



## SSC CGL Tier-2 14th September 2018 Statistics

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## SSC CGL Tier-2 14th September 2018 Statistics

### Instructions

For the following questions answer them individually

### Question 1

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

Commodity	Silk	Cotton	Jute	Rayon
Price(in 2016)	600	700	400	300
Price(in 2017)	700	600	480	270

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

- A net increase of 2.5% in price.
- B net increase of 2% in price.
- C net decrease of 2% in price.
- D net decrease of 2.5% in price.

Answer: A

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### Question 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 210. The mean working hour per month of all the staff was 200. The ratio of the number of the staff aged over 50 to that of the staff aged under 50 is:

- A 3 : 1
- B 2 : 1
- C 1 : 3
- D 1 : 4

Answer: D

### Question 3

The 4<sup>th</sup> decile for the given data is:

x	f
0	1
1	9
2	26
3	59
4	72
5	52
6	29
7	7
8	1

- A 5
- B 3

C 4

D 7

Answer: C

Question 4

The Mean deviation about Median for the given data. 52, 56, 66, 70, 75, 80, 82 is:

A 9

B 7

C 3

D 6

Answer: A

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Question 5

For a random variable  $x$ , the central moments  $(\mu_i)$  of all order exist. The square of  $(2j + 1)^{th}$  moment  $(\mu_{2j+1}^2)$  is always:

A More than  $\mu^{2j}\mu^{2j+2}$

B less than or equal to  $\mu^{2j}\mu^{2j+2}$

C More than or equal to  $\mu^{2j}\mu^{2j+2}$

D less than  $\mu^{2j}\mu^{2j+2}$

Answer: B

Question 6

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

A Continuous uniform distribution

B Normal distribution

C Gamma distribution

D Exponential distribution

Answer: D

Question 7

If the random sample of size  $n$  is drawn without replacement from finite population of size  $N$ , the correction factor for standard error of sample mean will be:

A  $\frac{N-1}{N-n}$

B  $\sqrt{\frac{N-1}{N-n}}$

C  $\sqrt{\frac{N-n}{N-1}}$

D  $\frac{N-n}{N-1}$

Answer: C

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### Question 8

The Excess Kurtosis of the Geometric distribution with parameter  $p$  is:

A  $4 + \frac{p^2}{1-p}$

B  $6 - \frac{p^2}{1-p}$

C  $6 + \frac{p^2}{1-p}$

D  $4 - \frac{p^2}{1-p}$

Answer: C

### Question 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:

A Geometric distribution with parameter  $p$

B Bernoulli distribution with parameter  $p$

C Binomial distribution with parameter  $n$  and  $p$

D Bernoulli distribution with parameter  $np$

Answer: C

### Question 10

Which one is parameter from population?

A  $X$

B  $\sigma$

C  $S$

D  $p$

Answer: B

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Question 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 ( $\sum x = 0, \sum x^2 = 28, \sum xy = 56$ ) is:

Year	Production('000 tons)(year)
1969	76
1970	87
1971	95
1972	81
1973	91
1974	96
1975	90

- A 88
- B 98
- C 96
- D 86

Answer: C

Question 12

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

- A Method of averages
- B Link relative method
- C Moving average method
- D Mathematical equations

Answer: D

Question 13

The second and fourth moment about mean for a distribution are 4 and 18 respectively. What is the value of Pearson's coefficient of skewness  $\beta_2$

- A 0.875
- B 1.125
- C 1.25
- D 4.5

Answer: B

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Question 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:

- A 11
- B 14
- C 12
- D 13

Answer: C

**Question 15**

The variance of degenerate random variable is:

- A 0
- B c
- C 1
- D  $e^{ct}$

Answer: A

**Question 16**

Statistics is not applicable to ..... observation.

- A classified
- B group
- C individual
- D monotonic

Answer: C

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**Question 17**

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

Class-interval	Frequency
0-10	6
10-20	9
20-30	8
30-40	14
40-50	28
50-60	20
60-70	11
70-80	9

- A 39.34
- B 46.36
- C 28

D 52.54

Answer: B

Question 18

Which of the following is NOT a way of the sampling?

A Purposive sampling

B Simple random sampling

C Unsystematic sampling

D Stratified sampling

Answer: C

Question 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:

A  $\frac{1}{4}$

B  $\frac{1}{2}$

C  $\frac{2}{5}$

D  $\frac{1}{3}$

Answer: C

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Question 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:

A  $4e^{-2}$

B  $e^{-2}$

C  $2e^{-2}$

D  $3e^{-2}$

Answer: A

Question 21

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

A Always have same value with different methods of construction

B It is used for the base of planned economy.

C International comparison is possible

D Do not alter with better quality and/or obsolescence

Answer: B

Question 22

If a discrete random variable  $X$  follows uniform distribution and assumes only the values 8, 9, 11, 15, 18, 20, the value of  $P(|X - 14| < 5)$  will be:

- A  $\frac{1}{5}$
- B  $\frac{1}{4}$
- C  $\frac{1}{3}$
- D  $\frac{1}{2}$

Answer: D

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Question 23

Marshall-Edgeworth Index number:

- A doesnotsatisfy only circular test of consistency
- B doesnotsatisfy both factor reversal test and circular test of consistency
- C satisfies factor reversal test and circular test of consistency
- D doesnotsatisfy only factor reversal test

Answer: B

Question 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:

- A Histogram
- B Ogive
- C Frequency Polygon
- D Pie curve

Answer: B

Question 25

The probability density function of a random variable  $X$  is  $f(x) = \frac{\pi}{10} \sin \frac{\pi x}{5}; 0 \leq x \leq 5$ . The first quartile of  $X$  is:

- A  $\frac{10}{3}$
- B  $\frac{5}{3}$
- C  $\frac{1}{5}$
- D  $\frac{5}{2}$



Answer: B

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### Question 26

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

- A 0.46
- B 0.38
- C 0.62
- D 0.54

Answer: B

### Question 27

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

- A  $\frac{\text{Average}}{\text{Grand average}} \times 100$
- B  $\frac{\text{Average}}{\text{Grand average}} \times 4$
- C  $\frac{\text{Average}}{\text{Grand average}} \times 10$
- D  $\frac{\text{Average}}{\text{Grand average}}$

Answer: A

### Question 28

If  $r_{12} = +0.80$ ,  $r_{13} = -0.40$  and  $r_{23} = -0.56$ , then the square of multiple correlation coefficient (correct to four decimal places)  $R_{1.23}^2$  is equal to:

- A 0.6434
- B 0.7586
- C -0.436
- D 0.8021

Answer: A

## General Science Notes for SSC CGL

### Question 29

If the multiple correlation coefficient of  $X_1$ , on  $X_2$ , and  $X_3$  is zero, then:

- A  $r_{12} \neq 0, r_{13} = 0$
- B  $r_{12} = 0, r_{13} \neq 0$

C  $r_{12} \neq 0, r_{13} \neq 0$

D  $r_{12} = 0, r_{13} = 0$

Answer: D

**Question 30**

The null hypothesis in ANOVA one-way classification, the study of the variances due to k different sources, is:

A  $H_o : \sigma_1 = \sigma_2 = \dots = \sigma_k$

B  $H_o$  : At least for one pair

$\mu_i = \mu_j; i, j = 1, 2, \dots, k, i \neq j$

C  $H_o$  : At least for one pair

$\sigma_i = \sigma_j; i, j = 1, 2, \dots, k, i \neq j$

D  $H_o : \mu_1 = \mu_2 = \dots = \mu_k$

Answer: D

**Question 31**

The limits of multiple correlation coefficient  $R_{1.23}$  are:

A -1 to 1

B 0 to 1

C -2 to 2

D -1 to 0

Answer: B

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**Question 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)

Answer: C

**Question 33**

The probability of getting 9 cards of the samesuit in one hand at a game of bridge is:

A  $\binom{13}{9} \times \binom{39}{4} \times 4$

B  $\binom{13}{9} \binom{52}{13}$

C  $\binom{13}{9} \times 4$

D  $\binom{13}{9} \times \binom{39}{4} \binom{52}{13}$

Answer: A

Question 34

Which of the following is NOT an approach for assigning the probability of the event?

- A Relative frequency approach
- B Personal approach
- C Classical approach
- D Statistical approach

Answer: B

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Question 35

A, B, and C are three mutually exclusive and exhaustive events associated with a random experiment. If  $P(B) = \frac{3}{2}P(A)$  and  $P(C) = \frac{1}{2}P(B)$  then value of  $P(A)$  is:

A  $\frac{1}{13}$

B  $\frac{2}{13}$

C  $\frac{4}{13}$

D  $\frac{3}{13}$

Answer: C

Question 36

If Laspeyres price index of a commodity is 208 and Passche's price index of the same commodity is 52, the value of Fisher index number will be:

- A 104
- B 103
- C 105
- D 102

Answer: A

Question 37

Following two statements are related to regression coefficient

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

- A Both (I) and (II) are correct
- B Only (I) is correct
- C Only (II) is correct
- D Neither (I) nor (II) is correct

Answer: B

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Question 38

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

- A 18
- B 16
- C 20
- D 14

Answer: C

Question 39

If X has Binomial distribution with parameters  $n$  and  $p$  such that  $np = \lambda$  then  $\lim_{n \rightarrow \infty} b(x, n, p); x = 0, 1, 2, \dots$  is equal to:

- A  $\frac{e^{-\lambda} \lambda^x}{x!}, x = 0, 1, 2, \dots$
- B Limit does not exist
- C 0
- D 1

Answer: A

Question 40

The given table shows ANOVA two-way classification to test two types of cloths in fashion trends.

Source of Variations	SS	df	MSS	F-Ratio
Varieties A	280	2	140	42.04
Varieties B	$\alpha$	3		$\gamma$
Error	20	$\beta$	3.33	
Total	640	11		

The respective values (correct to two decimal places) of  $(\alpha, \beta, \gamma)$  are:

- A (340, 6, 34.03)
- B (240, 6, 34.03)
- C (340, 6, 113.03)
- D (240, 6, 113.03)

Answer: A

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Question 41

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

Marks	No. of students
0-10	12
10-20	18
20-30	27
30-40	20
40-50	17
50-60	6

- A 38
- B 48
- C 18
- D 28

Answer: D

Question 42

The approximate median of the Poisson distribution with parameter  $\lambda$  is:

- A  $\lambda + \frac{1}{3} + \frac{1}{50\lambda}$
- B  $\sqrt{\lambda + \frac{1}{3} - \frac{1}{50\lambda}}$
- C  $\lambda + \frac{1}{3} - \frac{1}{50\lambda}$

D  $\lambda + \frac{1}{3} + \sqrt{\frac{1}{50\lambda}}$

Answer: C

Question 43

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

A  $\frac{-\sigma^2}{N-1}$

B  $\frac{\sigma^2}{N-1}$

C  $\frac{\sigma^2}{n-1}$

D  $\frac{-\sigma^2}{n-1}$

Answer: C

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Question 44

Which of the following approaches does multiplicative model have for the component of Time series Secular trend (T), Seasonal variation (S), Cyclical fluctuation (C) and Irregular movement (I) ?

A  $T \times S \times C + I$

B  $T + S \times C \times I$

C  $T \times S \times C \times I$

D  $T \times S + C \times I$

Answer: C

Question 45

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

A 2.1

B 2.5

C 1

D 0.4

Answer: B

Question 46

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

A 32

B 64

C 22

D 16

Answer: B

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### Question 47

Let  $MSA$  defines mean sum of squares due to factor A and  $MSE$  defines mean sum of squares due to error. If the null hypothesis of ANOVA for one way classification is not true, then  $\frac{E(MSA)}{E(MSE)}$  is:

A equal to -1

B more than 1

C equal to 1

D less than 1

Answer: B

### Question 48

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

Commodities	Quantities		Price per unit	
	2005	2006	2005	2006
A	3	5	2.0	2.5
B	4	6	2.5	3.0
C	2	3	3.0	2.5

A 121.36

B 101.36

C 111.36

D 100.36

Answer: C

### Question 49

If  $Z_1, Z_2, \dots, Z_n$  are  $n$  independent standard normal variates, then  $\sum_{i=1}^n Z_i^2$  will follow:

A chi-squared distribution with degree of freedom  $2n$

B F distribution with degree of freedom  $(n, n)$

C chi-squared distribution with degree of freedom  $n$

D t distribution with degree of freedom  $n$

Answer: C

Question 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:

- A  $\frac{1-r^2}{r}$
- B  $\frac{1-r^2}{r \sigma_X \sigma_Y}$
- C  $\frac{1-r^2}{r} \frac{\sigma_X \sigma_Y}{\sigma_X + \sigma_Y}$
- D  $\frac{1-r^2}{r} \frac{\sigma_X \sigma_Y}{\sigma_X + \sigma_Y}$

Answer: D

Question 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:

- A ₹900
- B ₹15,000
- C ₹16.67
- D ₹0

Answer: B

Question 52

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

- A mean  $\neq$  median = mode
- B mean = median = mode
- C mean = median  $\neq$  mode
- D mean = mode  $\neq$  mode

Answer: B

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Question 53

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

- A  $\frac{1}{p}$
- B 1
- C  $\left[ -\log_2 \frac{1}{1-p} \right]$
- D  $\frac{2-p}{\sqrt{1-p}}$



Answer: B

**Question 54**

Let  $M, M_d, M_o$  denote mean, median and mode and  $Q_1, Q_2$  and  $Q_3$  quartile points. Which of the following is an absolute measure of skewness?

A  $S_k = M + M_o$

B  $S_k = M + M_d$

C  $S_k = (Q_3 - M_d) + (M_d - Q_1)$

D  $S_k = \frac{[(Q_3 - M_d) - (M_d - Q_1)]}{Q_3 - Q_1}$

Answer: D

**Question 55**

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

A 61

B 63

C 62

D 64

Answer: B

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**Question 56**

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

(I) Change of origin will affect the value of F .

(II) Change of scale will affect the value of F .

A Neither (I) nor (II)

B Only (I)

C Only (II)

D Both (I) and (II)

Answer: B

**Question 57**

Which of the following is a sources of primary data?

A Reports of committees and commissions

B Information from correspondents

C Newspapers and magazines

D Official publications of central and state government

Answer: B

Question 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:

- A -0.20
- B 0.20
- C 1
- D -1

Answer: A

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Question 59

The product of partial regression coefficient  $b_{12.3}b_{23.1}b_{31.2}$  equals to:

- A  $\frac{r_{12.3} + r_{23.1} + r_{31.2}}{3}$
- B  $(r_{12.3}r_{23.1}r_{31.2})^{\frac{1}{2}}$
- C  $\frac{1}{r_{12.3}} + \frac{1}{r_{23.1}} + \frac{1}{r_{31.2}}$
- D  $r_{12.3}r_{23.1}r_{31.2}$

Answer: D

Question 60

If  $x_i | f_i, i = 1, 2, \dots, n$  is a frequency distribution with standard deviation 15 and mean 30, the coefficient of variation will be equal to:

- A 2
- B 200
- C 0.5
- D 50

Answer: D

Question 61

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

- A 1
- B 0.1
- C 60
- D 6

Answer: D

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### Question 62

Completely randomised design is based on the principles of ..... and randomisation only.

- A Divisibility
- B Replication
- C Local Control
- D Compounding

Answer: B

### Question 63

If  $\sum p_o q_o = 160$ ,  $\sum p_o q_1 = 250$ ,  $\sum p_1 q_o = 200$ , and  $\sum p_1 q_1 = 288$  then Fisher ideal index number is equal to:

- A 125
- B 115.2
- C 119.02
- D 120

Answer: D

### Question 64

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

- A Observations
- B Error sum of squares
- C Calculations
- D Experiment

Answer: B

## SSC CGL Important Questions PDF

### Question 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:

- A  $\frac{2}{n}$
- B  $\frac{1}{n-1}$
- C  $\frac{1}{n}$

D  $\frac{2}{n-1}$

Answer: D

Question 66

If  $p(x) = \begin{cases} \frac{x}{15}; & x = 1, 2, 3, 4, 5 \\ 0; & \text{elsewhere} \end{cases}$ , the probability  $P\left\{\frac{1}{2} < X < \frac{5}{2}\right\}$  is equal to:

A  $\frac{2}{5}$

B  $\frac{3}{5}$

C  $\frac{4}{15}$

D  $\frac{1}{5}$

Answer: D

Question 67

The first four moments of a distribution about the origin are -1.5, 17, -30 and 108. The third moment about the mean is:

A 39.75

B 41.75

C 40.75

D 42.75

Answer: A

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Question 68

Let  $M, M_d, M_o, Q_1, Q_2, Q_3$  be the mean, median, mode and quartile points for different data points. Skewness is negative if:

A  $Q_3 + Q_1 > 2M_d$

B  $Q_3 + Q_1 > M_d$

C  $M > M_o$

D  $M > M_d$

Answer: A

Question 69

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

A  $H_o$  is rejected.

B The test statistic value is 0.0186.

- C  $H_0$  is accepted.  
D The standard error of p is 1.77.

Answer: C

Question 70

The sample sizes for two cases were 15 each with means as 104 and 114 respectively and variances as 290 and 510 respectively. Let the null hypothesis is that the two population means are equal, then the value of t-statistic is:

- A 0.097  
B 0.97  
C 0.079  
D 0.79

Answer: A

General Science Notes for SSC CGL

Question 71

The variation among the observations of each specific class is known as:

- A total number of classes  
B variability between classes  
C random cause  
D variability within classes

Answer: D

Question 72

If  $n_1 = 10$  and  $n_2 = 5$ , are the sizes,  $x_1 = 7$  and  $x_2 = 4$  are the means and  $\sigma_1 = 1$  and  $\sigma_2 = 1$  are the standard deviations of two series of data. If combined mean  $x_2 = 6$ , then the variance of the combined series with size  $n_1 + n_2$  is equal to:

- A 3  
B 1  
C 2  
D 9

Answer: A

Question 73

The empirical relation between mean ( $M$ ), median ( $M_d$ ), and mode ( $M_o$ ) is:

- A  $M_o = 3M_d - 2M$   
B  $M_o = 2M_d - 3M$   
C  $M_o = 2M_d + 3M$

D  $M_o = 3M_d + 2M$

Answer: A

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### Question 74

X and Y are independent normal variables with mean 50 and 80 respectively and standard deviation as 4 and 3 respectively. What is the distribution of  $X + Y$  ?

A  $N(130, 7)$

B  $N(130, 3)$

C  $N(130, 5)$

D  $N(130, 4)$

Answer: C

### Question 75

The coefficient of correlation is the ..... of coefficients of regression.

A reciprocal of product

B arithmetic mean

C geometric mean

D harmonic mean

Answer: C

### Question 76

Which of the following satisfies the time and factor reversal test?

A Laspeyres index

B averaging the unweighted price relatives

C Passche's index

D Fisher ideal index

Answer: D

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### Question 77

For a distribution, mean is 40, median is 40.5 and mode is 41. The distribution is:

A negatively skewed

B normal

C positively skewed

D mesokurtic

Answer: A

Question 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:

A 17

B 20

C 19

D 18

Answer: C

Question 79

The mean deviation from an average A will be minimum, if A represents:

A Median

B Harmonic mean

C Mode

D Arithmetic mean

Answer: A

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Question 80

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

A 12.5

B 12.8

C 12

D 13

Answer: C

Question 81

For a distribution, the mean is 10, variance is 16,  $\gamma_1$  is +1 and  $\beta_2$  is 4. The distribution is:

A leptokurtic

B platykurtic

C normal

D mesokurtic

Answer: A

Question 82

The problem of statistics is given in two sections of same standard. The odds against for section X to solve the problem are 4 : 3 and odds in favour to section Y for solving the same problem are 7 : 8. The probability that neither section solves the problem of statistics. if both sections try independent of each other, is:

- A  $\frac{21}{105}$
- B  $\frac{32}{105}$
- C  $\frac{84}{105}$
- D  $\frac{73}{105}$

Answer: B

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Question 83

If the marks obtained by 500 candidates in statistics paper is given below, then the lower quartile mark is:

Marks more than	No. of Candidates
0	500
10	460
20	400
30	200
40	100
50	30

- A 21.25
- B 300
- C 125
- D 20.25

Answer: A

Question 84

$\mu'_r$  and  $\mu_r$  represent the factorial moment of order r about the origin and  $r^{th}$  moment about the origin of the distribution  $x_i$  |  $f_i, i = 1, 2, \dots, n$ . The value of  $\mu'_2$  equals to:

- A  $\mu'^{(1)2}$
- B  $\mu'^{(2)} - \mu'^{(1)}$
- C  $\mu'^{(2)} + \mu'^{(1)}$
- D  $\mu'^{(2)}$



Answer: C

Question 85

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

- A size of responses
- B experiment condition
- C size of class
- D number of observation

Answer: C

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Question 86

If the independent random variables X,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:

- A  $1 - \left(\frac{2}{3}\right)^6$
- B  $1 - \left(\frac{1}{3}\right)^8$
- C  $1 - \left(\frac{2}{3}\right)^8$
- D  $1 - \left(\frac{1}{3}\right)^6$

Answer: C

Question 87

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

- A Secular trend
- B Cyclical fluctuation
- C Regular movement
- D Seasonal variation

Answer: A

Question 88

For the discrete distribution, the Pearson's coefficient of skewness  $\beta_2$  is always:

- A  $\beta_2 < 1$
- B  $\beta_2 = 1$
- C  $\beta_2 < -1$
- D  $\beta_2 > 1$

Answer: D

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**Question 89**

The square of normal variate with mean 0 and variance 1 follows:

- A Beta distribution with  $\alpha = 0$  and  $\beta = 1$
- B Student's t-distribution with mean 0 and variance 1
- C Normal distribution with mean 0 and variance 1
- D Chi-squared distribution with degree of freedom 1

**Answer: D**

**Question 90**

Approximately, the coefficient of variation for the given data where Pearson's second measure of skewness = 0.42, arithmetic mean = 86 and median = 80, is:

- A 53
- B 51
- C 50
- D 52

**Answer: C**

**Question 91**

In one way ANOVA,  $\sigma^2$  is estimated by:

- A mean square within groups
- B  $s^2$
- C sum of squares between groups
- D mean square between groups

**Answer: A**

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**Question 92**

If ten coins are tossed simultaneously, then the probability of getting at most 1 head is:

- A  $\frac{1}{1024}$
- B  $\frac{2}{1024}$
- C  $\frac{11}{1024}$
- D  $\frac{10}{1024}$

Answer: C

Question 93

Which of the following is NOT a type of data classification?

- A Qualitative classification
- B Chronological classification
- C Geographical classification
- D Mathematical classification

Answer: D

Question 94

If the occurrence of events follows Poisson Process with mean rate  $\lambda$ , then inter-occurrence time of events will follow:

- A Geometric distribution
- B Poisson distribution
- C Exponential distribution
- D Gamma distribution

Answer: C

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Question 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 0.048 inches. The 95% confidence interval for the average diameter of these 2000 ball bearings is:

- A  $0.3544 \pm 1.96 \times 0.048$
- B  $0.354 \pm 1.96 \times 0.0047$
- C  $0.3544 \pm 0.048$
- D  $0.048 \pm 1.96 \times 0.354$

Answer: B

Question 96

The median for the given frequency distribution is:

x	f
1	8
2	10
3	11
4	16
5	20
6	25
7	15
8	9
9	6

- A 20
- B 5
- C 4
- D 65

Answer: B

Question 97

In Spearman rank correlation coefficient  $r_s = 1 - \frac{6 \sum d^2}{n(n^2-1)}$ , the maximum value of  $\sum d^2$  in case of untied ranks is:

- A  $\frac{1}{2}(n^2 - 1)$
- B  $\frac{1}{4}n(n^2 - 1)$
- C  $n$
- D  $\frac{1}{3}n(n^2 - 1)$

Answer: D

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Question 98

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

- A  $\sqrt{\frac{n \sum xy}{\sum x^2 \sum y^2}}$
- B  $\frac{\sum xy}{(\sum x^2 \sum y^2)^{\frac{1}{n}}}$
- C  $\sqrt{\frac{\sum xy}{\sum x^2 \sum y^2}}$
- D  $\frac{\sum xy}{n \sum x^2 \sum y^2}$

Answer: C

Question 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 35 respectively. The corrected mean equals to:

- A 30.09
- B 30.01
- C 30.41
- D 30.05

Answer: A

Question 100

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

Mathematics	Statistics
3	6
5	4
8	9
4	8
7	1
10	2
2	3
1	10
6	5
9	7

The coefficient of rank correlation is:

- A -0.3
- B -0.1
- C 0.1
- D 0.3

Answer: A

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