

EXAM CODE : ST13_542012 POST : STATISTICAL COMPILER	
1	<p>If the dual of the problem has infeasible solution, then the value of objective function is :</p> <p><input checked="" type="checkbox"/> A. Unbounded</p> <p>B. Bounded</p> <p>C. No solution</p> <p>D. None of these</p>
2	<p>If random variable X follows a standard normal distribution, then X^2 follows:</p> <p>A. Normal distribution</p> <p>B. Gamma distribution with parameters (1,1)</p> <p>C. Exponential distribution</p> <p><input checked="" type="checkbox"/> D. Chisquare distribution with one degree of freedom</p>

3	<p>The Chisquare distribution can be used to test:</p> <p>A. Goodness of fit of distribution</p> <p>B. Independence of attributes</p> <p>C. Single population variance</p> <p><input checked="" type="checkbox"/> D. All of these</p>
4	<p>If the two lines of regression are perpendicular to each other, the relation between the two regression coefficients is:</p> <p>A. $\beta_{yx} = \beta_{xy}$</p> <p>B. $\beta_{yx} \beta_{xy} = 1$</p> <p>C. $\beta_{yx} \leq \beta_{xy}$</p> <p><input checked="" type="checkbox"/> D. $\beta_{yx} = -\beta_{xy}$</p>

5	<p>If $\rho(x,y) = -1$, the relation between x and y is of the type :</p> <p>A. When y increases, x also increases</p> <p>B. When y decreases, x also decreases</p> <p>C. x is equal to $-y$</p> <p><input checked="" type="checkbox"/> D. When y increases, x decreases</p>
6	<p>The A.M of two numbers is 6.5 and their G.M is 6. The two numbers are :</p> <p>A. 9, 6</p> <p>www.upscstudymaterials.com</p> <p>B. 9, 5</p> <p>C. 7, 6</p> <p><input checked="" type="checkbox"/> D. 4, 9</p>

7	<p>If the two observations are 5 and -5. their Geometric mean is :</p> <p>A. 5</p> <p>B. -5</p> <p>C. 0</p> <p><input checked="" type="checkbox"/> D. None of these</p>
8	<p>The average which is mostly affected by the smallest values is :</p> <p>A. A.M</p> <p>B. G.M</p> <p><input checked="" type="checkbox"/> C. H.M</p> <p>D. Mode</p>

9	<p>The relationship between mean deviation (M.D) and Standard deviation is :</p> <p>A. $3 \text{ M.D} = 2 \text{ S.D}$</p> <p><input checked="" type="checkbox"/> B. $5 \text{ M.D} = 4 \text{ S.D}$</p> <p>C. $2 \text{ M.D} = 3 \text{ S.D}$</p> <p>D. $6 \text{ M.D} = 5 \text{ S.D}$</p>
10	<p>If each value of a series is divided by 5, its co-efficient of variation is reduced by :</p> <p><input checked="" type="checkbox"/> A. 0%</p> <p>B. 5%</p> <p>C. 10%</p> <p>D. 20%</p>

www.upscstudymaterials.com

11	<p>Harmonic mean in terms of G.M and A.M is :</p> <p>A. $H.M = \sqrt{G.M \times A.M}$</p> <p>B. $H.M = G.M \times A.M$</p> <p><input checked="" type="checkbox"/> C. $H.M = (G.M)^2 / A.M$</p> <p>D. $H.M = \sqrt{(G.M)^2 / A.M}$</p>
12	<p>The extreme values in a negatively skewed distribution lie in the :</p> <p>A. Middle</p> <p>B. Right tail</p> <p><input checked="" type="checkbox"/> C. Left tail</p> <p>D. Whole curve</p>

13	<p>Mode is calculated graphically by :</p> <p>A. Ogaive</p> <p>B. Line diagram</p> <p><input checked="" type="checkbox"/> C. Histogram</p> <p>D. Lorenz curve</p>
14	<p>The value of coefficient of Kurtosis β_2 can be :</p> <p>A. Less than 3</p> <p>B. www.upscstudymaterials.com Greater than 3</p> <p>C. Equal to 3</p> <p><input checked="" type="checkbox"/> D. All of these</p>

15	<p>For a symmetrical distribution odd moments take values:</p> <p><input checked="" type="checkbox"/> A. Zero</p> <p>B. Positive</p> <p>C. Negative</p> <p>D. Positive and Negative</p>
16	<p>When there is a pronounced skewness, the desirable scale to plot the frequency distribution is :</p> <p>A. Arithmetic Scale</p> <p>B. Multiple Scale</p> <p><input checked="" type="checkbox"/> C. Logarithmic Scale</p> <p>D. Any of these</p>

17	<p>What percentage of values lies between 5th and 25th percentiles?</p> <p>A. 15%</p> <p>B. 30%</p> <p>C. 75%</p> <p><input checked="" type="checkbox"/> D. 20%</p>
18	<p>If the mean deviation of a distribution is 20.20, the standard deviation of the distribution is :</p> <p>A. 15.15</p> <p><input checked="" type="checkbox"/> B. 25.25</p> <p>C. 30.30</p> <p>D. None of these</p>

19	<p>Which of the following statements is FALSE?</p> <p><input checked="" type="checkbox"/> A. Pie charts are better than bar graphs for comparing relative sizes</p> <p>B. Data that are nominal scale are presented using frequency tables</p> <p>C. Means and standard deviations of ordinal data are meaningless</p> <p>D. The scatter-plot is the basic graphic tool for investigating relationships between two interval or ratio scaled variables</p>
20	<p>The correct relationship between A.M., G.M and H.M is :</p> <p>A. $A.M = G.M = H.M$</p> <p>B. $G.M \geq A.M \geq H.M$</p> <p>C. $H.M \geq G.M \geq A.M$</p> <p><input checked="" type="checkbox"/> D. $A.M \geq G.M \geq H.M$</p>

21	<p>In a randomized block design with 6 treatments and 5 blocks, an observation is missing. The treatment total, the block total corresponding to the missing observation is 25 and 30 respectively. The total of the available observations is 100. Then an estimate for missing observation is :</p> <p>A. 25</p> <p>B. 15</p> <p>C. 20</p> <p><input checked="" type="checkbox"/> D. 10</p>
22	<p>Randomization is a process in which treatments are allocated to the experimental units :</p> <p>A. At the will of the investigator</p> <p>B. In a sequence</p> <p><input checked="" type="checkbox"/> C. With equal probability</p> <p>D. By choosing the units alternatively</p>

23	<p>In a Latin square design with 5 treatments, we need :</p> <p>A. 125 observations</p> <p>B. 50 observations</p> <p><input checked="" type="checkbox"/> C. 25 observations</p> <p>D. 10 observations</p>
24	<p>The distribution for error in ANOVA is assumed to be :</p> <p><input checked="" type="checkbox"/> A. $N(0, \sigma^2)$</p> <p>B. $N(0, 1)$</p> <p>C. $N(\mu, \sigma^2)$</p> <p>D. $N(\mu, 1)$</p>

www.upscstudymaterials.com

25

The contrast representing the linear effect among the 4 treatments is :

A. $T_1 - 2T_2 + T_3$

B. $T_1 - T_2 - T_3 + T_4$

C. $-T_1 + 3T_2 - 3T_3 + T_4$

☒ D. None of these

26

The quadratic effect of a factor X at three levels 0, 1 and 2 can be estimated by the contrast :

www.upscstudymaterials.com

A. $X_0 - X_2$

☒ B. $X_0 + X_2 - 2X_1$

C. $X_1 + X_2 - 2X_0$

D. $X_0 + X_1 - 2X_2$

27

The number of Additional Director
Generals assisting the Director
General of CSO is :

☒ A. 5

B. 4

C. 3

D. 6

28

The probability of selecting 8th population unit in the 6th draw when 10 units are randomly drawn one by one without replacement out of 25 population units is :

A. $\frac{10}{25}$

B. $\frac{1}{10}$

C. $\frac{6}{25}$

~~D. $\frac{1}{25}$~~

www.upscstudymaterials.com

29

The Government organization whose primary responsibility is organizing socio-economic surveys is :

A. Indian Statistical Institute

B. CSO

☒ C. NSSO

D. Ministry of Statistics

30

Given $V_1=26$, $V_2 = 32$ and $V_3 = 15$.
Identify the correct choice:

A. $V_{\text{ran}} = V_1$, $V_{\text{opt}} = V_2$, $V_{\text{prop}} = V_3$

B. $V_{\text{opt}} = V_1$, $V_{\text{ran}} = V_2$, $V_{\text{prop}} = V_3$

☒ C. $V_{\text{opt}} = V_3$, $V_{\text{ran}} = V_2$, $V_{\text{prop}} = V_1$

D. $V_{\text{opt}} = V_3$, $V_{\text{ran}} = V_1$, $V_{\text{prop}} = V_2$

31	<p>Neyman allocation reduces to proportional allocation when :</p> <p>A. Stratum sizes are equal</p> <p><input checked="" type="checkbox"/> B. Stratum standard deviations are equal</p> <p>C. Stratum means are equal</p> <p>D. Stratum means are unequal</p>
32	<p>When $Y_i = \alpha + \beta_i$, $i=1, 2, \dots, N$, which of the following statement is TRUE?</p> <p>www.upscstudymaterials.com</p> <p>A. $V(\bar{y}_{srs}) = V(\bar{y}_{sys})$</p> <p><input checked="" type="checkbox"/> B. $V(\bar{y}_{sys}) = V(\bar{y}_{srs})$</p> <p>C. $V(\bar{y}_{sys}) = V(\bar{y}_{srs})$</p> <p>D. $V(\bar{y}_{sys}) = 0$</p>

33	<p>The number of possible systematic samples of size 8 with population size 120 is :</p> <p>A. 8</p> <p>B. 12</p> <p>C. 15</p> <p>D. 10</p>
34	<p>Choose the sequence of labels corresponding to a systematic sample of size 4 when $N = 20$:</p> <p>A. 5, 10, 15, 20</p> <p>B. 1, 10, 11, 20</p> <p>C. 3, 9, 15, 18</p> <p>D. 2, 6, 10, 14</p>

35	<p>Neyman allocation :</p> <p>A. Minimizes $V(\bar{y}_{st})$ for a given cost</p> <p>B. Maximizes $V(\bar{y}_{st})$ for a given cost</p> <p><input checked="" type="checkbox"/> C. Minimizes $V(\bar{y}_{st})$ for a given sample size</p> <p>D. Maximizes $V(\bar{y}_{st})$ for a given sample size</p>
36	<p>In a randomized block design with 5 blocks and 6 treatments having one missing value, the error degrees of freedom will be :</p> <p>A. 18</p> <p><input checked="" type="checkbox"/> B. 19</p> <p>C. 20</p> <p>D. 30</p>

37	<p>Error sum of squares in RBD as compared to CRD using the same material is :</p> <p>A. More</p> <p>B. Less</p> <p>C. Equal</p> <p>D. Not comparable</p>
38	<p>In a Latin square design with 5 treatments, the error degrees of freedom in analysis of variance is equal to:</p> <p>A. 12</p> <p>B. 16</p> <p>C. 25</p> <p>D. 14</p>

www.upscstudymaterials.com

39

If from each value of Y , a constant value 15 is subtracted and then divided by 2, the changed regression coefficient b_{xy} through coded values is :

- A. Half of b_{xy}
- ☒ B. Twice of b_{xy}
- C. Same as b_{xy}
- D. None of these

40

A linear combination of treatments is said to be a contrast iff :

www.upscstudymaterials.com

- A. The sum of the treatment effects is 0
- B. All the coefficients of the treatments are unity
- ☒ C. The sum of the coefficients of the treatment is 0
- D. The sum of the coefficients of the treatment is less than 0

41	<p>In a 2^3 factorial experiment, if the effect ABC is confounded in all the 4 replicates then the error degrees of freedom is :</p> <p>A. 16</p> <p>B. 18</p> <p>C. 20</p> <p>D. 15</p>
42	<p>In a randomized block design, the unbiased estimator for error variance is : www.upscstudymaterials.com</p> <p>A. Mean sum of squares due to error</p> <p>B. Sum of squares due to error</p> <p>C. Sum of squares due to treatment</p> <p>D. Mean sum of squares due to treatment</p>

43

If the treatment ABC is confounded in a replicate, then the other treatment combinations that must occur with abc in the same block is :

~~A.~~ a, b, c

B. ab, ac, bc

C. bc, ac, c

D. a, b, ab

44

If $Y = CX$, C being a constant, then $E(Y) = ?$

A. C

B. $E(X)$

~~C.~~ $CE(X)$

D. $C + E(X)$

www.upscstudymaterials.com

45

If $X \sim B(n, p)$, the distribution of $Y = n - X$ is :

A. $B(n, 1)$

B. $B(n, x)$

C. $B(n, p)$

☒ D. $B(n, q)$

46

A problem in statistics is given to two students A and B. The odds in favour of A solving the problem are 6 to 9 and against B solving the problem are 12 to 10. If A and B attempt it, find the probability of the problem being solved.

A. $6/15$

B. $5/11$

C. $18/55$

☒ D. $37/55$

47

If X is a normal distribution with mean 8 and variance 4. then $P(X < 8)$ is :

A. 0

B. 1

C. 0.5

D. 0.8

48

If $f(x)$ is the probability density function of a continuous random variable x . then $E(x^r)$ is :

A. $\int_{-\infty}^{\infty} x^r f(x) dx$ B. $\int_{-\infty}^{\infty} x^{r+1} f(x) dx$ C. $\int_{-\infty}^{\infty} x f(x) dx$ D. $\int_{-\infty}^{\infty} f(x) dx$

49	<p>A number is chosen at random from the first 20 natural numbers. The probability that it is a multiple of 3 or 5 is :</p> <p>A. $\frac{1}{2}$</p> <p><input checked="" type="checkbox"/> B. $\frac{9}{20}$</p> <p>C. $\frac{3}{10}$</p> <p>D. $\frac{1}{5}$</p>
50	<p>A coin is tossed 6 times. The probability of obtaining four or more heads is :</p> <p>A. $\frac{1}{2^6}$</p> <p>B. $\frac{11}{2^6}$</p> <p><input checked="" type="checkbox"/> C. $\frac{11}{2^5}$</p> <p>D. $\frac{1}{2^5}$</p>

51	<p>If X is a Poisson random variable with parameter 9, an upper bound for $P(3 < X < 15)$ using Chebyshev's inequality is :</p> <p>A. 0.075</p> <p>B. 0.025</p> <p>C. 0.75</p> <p><input checked="" type="checkbox"/> D. 0.25</p>
52	<p>The joint probability mass function of (x, y) is $f(x, y) = \begin{cases} k(2x+y), & x=0,1,2 \text{ and } y=0,1,2,3 \\ 0, & \text{otherwise} \end{cases}$</p> <p>The value of k is :</p> <p><input checked="" type="checkbox"/> A. 1/30</p> <p>B. 1/5</p> <p>C. 1/3</p> <p>D. 7/15</p>

53

Mr. A speaks truth in 90% of cases and Mr. B speaks truth in 70% of cases. The percentage of cases they contradict each other in making the same statement is :

A. 63

B. 20

C. 27

☒ D. 34

54

The interquartile range of a normal distribution with mean μ and variance σ^2 is approximately

A. $\frac{2}{3}\sigma$ ☒ B. $\frac{4}{3}\sigma$ C. σ D. $\frac{4}{5}\sigma$

55	<p>A man and his wife appear for an interview for two posts. The probability of the husband's selection is $\frac{1}{7}$ and that of wife's selection is $\frac{1}{5}$. What is the probability that only one of them will be selected?</p> <p>A. $\frac{6}{7}$</p> <p><input checked="" type="checkbox"/> B. $\frac{2}{7}$</p> <p>C. $\frac{4}{5}$</p> <p>D. $\frac{4}{35}$</p>
56	<p>The distribution for which the moment generating function is $\frac{1}{2^6} (1 + e^t)^6$ is a :</p> <p>A. Hypergeometric distribution</p> <p>B. Negative binomial distribution</p> <p><input checked="" type="checkbox"/> C. Binomial distribution</p> <p>D. Geometric distribution</p>

57

The recurrence relation for the moments of a Poisson distribution with the parameter λ is:

A. $\mu_{r+1} = r\mu_{r-1} + \frac{d\mu_r}{d\lambda}$

B. $\mu_{r+1} = \lambda \left[\mu_{r-1} + \frac{d\mu_r}{d\lambda} \right]$

C. $\mu_{r+1} = \lambda \left[r\mu_r + \frac{d\mu_r}{d\lambda} \right]$

☒ D. $\mu_{r+1} = \lambda \left[r\mu_{r-1} + \frac{d\mu_r}{d\lambda} \right]$

58

Expected value of $|x - k|$ is minimum when:

A. $k = E(x)$

B. $k < \text{Median}$

C. $k > E(x)$

☒ D. $k = \text{Median}$

59	<p>Performance of an acceptance sampling plan can be analyzed using:</p> <p>A. Single sampling plan</p> <p><input checked="" type="checkbox"/> B. Operating characteristic curve</p> <p>C. Control chart</p> <p>D. None of these</p>
60	<p>If $P = \pm 1$, the two regression lines are:</p> <p><input checked="" type="checkbox"/> A. Coincide</p> <p>B. Parallel</p> <p>C. Perpendicular to each other</p> <p>D. None of these</p>

61	<p>The probability of selecting the set {1, 2, 4} as samples in SRSWOR, when $N=10$ and $n=3$ is:</p> <p>A. $\frac{1}{3}$</p> <p>B. $\frac{3}{10}$</p> <p><input checked="" type="radio"/> C. $\frac{1}{120}$</p> <p>D. $\frac{1}{10}$</p>
62	<p>The probability of including the units with label 3 in a SRS with $N=10$ and $n=3$ is: www.upscstudymaterials.com</p> <p>A. $\frac{1}{10}$</p> <p><input checked="" type="radio"/> B. $\frac{3}{10}$</p> <p>C. $\frac{1}{3}$</p> <p>D. $\frac{1}{120}$</p>

63

The range for intraclass correlation, when clusters contain exactly M units each is:

A. $\frac{1}{(M-1)} \rho - 1$

B. $-1 < \rho < 1$

☒ C. $-\frac{1}{(M-1)} \rho - 1$

D. $0 < \rho < 1$

64

In which of the following sampling methods, one can have $n > N$ with positive probability?

☒ A. SRSWR

B. SRSWOR

C. Systematic sampling

D. Stratified sampling

65

Given $N = 36$, $n = 5$ and $S^2 = 2$. The value of $V(\bar{y}_{\text{SRSWOR}})$ is:

A. $\frac{2}{5}$

B. $\frac{7}{18}$

☒ C. $\frac{31}{90}$

D. $\frac{4}{5}$

66

When $N = 24$ and $n = 6$, which of the following statement is TRUE in systematic sampling?

A. The probability of selecting a sample consisting 10th and 14th population

unit is $\frac{1}{6}$

B. The probability of selecting a sample consisting 9th and 14th population unit is 0

C. The probability of selecting a sample consisting 9th and 14th population

unit is $\frac{1}{4}$

D. The probability of selecting a sample consisting 7th, 12th and 15th

population unit is $\frac{1}{4}$

www.upscstudymaterials.com

67	<p>A life-table constructed for an age interval of 5 to 10 years is specifically known as:</p> <p>A. Grouped life-table</p> <p>B. Interval life-table</p> <p><input checked="" type="checkbox"/> C. Abridged life-table</p> <p>D. None of these</p>
68	<p>The death rate of women due to delivery of children is termed as:</p> <p><input checked="" type="checkbox"/> A. www.upscstudymaterials.com Maternal mortality rate</p> <p>B. Neonatal mortality rate</p> <p>C. Infant mortality rate</p> <p>D. Foetal death rate</p>

69	<pre>10 LET A = 5.3 20 PRINT A 30 END</pre> <p>The output will be:</p> <ul style="list-style-type: none"><input checked="" type="radio"/> A. 5.3<input type="radio"/> B. 5.36<input type="radio"/> C. 3.5<input type="radio"/> D. 5.03
70	<p>GOTO statement in BASIC is:</p> <ul style="list-style-type: none"><input type="radio"/> A. Conditional<input checked="" type="radio"/> B. Unconditional<input type="radio"/> C. Branching<input type="radio"/> D. Transfer

71	<p>In BASIC, if within an expression the parenthesis are present, then the calculations within the innermost parenthesis will have:</p> <ul style="list-style-type: none"><input checked="" type="checkbox"/> A. First preference<input type="checkbox"/> B. Second preference<input type="checkbox"/> C. Third preference<input type="checkbox"/> D. Fourth preference
72	<p>The child bearing age in India is:</p> <ul style="list-style-type: none"><input type="checkbox"/> A. 20 – 24 years<input type="checkbox"/> B. 20 – 29 years<input checked="" type="checkbox"/> C. 15 – 49 years<input type="checkbox"/> D. 15 – 52 years

73

The equation of the Parabola is:

A. $y = ax^2 + bx + c$

B. $y = ax^3 + bx^2 + cx + D$

C. $y = ae^{bx}$

D. $y = ax^b$

74

Given the two regression lines as $3x - 4y + 8 = 0$ and $4x - 3y = 1$. The means of x and y are:

A. $\bar{x} = 4, \bar{y} = 5$

B. $\bar{x} = 3, \bar{y} = 4$

C. $\bar{x} = \frac{3}{4}, \bar{y} = \frac{5}{4}$

D. None of these

www.upscstudymaterials.com

75	<p>Variance of a constant is:</p> <p>A. 1</p> <p>B. $-\infty$</p> <p><input checked="" type="radio"/> C. 0</p> <p>D. ∞</p>
76	<p>In a Normal distribution, skewness is :</p> <p>A. One</p> <p><input checked="" type="radio"/> B. Zero</p> <p>C. Greater than one</p> <p>D. Less than one</p>

77	<p>Given the expected values for two variables x and y as $E(x) = 2$, $E(x^2) = 10$, $E(y) = 3$, $E(y^2) = 20$ and $E(xy) = 16$. We conclude that:</p> <p>A. Correlation coefficient will be positive</p> <p>B. Correlation coefficient will be negative</p> <p><input checked="" type="checkbox"/> C. Given data are incorrect</p> <p>D. None of these</p>
78	<p>The most popular method of computing consumer price index is:</p> <p>A. Aggregate expenditure method</p> <p>B. Simple average of price relative method</p> <p><input checked="" type="checkbox"/> C. Family budget method</p> <p>D. Simple aggregate method</p>

79

Pansche's formula for price index is :

$$A. \frac{\sum P_1 Q_1}{\sum P_0 Q_0} \cdot 100$$

$$B. \frac{\sum P_1 Q_1}{\sum P_0 Q_1} \cdot 100$$

$$C. \frac{\sum P_1 Q_0}{\sum P_0 Q_0} \cdot 100$$

$$D. \frac{\sum P_0 Q_1}{\sum P_1 Q_1} \cdot 100$$

www.upscstudymaterials.com

80

Factor reversal test is invented by:

A. Walsh

B. A.L. Bowley

C. John I. Griffin

D. Irwin Fisher

81	<p>The gross National product value is deflated through:</p> <ul style="list-style-type: none">A. Quantity Index Number<input checked="" type="radio"/> B. Price Index NumberC. Value Index NumberD. All of these
82	<p>Fisher's ideal index number is the ____ of Laspegre's and Pansche's index numbers.</p> <ul style="list-style-type: none">A. Arithmetic mean<input checked="" type="radio"/> B. Geometric meanC. Harmonic meanD. Weighted Arithmetic mean

83	<p>Geometrically crossed – weight formula was given by:</p> <p><input checked="" type="checkbox"/> A. Marshall and Edgeworth</p> <p>B. Fisher</p> <p>C. Kelly</p> <p>D. Dorbish and Bowley</p>
84	<p>If 'r' is the correlation coefficient of n pairs of values, then its standard error is:</p> <p>www.upscstudymaterials.com</p> <p>A. $\sqrt{\frac{1-r^2}{n}}$</p> <p>B. $\frac{1-r}{\sqrt{n}}$</p> <p>C. $\frac{1+r^2}{\sqrt{n}}$</p> <p><input checked="" type="checkbox"/> D. $\frac{1-r^2}{\sqrt{n}}$</p>

85

The Arithmetic mean of the two regression coefficients β_{yx} and β_{xy} is:

☒ A. $-r$

B. $-r$

C. $-r^2$

D. $-r^2$

86

The Spearman's rank correlation coefficient formula is:

A. $1 - \frac{6 \sum di^3}{n(n^2 - 1)}$

B. $1 + \frac{6 \sum di^2}{n(n^2 - 1)}$

☒ C. $1 - \frac{6 \sum di^2}{n(n^2 - 1)}$

D. $1 + \frac{\sum di^2}{n(n - 1)}$

www.upscstudymaterials.com

87

The skewness of a chi-square distribution will be zero if:

- A. $n = 0$
- B. $n = 1$
- C. $n < 0$
- D. $n \rightarrow \infty$

88

Sampling distribution is defined as:

- A. Chi square distribution
- B. Frequency distribution of the statistic
- C. Frequency distribution of the parameter
- D. t - distribution

89

If X and Y are two independent chi square variates with γ_1 and γ_2 degrees

of freedom respectively, then $W = \frac{X/\gamma_1}{Y/\gamma_2}$

follows:

- A. Chi square distribution
- B. t - distribution
- C. Normal distribution
- ☒ D. F - distribution

90

The maximum height of the students' t-distribution curve at the point $t = 0$ is:

- A. $\frac{1}{\beta\left(\frac{1}{2}, \frac{n-1}{2}\right)}$
- ☒ B. $\frac{1}{\sqrt{n-1} \beta\left(\frac{1}{2}, \frac{n-1}{2}\right)}$
- C. $\frac{1}{\sqrt{n-1} \beta\left(\frac{1}{2}, \frac{n}{2}\right)}$
- D. $\sqrt{n-1} \beta\left(\frac{1}{2}, \frac{n-1}{2}\right)$

www.upscstudymaterials.com

91

For a random sample of size n from

$$N(\mu, \sigma^2), \bar{x} \text{ and } (n-1)S^2 = \sum_{i=1}^n (x_i - \bar{x})^2$$

are:

- A. Identically distributed
- ☒ B. Independently distributed
- C. Both (A) and (B)
- D. Neither (A) nor (B)

92	<p>Fertility rates provide an adequate basis for:</p> <p>A. Population growth</p> <p><input checked="" type="checkbox"/> B. Family planning</p> <p>C. Checking infant mortality</p> <p>D. None of these</p>
93	<p>Given $\text{Min } 10x_1 + 5x_2 + 5x_3$ Subject to $5x_1 - 5x_2 - 3x_3 = 1$ $-x_1 + x_2 = -3$ $x_1 - x_2 = -7$ $-4x_1 + 4x_2 + x_3 = 5$ $x_1 \geq 0$</p> <p>In the dual of this problem we have :</p> <p><input checked="" type="checkbox"/> A. $\text{Max } y_1 - 3y_2 - 7y_3 + 5y_4$</p> <p>B. $\text{Max } 10x_1 + 5x_2 + 5x_3$</p> <p>C. $\text{Max } 5x_1 - 5x_2 - 3x_3 = 1$</p> <p>D. None of these</p>

94	<p>“Assign a value of 758.33 to the variable “P” – for this corresponding LET statement is:</p> <p><input checked="" type="checkbox"/> A. 10 LET P = 758.33</p> <p>B. P = 758.33</p> <p>C. 10 LET P = 7.33</p> <p>D. None of these</p>
95	<p>Sequence of instructions in a program that can be executed repetitively until certain specific conditions are satisfied is: www.upscstudymaterials.com</p> <p>A. Fixed loop</p> <p>B. Jump</p> <p>C. Variable loop</p> <p><input checked="" type="checkbox"/> D. Loop</p>

96

The table of expected frequencies associated with the following contingency table is:

20	10
10	20

A.

20	20
10	10

~~C.~~

15	15
15	15

B.

20	10
10	20

D.

10	10
20	20

www.upscstudymaterials.com

97

Which method is not suitable to as measured seasonal variation

A. Method of simple average

B. Moving average method

~~C.~~ Ratio to trend method

D. Link relative method

98

To test the hypothesis $H_0 : \sigma^2 = \sigma_0^2$ against $H_1 : \sigma^2 \neq \sigma_0^2$ based on a sample size 15 drawn from $N(\theta, \sigma^2)$, θ -unknown, the test statistic has :

- A. t distribution with 14 degrees of freedom
- B. t distribution with 13 degrees of freedom
- C. χ^2 distribution with 14 degrees of freedom
- D. χ^2 distribution with 15 degrees of freedom

99

A statistical test is :

- A. A statement about the probability distribution of a random variable
- ☒ B. A decision rule which helps us to take a decision regarding the acceptance or rejection of a hypothesis based on sample evidence
- C. A decision rule that can be used even before sampling.
- D. All of these

www.upscstudymaterials.com

100

Choose the correct statement :

- A. If the p-value of a test is 1, the null hypothesis must be rejected.
- B. If the p-value of a test is 0, the null hypothesis must be accepted
- ☒ C. If the p-value of a test is 1, the null hypothesis must be accepted
- D. p-value of a test has no role in deciding whether to accept or reject a statistical hypothesis

101	<p>Neyman-pearson lemma gives a -</p> <ul style="list-style-type: none"> <input checked="" type="radio"/> A. Most powerful test B. Likelihood ratio test C. Uniformly most powerful test D. All of these
102	<p>A most powerful test is associated with testing -</p> <ul style="list-style-type: none"> <input checked="" type="radio"/> A. Simple null against simple alternative B. Simple null against composite alternative C. Composite null against composite alternative D. Composite null against simple alternative

103 Paired t-test is used for -

- A. Testing the equality of means based on 2 independent samples
- B. Testing the equality of variance based on 2 independent samples
- ☒ C. Testing the equality of means of paired observations on same experimental units
- D. Testing the equality of means of paired observation on different experimental units

104

The sample correlation based on a sample of size 11 drawn from a bivariate normal distribution is found to be $+\sqrt{0.19}$. The value of the test statistic associated with $H_0: \rho=0$ against $H_1: \rho \neq 0$ is :

A. $\sqrt{\frac{19}{3}}$

B. $\sqrt{\frac{19}{9}}$

C. $\sqrt{\frac{19}{30}}$

D. $\sqrt{\frac{3}{19}}$

www.upscstudymaterials.com

105

Based on two independent samples of sizes 12 and 15 drawn from $N(\theta_1, \sigma_1^2)$ and $N(\theta_2, \sigma_2^2)$, it is found that

$$\sum_{i=1}^{12} (x_i^{(1)} - \bar{x}^{(1)})^2 = 80 \text{ and } \sum_{i=1}^{15} (x_i^{(2)} - \bar{x}^{(2)})^2 = 70.$$

The value of the test statistic associated with $H_0 : \sigma_1^2 = \sigma_2^2$ vs $H_1 : \sigma_1^2 \neq \sigma_2^2$ is:

A. $\frac{11}{16}$

B. $\frac{16}{11}$

C. $\frac{10}{7}$

D. $\frac{7}{10}$

www.upscstudymaterials.com

106	<p>The likelihood ratio test reduces to MPT if :</p> <p>A. Null and Alternative are simple</p> <p>B. Null is simple, Alternative is composite</p> <p>C. Null is composite, Alternative is simple</p> <p>D. Null and alternative are composite</p>
107	<p>For which of the following testing problems there is no UMPT of level α in the case of Poisson distribution with mean λ -</p> <p>A. $H_0 : \lambda = \lambda_0$ against $H_1 : \lambda < \lambda_0$</p> <p>B. $H_0 : \lambda = \lambda_0$ against $H_1 : \lambda > \lambda_0$</p> <p>C. $H_0 : \lambda \leq \lambda_0$ against $H_1 : \lambda > \lambda_0$</p> <p>D. $H_0 : \lambda = \lambda_0$ against $H_1 : \lambda \neq \lambda_0$</p>

108 It is believed that in Tamil Nadu, students undergoing Science, Arts, Commerce and Engineering branches are in the ratio 2 : 1 : 1 : 6. Based on a random sample of 1500 students, it is proposed to test the above statement, which of the following tests is an appropriate one?

A. F test

B. t – test

☒ C. Chi-square test

D. Normal test

109 Corrected statement for
20 IF B1 > B\$ THEN 70 is :

A. 20 IF BS > B1 THEN 70

B. 20 IF B1 > B\$ THEN 20

☒ C. 20 IF B1 > B2 THEN 70

D. None of these

110	<p>Supply corresponding INPUT statements to ?, 10, 20, 30, 40</p> <p><input checked="" type="radio"/> A. 10 INPUT A, B, C, D</p> <p><input type="radio"/> B. 10 INPUT A\$, B\$, C,D</p> <p><input type="radio"/> C. 10 INPUT A, B</p> <p><input type="radio"/> D. None of these</p>
111	<p>Total numbers of live births to the total female population of the child bearing age is :</p> <p>www.upscstudymaterials.com</p> <p><input checked="" type="radio"/> A. Total fertility rate</p> <p><input type="radio"/> B. Specific fertility rate</p> <p><input type="radio"/> C. General fertility rate</p> <p><input type="radio"/> D. Crude birth rate</p>

112	Size of an array is accomplished by means of the statement :
	<p><input checked="" type="radio"/> A. DIM</p> <p><input type="radio"/> B. READ</p> <p><input type="radio"/> C. DATA</p> <p><input type="radio"/> D. END</p>
113	What is the library function for finding the square root of a variable?
	<p><input type="radio"/> A. ABS</p> <p><input type="radio"/> B. LOG</p> <p><input checked="" type="radio"/> C. SQRT</p> <p><input type="radio"/> D. SQR</p>

www.upscstudymaterials.com

114	<p>The moment generating function of a t-distribution is :</p> <p>A. $(1 - 2t)^{-n/2}$</p> <p>B. $(n - t)^{-1/2}$</p> <p>C. $(1 + 2t)^{-n}$</p> <p><input checked="" type="checkbox"/> D. Does not exist</p>
115	<p>If X_1 and X_2 are two independent chisquare variates with n_1 and n_2 degrees of freedom respectively, then $\frac{X_1}{X_2}$ follows a www.upscstudymaterials.com</p> <p>A. t distribution with (n_1/n_2) degrees of freedom</p> <p>Beta distribution of the second kind</p> <p><input checked="" type="checkbox"/> B. with parameters $\left(\frac{n_1}{2}, \frac{n_2}{2}\right)$</p> <p>C. Gamma distribution with parameters $\left(\frac{n_1}{2}, \frac{n_2}{2}\right)$</p> <p>D. None of these</p>

116	<p>The standard error is :</p> <p>A. Error of the statistic</p> <p>B. Standard deviation</p> <p><input checked="" type="checkbox"/> C. Standard deviation of the statistic</p> <p>D. None of these</p>
117	<p>The relation between Snedecor's F and Fisher's Z is :</p> <p>A. $Z = \frac{1}{2} \log_e F$</p> <p>B. $F = e^{2Z}$</p> <p><input checked="" type="checkbox"/> C. Both (A) and (B)</p> <p>D. None of (A) and (B)</p>

118	<p>Value of b in the trend line $y = a + bx$ is:</p> <p>A. Always positive</p> <p>B. Always negative</p> <p><input checked="" type="checkbox"/> C. Both positive and negative</p> <p>D. None of these</p>
119	<p>The best method for finding out seasonal variation is :</p> <p>A. Simple average method</p> <p><input checked="" type="checkbox"/> B. Ratio to moving average method</p> <p>C. Ratio to trend method</p> <p>D. None of these</p>
120	<p>Least square method of fitting a trend is :</p> <p><input checked="" type="checkbox"/> A. Most exact</p> <p>B. Least exact</p> <p>C. Full of subjectivity</p> <p>D. Mathematically unsound</p>

121	<p>If the origin in a trend equation is shifted forward by three years, x in the equation $y = a + bx$ will be replaced by:</p> <p>A. $x - 3$</p> <p><input checked="" type="checkbox"/> B. $x + 3$</p> <p>C. $3x$</p> <p>D. None of these</p>
122	<p>For Bernoulli distribution with probability p of a success and q of a failure, the relation between mean and variance that holds is:</p> <p><input checked="" type="checkbox"/> A. Mean < variance</p> <p>B. Mean > variance</p> <p>C. Mean = variance</p> <p>D. Mean \leq variance</p>

123	<p>Purchasing power of money can be accessed through -</p> <ul style="list-style-type: none">A. Value indexB. Quantity index<input checked="" type="checkbox"/> C. Consumer price indexD. Price index
124	<p>A good index number is one that Satisfies -</p> <ul style="list-style-type: none">A. Time reversal testB. Factor reversal test<input checked="" type="checkbox"/> C. Both time reversal and factor reversal testD. None of these

www.upscstudymaterials.com

125 Current year fixed base index is equal to

- A. $\frac{\text{Current year CBI} \times \text{Previous year FBI}}{100}$
- B. $\frac{\text{Current year FBI} \times \text{Previous year CBI}}{100}$
- C. $\frac{\text{Current year CBI} \times \text{Current year FBI}}{100}$
- D. $\frac{\text{Previous year FBI} \times \text{Previous year CBI}}{100}$

126 For a random sample from $N(\mu, 1)$, an unbiased estimator of $\mu^2 + 1$ is :

- A. $\bar{x}^2 + 1$
- B. $(\sum x_i)^2 + 1$
- C. $\frac{1}{n}(\sum x_i)^2 + 1$
- D. $\frac{\sum x_i^2}{n}$

127	<p>If x_1, x_2, \dots, x_n be a random sample from $N(\mu, \sigma^2)$ population, the sufficient Statistic for μ is :</p> <p>A. $\sum(x_i - \bar{x})$</p> <p>B. \bar{x}/n</p> <p><input checked="" type="checkbox"/> C. $\sum x_i$</p> <p>D. $\sum(x_i - \bar{x})^2$</p>
128	<p>An estimates is considered to be the best if its distribution is :</p> <p>www.upscstudymaterials.com</p> <p>A. Continuous</p> <p>B. Discrete</p> <p><input checked="" type="checkbox"/> C. Concentrated about the true parameter value</p> <p>D. Normal</p>

129	<p>Pick the family which is NOT regular :</p> <p>A. Binomial</p> <p>B. Poisson</p> <p>C. Cauchy</p> <p><input checked="" type="radio"/> D. $U(0, \theta)$</p>
130	<p>The Rao-Blackwell theorem helps to improve the unbiased estimator by using the -</p> <p>A. Estimator with maximum variance</p> <p>B. Unbiased estimator</p> <p><input checked="" type="radio"/> C. Sufficient estimator</p> <p>D. Biased estimator</p>

www.upscstudymaterials.com

131 If the variance of an estimator attains the Cramer Rao lower bound the estimator is :

- ☒ A. Most sufficient
- B. Having 0 variance
- C. Biased
- D. Having the maximum variance

132 Least square estimator under linear model set up is :

- www.upscstudymaterials.com
- A. Biased
 - ☒ B. Unbiased with minimum variance
 - C. Unbiased with maximum variance
 - D. Having variance 0

133	<p>The 95% confidence limits for μ of normal distribution when σ^2 is known is -</p> <p>A. $\bar{x} \pm 1.96 \frac{\sigma}{\sqrt{n}}$</p> <p>B. $\bar{x} \pm 1.96 \frac{S}{\sqrt{n}}$</p> <p>C. $\bar{x} \pm 1.96 \frac{S}{\sqrt{n-1}}$</p> <p>D. $\bar{x} \pm t_{\alpha/2} \frac{S}{\sqrt{n}}$</p>
134	<p>Index numbers help -</p> <p>www.upscstudymaterials.com</p> <p>A. In framing of economic policies</p> <p>B. In accessing the purchasing power or money</p> <p>C. For adjusting national income</p> <p>D. All of these</p>

135	<p>The error (s) involved in the construction or index numbers is :</p> <p>A. Error of sampling</p> <p>B. Formula error</p> <p>C. Error in collected data</p> <p><input checked="" type="checkbox"/> D. All of these</p>
136	<p>One of the limitations in the construction of index numbers is:</p> <p><input checked="" type="checkbox"/> A. The choice of the type of average</p> <p>B. Choice of investigators</p> <p>C. Choice of variables to be studied</p> <p>D. All of these</p>

137	Weights which can be expressed with definiteness are called - A. Implicit weights B. Explicit weights C. Fixed weights D. None of these
138	The chisquare distribution with n degrees of freedom, for $n < 30$ is : A. Positively skewed B. Symmetric C. Negatively skewed D. None of these

www.upscstudymaterials.com

139	<p>The credit for deriving the F-distribution goes to -</p> <p>A. R.A. Fisher</p> <p><input checked="" type="checkbox"/> B. G.W. Snedecor</p> <p>C. W.S. Gossett</p> <p>D. All of these</p>
140	<p>The t distribution is :</p> <p>A. Positively skewed</p> <p><input checked="" type="checkbox"/> B. Symmetrical about the line $t = 0$</p> <p>C. Negatively skewed</p> <p>D. None of these</p>
141	<p>The range of a chi-square variate is :</p> <p>A. $-\infty$ to $+\infty$</p> <p>B. 0 to 1</p> <p><input checked="" type="checkbox"/> C. 0 to ∞</p> <p>D. $-\infty$ to $+0$</p>

142

Which of the following is TRUE?

- (i) Method of minimum X^2 and m.l.e gives the same estimator for large n
- (ii) Method of modified minimum X^2 and m.l.e gives the same estimator for large n
- (iii) m.l.e's are unbiased
- (iv) Consistent estimator is always unbiased

A. (i) only

B. (i), (ii) and (iii) only

☒ C. (i) and (ii)

www.upscstudymaterials.com

D. All the statements

143

If x_1, x_2, \dots, x_n is a random sample from population $N(\mu, \sigma^2)$, the sufficient Statistic For σ^2 , when μ is unknown, is :

A. $(\sum x_i)^2$

☒ B. $\sum x_i^2$

C. $\sum (x_i - \mu)^2$

D. None of these

144

The $100(1-\alpha)\%$ confidence interval for σ_1^2/σ_2^2 based on random samples from two independent normal population of sizes n_1 and n_2 with unknown means, where S_1^2 and S_2^2 are unbiased estimators of σ_1^2 and σ_2^2 , is given by:

A. $\left[\frac{S_2^2}{S_1^2} \times \frac{1}{F_{n_1-1, n_2-1}^{\alpha/2}}, \frac{S_2^2}{S_1^2} \times F_{n_2-1, n_1-1}^{\alpha/2} \right]$

B. $\left[\frac{S_1^2}{S_2^2} \times \frac{1}{F_{n_1-1, n_2-1}^{\alpha/2}}, \frac{S_1^2}{S_2^2} \times F_{n_2-1, n_1-1}^{\alpha/2} \right]$

C. $\left[\frac{S_2^2}{S_1^2} \times \frac{1}{F_{n_2-1, n_1-1}^{\alpha/2}}, \frac{S_2^2}{S_1^2} \times F_{n_1-1, n_2-1}^{\alpha/2} \right]$

D. $\left[\frac{S_1^2}{S_2^2} \times \frac{1}{F_{n_2-1, n_1-1}^{\alpha/2}}, \frac{S_1^2}{S_2^2} \times F_{n_1-1, n_2-1}^{\alpha/2} \right]$

www.upscstudymaterials.com

145 If X_1, X_2, \dots, X_n constitutes a random sample from $f(x) = e^{-(x-\delta)}, x > \delta$, which of the following estimators of δ are not biased?

A. \bar{X}

☒ B. $\bar{X} - 1$

C. $\bar{X} + 1$

D. $2\bar{X}$

146 If X_1, X_2, \dots, X_n is a random sample from $f(x) = e^{-(x-\delta)}, x > \delta$, which of the following is a consistent estimators of δ ?

☒ A. $X_{(1)}$

B. $X_{(n)}$

C. \bar{X}

D. $\bar{X} - 1$

147	<p>Cramer- Rao inequality with regard to the variance of an estimator provides:</p> <p>A. Upper bound on the variance</p> <p><input checked="" type="checkbox"/> B. Lower bound on the variance</p> <p>C. Asymptotic variance of an estimator</p> <p>D. Efficiency of an estimator</p>
148	<p>For a random sample of size 100 from $N(\mu, \sigma^2)$ the two sided, 95% confidence interval for μ when σ^2 is unknown, with $S^2 = \frac{1}{n-1} \sum (X_i - \bar{X})^2$, is:</p> <p>www.upscstudymaterials.com</p> <p>A. $[\bar{X} - 1.96S, \bar{X} + 1.96S]$</p> <p>B. $[\bar{X} - 1.645S, \bar{X} + 1.645S]$</p> <p>C. $[\bar{X} - 0.1645S, \bar{X} - 0.1645S]$</p> <p><input checked="" type="checkbox"/> D. $[\bar{X} - 0.196S, \bar{X} + 0.196S]$</p>

149	<p>If μ and σ are the process mean and SD then the limits $\mu \pm 3\sigma$ are called -</p> <p>A. Specification limits</p> <p>B. Standard limits</p> <p><input checked="" type="radio"/> C. Natural tolerance limits</p> <p>D. Warning limits</p>
150	<p>AOQL of a single sampling plan is :</p> <p>A. $\frac{P(N - n)}{N}$</p> <p>B. $\frac{N - n}{N} P_a$</p> <p>C. $\frac{P(N - n)(1 - P_a)}{N}$</p> <p><input checked="" type="radio"/> D. $\frac{P(N - n)P_a}{N}$</p>

151	<p>Type A oc curve is based on -</p> <p>A. Binomial distribution</p> <p>B. Poisson distribution</p> <p><input checked="" type="checkbox"/> C. Hypergeometric distribution</p> <p>D. Normal distribution</p>
152	<p>C – chart is based on -</p> <p>A. Binomial distribution</p> <p>B. Normal distribution</p> <p><input checked="" type="checkbox"/> C. Poisson distribution</p> <p>D. Hypergeometric distribution</p>
153	<p>Which of the following statement is true?</p> <p>A. AQL and LQL are same</p> <p>B. AQL and LTPD are same</p> <p><input checked="" type="checkbox"/> C. LQL and LTPD are same</p> <p>D. AQL and RQL are same</p>

154	<p>The oc curve of a single sampling plan gives -</p> <p>A. Probability of accepting the lots</p> <p>B. Probability of finding the specified number of defectives.</p> <p>C. Probability of finding specified number of good items</p> <p>D. Probability of never committing an error</p>
155	<p>In a double sampling plan we reject the lot if www.upscstudymaterials.com</p> <p>A. $d_1 \leq c_1$</p> <p>B. $d_1 > c_2$</p> <p>C. $d_1 + d_2 \leq c_2$</p> <p>D. $d_1 + d_2 \leq c_1$</p>

156	<p>Lot tolerance percentage defective is also called -</p> <p>A. Acceptance quality level</p> <p><input checked="" type="checkbox"/> B. Rejectable quality level</p> <p>C. Best quality level</p> <p>D. Medium quality level</p>
157	<p>Given $\bar{R} = .009$ for a process that is in control obtain the estimate of process standard deviation. The sample size $n = 6$ and $d_2 = 2.534$?</p> <p>A. .05</p> <p>B. .035</p> <p><input checked="" type="checkbox"/> C. .0035</p> <p>D. .0027</p>

www.upscstudymaterials.com

158	Acceptance of a lot of unsatisfactory quality on the basis of sampling inspection is called ____ A. Market Risk B. Bayes Risk <input checked="" type="radio"/> C. Consumer's Risk D. Producer's Risk
159	The rejection of a lot which is of acceptable quality is called ____ A. Bayes Risk B. Consumer's Risk <input checked="" type="radio"/> C. Producer's Risk D. Market Risk

160	<p>Suppose a random sample of 'n' items is drawn from a lot of 'N' items and let 'd' be the number of defectives in the sample. If 'c' be the acceptance number of defectives then we reject the lot if -</p> <p>A. $d > c$</p> <p>B. $d = c$</p> <p>C. $d < c$</p> <p>D. $d \leq c$</p>
161	<p>The double sampling inspection plan was designed by</p> <p>www.upscstudymaterials.com</p> <p>A. Dodge and Roming</p> <p>B. Walter A Shewhart</p> <p>C. Duncan</p> <p>D. A.V. Feigenbaum</p>

162 In a certain sampling inspection, the number of defects found in 10 samples of 100 each are given below:
16, 18, 11, 18, 21, 10, 20, 18, 17 and 21.
Find the upper control limit for the C-chart.

- A. 17
- B. 4.631
- C. 12.369
- ☒ D. 29.369

163 The three sigma trial control limits for C-chart for equal size samples are given as -

A. $UCL = \bar{C} + 3\sqrt{\bar{c}}; CL = \bar{C},$
 $LCL = \bar{C} - 3\sqrt{\bar{c}}$

B. $UCL = \bar{C} + 2\sqrt{\bar{c}}; CL = \bar{C},$
 $LCL = \bar{C} - 2\sqrt{\bar{c}}$

C. $UCL = \bar{C} + \sqrt{3\bar{c}}; CL = 3,$
 $LCL = \bar{C} - \sqrt{3\bar{c}}$

D. None of the above

164 In variable sampling plan, the distribution of quality characteristic is assumed as -

A. Poisson distribution

B. Normal distribution

C. Binomial distribution

D. None of these

165	Control chart for nonconformities is based on - A. Poisson distribution B. Exponential distribution C. Normal distribution D. None of these
166	Which probability density function has a constant hazard rate? A. Binomial distribution B. Poisson distribution C. Gamma distribution D. Exponential distribution

167	<p>For an exponential probability density function $F(t) = \lambda e^{-\lambda t}$, $t \geq 0$, mean time to failure is :</p> <p>A. λ</p> <p><input checked="" type="checkbox"/> B. $1/\lambda$</p> <p>C. $\frac{1}{1+\lambda}$</p> <p>D. $1+\lambda$</p>
168	<p>Monthly fluctuation observed in a time series data are termed as -</p> <p>A. Cyclical variation</p> <p>B. Irregular variation</p> <p><input checked="" type="checkbox"/> C. Seasonal variation</p> <p>D. Secular trend</p>

169	<p>Periodic changes in a business time series are called -</p> <p>A. Seasons</p> <p><input checked="" type="checkbox"/> B. Cycles</p> <p>C. Secular</p> <p>D. None of these</p>
170	<p>The abrupt changes observed in a time series data are attributed to _____ variations</p> <p>A. Secular</p> <p>B. Cyclical</p> <p><input checked="" type="checkbox"/> C. Irregular</p> <p>D. Seasonal</p>

www.upscstudymaterials.com

171	<p>If the slope of the trend line is positive it shows -</p> <ul style="list-style-type: none"><input checked="" type="checkbox"/> A. Rising trend<input type="checkbox"/> B. Declining trend<input type="checkbox"/> C. Stagnation<input type="checkbox"/> D. Any of the above
172	<p>A time series is affected by -</p> <ul style="list-style-type: none"><input type="checkbox"/> A. Economic factors<input type="checkbox"/> B. Non economic factors<input checked="" type="checkbox"/> C. Both (A) and (B)<input type="checkbox"/> D. Neither (A) nor (B)

173 Variance of the project duration in network is :

A. $\sigma^2 = \left[\frac{t_p - t_0}{6} \right]^2$

B. $\sigma^2 = \frac{1}{6} [t_p - t_0]^2$

C. $\sigma^2 = \left[\frac{t_p - t_0}{6} \right]$

D. $\sigma^2 = 6 [t_p - t_0]$

www.upscstudymaterials.com

174 Representation of beginning or completion of some activity which consumes no time in network is :

A. Event

B. PERT

C. CPM

D. Activity

175 The longest time that an activity could take if everything goes wrong in network is:

- A. Pessimistic time
- B. Most likely time
- C. Optimistic time
- D. Critical path

176 Given $2x_1 + x_2 - x_3 = 2$
and $3x_1 + 2x_2 + x_3 = 3$
then one of the basis :

A. $\begin{pmatrix} 2 & 1 \\ 3 & 2 \end{pmatrix}$

B. $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$

C. $\begin{pmatrix} 2 & 1 & -1 \\ 3 & 2 & 1 \end{pmatrix}$

D. None of these

www.upscstudymaterials.com

177	<p>O.R Models may be classified depending upon -</p> <ul style="list-style-type: none">A. DimensionalityB. FunctionC. Subject<input checked="" type="checkbox"/> D. All of these
178	<p>The component of a time series which is attached to long term fluctuations is :</p> <ul style="list-style-type: none">A. Seasonal variation<input checked="" type="checkbox"/> B. Cyclical variationC. Irregular variationD. All of these

179	<p>The general decline in sales of cotton cloths is attached to the component of the time series –</p> <p>A. Secular trend</p> <p>B. Cyclical variation</p> <p>C. Seasonal variation</p> <p>D. All of these</p>
180	<p>The consistent increase in production of cereals constitutes the component of a time series -</p> <p>www.upscstudymaterials.com</p> <p>A. Secular trend</p> <p>B. Seasonal variation</p> <p>C. Cyclical variation</p> <p>D. All of these</p>

181	<p>Cyclic variations in a time series are caused by -</p> <ul style="list-style-type: none">A. Lockouts in a factoryB. War in a CountryC. Floods in the States<input checked="" type="checkbox"/> D. None of these
182	<p>Semi-average method or finding trend is appropriate if the data are available for a -</p> <ul style="list-style-type: none"><input checked="" type="checkbox"/> A. Long periodB. Short periodC. Long and Short periodD. None of these

183	<p>Link relatives in a time series remove the influence of -</p> <p><input checked="" type="radio"/> A. The trend</p> <p><input type="radio"/> B. Cyclic variation</p> <p><input type="radio"/> C. Irregular variation</p> <p><input type="radio"/> D. All of these</p>
184	<p>Which of the following component is used for short term forecast?</p> <p><input type="radio"/> A. Cyclical variation</p> <p><input type="radio"/> B. Trend</p> <p><input checked="" type="radio"/> C. Seasonal variation</p> <p><input type="radio"/> D. None of these</p>

185	<p>If either the primal or the dual problem has an unbounded objective function value, then the other problem has -</p> <p>A. Feasible solution</p> <p><input checked="" type="checkbox"/> B. No feasible solution</p> <p>C. Unbounded solution</p> <p>D. None of these</p>
186	<p>To convert $\sum a_{ij} x_j \geq b_j$ into an equality, we introduce -</p> <p>A. Slack variable</p> <p><input checked="" type="checkbox"/> B. Surplus variable</p> <p>C. Unrestricted variable</p> <p>D. None of these</p>

187	<p>In an assignment problem, if there are 'n' workers and 'n' jobs there would be -</p> <p>A. n solutions</p> <p><input checked="" type="checkbox"/> B. n! solutions</p> <p>C. (n-1)! solutions</p> <p>D. (n!)ⁿ solutions</p>
188	<p>An assignment problem can be solved by-</p> <p><input checked="" type="checkbox"/> A. Transportation method</p> <p>B. Sequencing method</p> <p>C. Row method</p> <p>D. None of these</p>
189	<p>If x_j's are feasible solution to linear programming problem then -</p> <p><input checked="" type="checkbox"/> A. $x_j \geq 0$</p> <p>B. $x_j \leq 0$</p> <p>C. $x_j = 0$</p> <p>D. None of these</p>

190

Given
$$\begin{pmatrix} 1 & 2 & 1 \\ 2 & 1 & 5 \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} = \begin{pmatrix} 4 \\ 5 \end{pmatrix}$$

The maximum possible basic solution is :

☒ A. 3

B. 4

C. 2

D. 6

191

Most commonly used index number is -

A. Diffusion index number

☒ B. Price index number

C. Value index number

D. None of these

www.upscstudymaterials.com

192	<p>Consumer price index is mostly used for framing -</p> <p>A. Price policy</p> <p><input checked="" type="checkbox"/> B. Wage policy</p> <p>C. Policy making</p> <p>D. All of these</p>
193	<p>Estimation of quantity index number by applying Fisher method is :</p> <p><input checked="" type="checkbox"/> A. $Q_{01} = \sqrt{\frac{\sum q_1 p_0}{\sum q_0 p_0} \times \frac{\sum q_1 p_1}{\sum q_0 p_1}} \times 100$</p> <p>B. $Q_{01} = \sqrt{\frac{\sum q_1 p_1}{\sum q_0 p_0} \times \frac{\sum q_1 p_0}{\sum q_0 p_1}} \times 100$</p> <p>C. $Q_{01} = \sqrt{\frac{\sum q_0 p_0}{\sum q_1 p_0} \times \frac{\sum q_0 p_1}{\sum q_1 p_1}} \times 100$</p> <p>D. $Q_{01} = \sqrt{\frac{\sum q_0 p_1}{\sum q_1 p_1} \times \frac{\sum q_0 p_0}{\sum q_1 p_0}} \times 100$</p>

194	<p>Link relative for any month is equal to -</p> <p>A. $\frac{\text{Previous month value}}{\text{current month value}} \times 100$</p> <p>B. $\frac{\text{Current month value}}{\text{previous month value}} \times 100$</p> <p>C. $\frac{\text{Current month value}}{\text{Chain relative of preceeding month}} \times 100$</p> <p>D. All of these</p>
195	<p>In the least square linear trend equation $y = a + bx$, if b is positive it indicates -</p> <p>A. Declining trend</p> <p>B. Rising trend</p> <p>C. No trend at all</p> <p>D. All of these</p>

196	<p>The only way of isolating irregular variations is to remove _____ from the time series.</p> <p>A. Secular trend and seasonal variation</p> <p><input checked="" type="radio"/> B. Secular trend, seasonal and cyclical variation</p> <p>C. Seasonal and cyclical variation</p> <p>D. Secular Trend and cyclical variation</p>
197	<p>For the given five values 15,24,18,33,42 the three year moving averages are:</p> <p>www.upscstudymaterials.com</p> <p>A. 19, 22, 33</p> <p><input checked="" type="radio"/> B. 19, 25, 31</p> <p>C. 19, 30, 31</p> <p>D. None of these</p>

198	<p>Quantity index reflects what changes from one period to another?</p> <p>A. Price</p> <p><input checked="" type="checkbox"/> B. Quantity</p> <p>C. Value</p> <p>D. All of these</p>
199	<p>Index numbers are called -</p> <p><input checked="" type="checkbox"/> A. Economic barometers</p> <p>B. Good guide</p> <p>C. Both (A) and (B)</p> <p>D. Neither (A) nor (B)</p>
200	<p>The cost matrix in an assignment problem is a -</p> <p><input checked="" type="checkbox"/> A. Square matrix</p> <p>B. Rectangle matrix</p> <p>C. Diagonal matrix</p> <p>D. None of these</p>