

Q.50 The coefficient of correlation is $r$ between $X$ and $Y$ having standard deviation $\sigma_X$ and $\sigma_Y$. The tangent of the angle between two lines of regression is:

Ans

1. $\frac{1-r^2}{r}$
2. $\frac{1-r^2}{\sigma_X \sigma_Y}$
3. $\frac{1-r^2}{\sigma_X + \sigma_Y}$
4. $\frac{1-r^2}{\sigma_X^2 + \sigma_Y^2}$

Q.51 The incomes of the employees in a state is assumed to be normally distributed with mean ₹15,000 and variance ₹900. The median of the distribution of the income is:

Ans

1. ₹900
2. ₹15,000
3. ₹16.67
4. ₹0

Q.52 For a normal distribution, which of the following is true?

Ans

1. mean $\neq$ median $=$ mode
2. mean $=$ median $=$ mode
3. mean $=$ median $\neq$ mode
4. mean $=$ mode $\neq$ mode

Q.53 The mode of a geometric distribution with parameter $p$ is:

Ans

1. $\frac{1}{p}$
2. 1
3. $\left[\frac{1}{\log_2(1-p)}\right]$
4. $\frac{2-p}{\sqrt{1-p}}$

Q.54 Let $M$, $M_0$, $M_d$ denote mean, median and mode and $Q_1$, $Q_2$ be quartile points. Which of the following is an absolute measure of skewness?

Ans

1. $S_h = M + M_0$
2. $S_h = M + M_d$
3. \( S_k = (Q_3 - M_d) + (M_d - Q_1) \)

4. \( S_k = \frac{(Q_3 - M_d) - (M_d - Q_1)}{Q_3 - Q_1} \)

Q.55

The second quartile for the following data 38, 39, 40, 52, 59, 67, 73, 77, 149, 248 is:

- \( \times \) 61
- \( \checkmark \) 62
- \( \times \) 64

Q.56

With reference to analysis of variance, which of the following statements is/are correct?

1. Change of origin will affect the value of \( F \).
2. Change of scale will affect the value of \( F \).

- \( \times \) Neither (I) nor (II)
- \( \checkmark \) Only (I)
- \( \times \) Only (II)
- \( \checkmark \) Both (I) and (II)

Q.57

Which of the following is a sources of primary data?

- \( \times \) Reports of committees and commissions
- \( \checkmark \) Information from correspondents
- \( \times \) Newspapers and magazines
- \( \checkmark \) Official publications of central and state government

Q.58

For a distribution with mean, median, mode and standard deviation 25, 24, 26 and 5 respectively, Karl Pearson's coefficient of skewness equals to:

- \( \checkmark \) -0.20
- \( \times \) 0.20
- \( \times \) 1
- \( \times \) -1

Q.59

The product of partial regression coefficient \( b_{12.3} b_{23.1} b_{31.2} \) equals to:

- \( \times \) \( \frac{r_{12.3} r_{23.1} r_{31.2}}{3} \)
- \( \times \) \( (r_{12.3} r_{23.1} r_{31.2})^{\frac{3}{2}} \)
- \( \times \) \( \frac{1}{r_{12.3}} + \frac{1}{r_{23.1}} + \frac{1}{r_{31.2}} \)
- \( \checkmark \) \( r_{12.3} r_{23.1} r_{31.2} \)
Q.60  If $x_i, i = 1, 2, \ldots, n$ is a frequency distribution with standard deviation 15 and mean 30, the coefficient of variation will be equal to:

Ans  
- $\% = 2$
- $\% = 200$
- $\% = 0.5$
- $\% = 50$

Question ID: 558101714
Status: Not Answered
Chosen Option: --

Q.61  At a reservation counter, passengers are arriving for booking the tickets in a Poisson fashion with mean rate 60 per hour. The maximum of the inter-arrival times of the passengers is:

Ans  
- $\% = 1$
- $\% = 0.1$
- $\% = 60$
- $\% = 6$

Question ID: 558101729
Status: Not Attempted and Marked For Review
Chosen Option: --

Q.62  Completely randomised design is based on the principles of _______ and randomization only.

Ans  
- Divisibility
- Replication
- Local Control
- Compounding

Question ID: 558101755
Status: Not Answered
Chosen Option: --

Q.63  If $\sum P_i Q_i = 160, \sum P_i = 150, \sum P_i Q_i = 200" and $\sum P_i = 120", then Fodor ideal order number is equal to:

Ans  
- $\% = 125$
- $\% = 115.2$
- $\% = 119.02$
- $\% = 120$

Question ID: 558101770
Status: Answered
Chosen Option: 4

Q.64  Completely Randomised Design provides maximum number of degree of freedom for the:

Ans  
- Observations
- Error sum of squares
- Calculations
- Experiment

Question ID: 558101753
Status: Not Answered
Chosen Option: --

Q.65  At a round table, $n$ persons are seated on $n$ chairs. The probability that two friends from same college are sitting next to each other is:

Ans  
- $\% = \frac{2}{n}$
- $\% = \frac{1}{n-1}$
- $\% = \frac{1}{n}$

Question ID: 558101770
Status: Answered
Chosen Option: 4
Q.66  If \( p(x) = \begin{cases} \frac{x}{15}, & x = 1,2,3,4,5 \\ 0, & \text{elsewhere} \end{cases} \), the probability \( P\left\{ \frac{2}{5} < X < \frac{3}{5} \right\} \) is equal to:

**Ans**
- \( \frac{2}{5} \)
- \( \frac{3}{5} \)
- \( \frac{4}{15} \)
- \( \frac{1}{5} \)

Q.67  The first four moments about the origin are \( -1.5,17,-30 \) and \( 108 \). The third moment about the mean is:

**Ans**
- 39.75
- 41.75
- 40.75
- 42.75

Q.68  Let \( H_0: \mu_1 = \mu_2 \), \( H_1: \mu_1 \neq \mu_2 \) be the mean, median, mode and quartile points for different data points. Skewness is negative.

**Ans**
- \( Q_3 + Q_4 > 2M_d \)
- \( Q_3 + Q_4 > M_d \)
- \( M > M_0 \)
- \( M > M_d \)

Q.69  A die was thrown 400 times and '1' resulted 80 times. The data is used to justify the hypothesis of an unbiased die at 95% confidence. With reference to the given data, which of the following statements is correct?

**Ans**
- \( H_0 \) is rejected.
- The test statistic value is 0.0186.
- \( H_0 \) is accepted.
- The standard error of \( p \) is 1.77.

Q.70  The sample sizes for two cases were 15 each with means as 104 and 114 respectively and variances as 200 and 310 respectively. Let the null hypothesis is that the two population means are equal. The value of t-statistic is:

**Ans**
- 0.097
- 0.97
- 0.079
- 0.79
Q.71  The variation among the observations of each specific class is known as:

Ans  
- total number of classes
- variability between classes
- random cause
- variability within classes

Question ID: 558101747
Status: Answered
Chosen Option: 4

Q.72  If \( n_1 = 10 \) and \( n_2 = 5 \) are the sizes, \( \bar{x}_1 = 7 \) and \( \bar{x}_2 = 4 \) are the means and \( s_1 = 1 \) and \( s_2 = 1 \) are the standard deviations of two series of data. If combined mean \( \bar{x} = 6 \), then the variance of the combined series with size \( n_1 + n_2 \) is equal to:

Ans  
- 3
- 1
- 9

Question ID: 558101712
Status: Not Answered
Chosen Option: --

Q.73  The empirical relation between mean (\( M \)), median (\( M_d \)), and mode (\( M_o \)) is:

Ans  
- \( M_o = 3M_d - 2M \)
- \( M_o = 2M_d - 3M \)
- \( M_o = 2M_d + 3M \)
- \( M_o = 3M_d + 2M \)

Question ID: 558101727
Status: Answered
Chosen Option: 1

Q.74  \( X \) and \( Y \) are independent normal variables with mean 50 and 80 respectively and standard deviation 4 and 3 respectively. What is the distribution of \( X - Y ? \)

Ans  
- \( N(130, 7) \)
- \( N(130, 3) \)
- \( N(130, 5) \)
- \( N(130, 4) \)

Question ID: 558101745
Status: Answered
Chosen Option: 3

Q.75  The coefficient of correlation is the ______ of coefficients of regression.

Ans  
- reciprocal of product
- arithmetic mean
- geometric mean
- harmonic mean

Question ID: 558101762
Status: Answered
Chosen Option: 3

Q.76  Which of the following satisfies the time and factor reversal test?

Ans  
- Laspeyres index
- averaging the unweighted price relatives
- Passche’s index
- Fisher ideal index

Question ID: 558101789
Status: Answered
Q.77 For a distribution, mean is 40, median is 40.5 and mode is 41. The distribution is:

Ans:
- ✗ negatively skewed
- ✔ normal
- ✗ positively skewed
- ✗ mesokurtic

Question ID: 558101728
Status: Answered
Chosen Option: 4

Q.78 The following observations 14, 19, 17, 20, 25 constitute a random sample from an unknown population with mean \( \mu \) and standard deviation \( \sigma \). The point estimation of population mean is:

Ans:
- ✗ 17
- ✗ 20
- ✔ 19
- ✗ 18

Question ID: 558101783
Status: Not Answered
Chosen Option: --

Q.79 The mean deviation from an average \( \bar{A} \) will be minimum, if \( \bar{A} \) represents:

Ans:
- ✔ Median
- ✗ Harmonic mean
- ✗ Mode
- ✗ Arithmetic mean

Question ID: 558101709
Status: Answered
Chosen Option: 1

Q.80 A man pushed cycle from his house to his office at a speed of 10 km/hr and back from the office to his house at a speed of 15 km/hr. His average speed (in km/hr) is:

Ans:
- ✗ 12.5
- ✗ 12.8
- ✔ 12
- ✗ 13

Question ID: 558101703
Status: Answered
Chosen Option: 3

Q.81 For a distribution, the mean is 10, variance is 16, \( \gamma_1 \) is +1 and \( \gamma_2 \) is 4. The distribution is:

Ans:
- ✔ leptokurtic
- ✗ platykurpic
- ✗ normal
- ✗ mesokurtic

Question ID: 558101726
Status: Answered
Chosen Option: 3

Q.82 The problem of statistics is given in two sections of same standard. The odds against for section I to solve the problem are 4 : 3 and odds in favor to section II for solving the same problem are 7 : 6. The probability that section I solves the problem of statistics, if both sections try independent of each other, is:

Ans:
- ✗ 21
- ✗ 32
- ✗ 84
- ✔ 105

Question ID: 558101726
Status: Answered
Chosen Option: 1
4.

Q.83
If the marks obtained by 900 candidates in statistics paper is given below, then the lower quartile mark is:

<table>
<thead>
<tr>
<th>Marks more than</th>
<th>No. of Candidates</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>500</td>
</tr>
<tr>
<td>10</td>
<td>460</td>
</tr>
<tr>
<td>20</td>
<td>400</td>
</tr>
<tr>
<td>30</td>
<td>200</td>
</tr>
<tr>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>50</td>
<td>30</td>
</tr>
</tbody>
</table>

Ans
\[ \begin{align*}
\checkmark & \quad 21.25 \\
\times & \quad 300 \\
\checkmark & \quad 125 \\
\times & \quad 20.25
\end{align*} \]

Q.84
\[ \mu'_1 \quad \text{and} \quad \mu'_2 \] represent the factorial moment of order r about the origin and \( r^{th} \) moment about the origin of the distribution \( x_i, i = 1, 2, \ldots, n \). The value of \( \mu'_2 \) equals to:

Ans
\[ \begin{align*}
\checkmark & \quad \mu'_1^2 \\
\times & \quad \mu'_2 - \mu'_1 \\
\checkmark & \quad \mu'_2 + \mu'_1 \\
\times & \quad \mu'_2
\end{align*} \]

Q.85
For making frequency distribution, the number of classes used depends upon:

Ans
\[ \begin{align*}
\checkmark & \quad \text{size of responses} \\
\times & \quad \text{experiment condition} \\
\checkmark & \quad \text{size of class} \\
\times & \quad \text{number of observation}
\end{align*} \]

Q.86
If the independent random variables \( X \) and \( Y \) are Binomially distributed with \( n = 3, p = \frac{1}{3} \) and \( n = 5, p = \frac{1}{3} \) respectively, then the probability of \( X + Y \geq 1 \) is:

Ans
\[ \begin{align*}
\checkmark & \quad 1 - \left( \frac{2}{3} \right)^6 \\
\times & \quad 1 - \left( \frac{1}{3} \right)^8 \\
\checkmark & \quad 1 - \left( \frac{2}{3} \right)^8 \\
\times & \quad 1 - \left( \frac{1}{3} \right)^6
\end{align*} \]

Q.87
With which characteristic movement of a time series would you associate increasing demand of smaller automobiles?

Ans
\[ \begin{align*}
\checkmark & \quad \text{Secular trend} \\
\times & \quad \text{Cyclical fluctuation}
\end{align*} \]
3. Regular movement
4. Seasonal variation

Q.88 For the discrete distribution, the Pearson’s coefficient of skewness \( \beta_2 \) is always:
- \( \beta_2 < 1 \)
- \( \beta_2 = 1 \)
- \( \beta_2 < -1 \)
- \( \beta_2 > 1 \)

Q.89 The square of normal variate with mean 0 and variance 1 follows:
- Beta distribution with \( \alpha = 0 \) and \( \beta = 1 \)
- Student’s \( t \)-distribution with mean 0 and variance 1
- Normal distribution with mean 0 and variance 1
- Chi-squared distribution with degree of freedom 1

Q.90 Approximately, the coefficient of variation for the given data where Pearson’s second moment of skewness = 0.42, arithmetic mean = 65 and median = 80, is:
- 53
- 51
- 50
- 52

Q.91 In one way ANOVA, \( \sigma^2 \) is estimated by:
- mean square within groups
- \( s^2 \)
- sum of squares between groups
- mean square between groups

Q.92 If ten coins are tossed simultaneously, then the probability of getting at most 1 head is:
- \( \frac{1}{1024} \)
- \( \frac{2}{1024} \)
- \( \frac{11}{1024} \)
- \( \frac{10}{1024} \)
Q.93 Which of the following is NOT a type of data classification?

- Qualitative classification
- Chronological classification
- Geographical classification
- Mathematical classification

Question ID: 558101732
Status: Answered
Chosen Option: 4

Q.94 If the occurrence of events follows Poisson Process with mean rate \( \lambda \), then inter-occurrence time of events will follow:

- Geometric distribution
- Poisson distribution
- Exponential distribution
- Gamma distribution

Question ID: 558101687
Status: Not Answered
Chosen Option: --

Q.95 A random sample of 100 ball bearings selected from a shipment of 2000 ball bearing has an average diameter of 0.354 inches with standard deviation 0.044 inches. The 95% confidence interval for the average diameter of these 2000 ball bearings is:

- \( 0.354 \pm 1.96 \times 0.048 \)
- \( 0.354 \pm 1.96 \times 0.0047 \)
- \( 0.354 \pm 0.048 \)
- \( 0.048 \pm 1.96 \times 0.354 \)

Question ID: 558101784
Status: Not Answered
Chosen Option: --

Q.96 The median for the given frequency distribution is:

<table>
<thead>
<tr>
<th>( x )</th>
<th>( f )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>6</td>
<td>25</td>
</tr>
<tr>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>9</td>
<td>6</td>
</tr>
</tbody>
</table>

- 20
- 5
- 4
- 65

Question ID: 558101701
Status: Answered
Chosen Option: 2

Q.97 In Spearman rank correlation coefficient, \( \rho = 1 - \frac{6\sum d^2}{n(n^2-1)} \), the maximum value of \( \sum d^2 \) in case of tied ranks is:

- \( \frac{1}{2} (n^2 - 1) \)
- \( \frac{1}{4} (n^2 - 1) \)
- \( n \)
- \( \frac{1}{3} n(n^2 - 1) \)

Question ID: 558101759
Q.98
If $x = \bar{x} - \bar{X}$ and $y = \bar{Y} - \bar{Y}$ and the number of pairs $(x, y)$ is $n$, then the Karl Pearson's coefficient of correlation is:

\[ r = \frac{n \sum xy}{\sqrt{\sum x^2 \sum y^2}} \]

\[ = \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}} \]

\[ = \frac{\sum xy}{n \sum x^2 \sum y^2} \]

Q.99
For a group of 100 students, the mean and standard deviation of scores were found to be 30 and 5 respectively. Later on it was discovered that the scores 34 and 53 were misread as 43 and 53 respectively. The corrected mean equals to:

\[ \bar{x} = 30.09 \]

\[ \bar{x} = 30.01 \]

\[ \bar{x} = 30.41 \]

\[ \bar{x} = 30.05 \]

Q.100
The given table shows the ranking of ten students in two subjects mathematics and statistics.

<table>
<thead>
<tr>
<th>Mathematics</th>
<th>Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>7</td>
</tr>
</tbody>
</table>

The coefficient of rank correlation is:

\[ r = -0.3 \]

\[ r = -0.1 \]

\[ r = 0.1 \]

\[ r = 0.3 \]