Sl. No. :

STATM/17

Register Number

2017

STATISTICS

(Degree Standard)

Time Allowed : 3 Hours] **[Maximum Marks : 300**

Read the following instructions carefully before you begin to answer the questions.

IMPORTANT INSTRUCTIONS

1. The applicant will be supplied with Question Booklet 15 minutes before commencement of the examination.
2. This Question Booklet contains 200 questions. Prior to attempting to answer the candidates are requested to check whether all the questions are there and ensure there are no blank pages in the question booklet. **In case any defect in the Question Paper is noticed it shall be reported to the Invigilator within first 10 minutes and get it replaced with a complete Question Booklet. If any defect is noticed in the Question Booklet after the commencement of examination it will not be replaced.**
3. Answer all questions. All questions carry equal marks.
4. You must write your Register Number in the space provided on the top right side of this page. Do not write anything else on the Question Booklet.
5. An answer sheet will be supplied to you, separately by the Invigilator to mark the answers.
6. You will also encode your Register Number, Subject Code, Question Booklet Sl. No. etc. with Blue or Black ink Ball point pen in the space provided on the side 2 of the Answer Sheet. If you do not encode properly or fail to encode the above information, action will be taken as per commission's notification.
7. Each question comprises *four* responses (A), (B), (C) and (D). You are to select ONLY ONE correct response and mark in your Answer Sheet. In case you feel that there are more than one correct response, mark the response which you consider the best. In any case, choose ONLY ONE response for each question. Your total marks will depend on the number of correct responses marked by you in the Answer Sheet.
8. In the Answer Sheet there are four circles Ⓐ, Ⓑ, Ⓒ and Ⓓ against each question. To answer the questions you are to mark with Ball point pen ONLY ONE circle of your choice for each question. Select one response for each question in the Question Booklet and mark in the Answer Sheet. If you mark more than one answer for one question, the answer will be treated as wrong. *e.g.* If for any item, Ⓑ is the correct answer, you have to mark as follows :

   Ⓐ ● Ⓒ Ⓓ
9. You should not remove or tear off any sheet from this Question Booklet. You are not allowed to take this Question Booklet and the Answer Sheet out of the Examination Hall during the examination. After the examination is concluded, you must hand over your Answer Sheet to the Invigilator. You are allowed to take the Question Booklet with you only after the Examination is over.
10. The sheet before the last page of the Question Booklet can be used for Rough Work.
11. Do not tick-mark or mark the answers in the Question Booklet.
12. Failure to comply with any of the above instructions will render you liable to such action or penalty as the Commission may decide at their discretion.

1. Find the Geometric Mean for the following values, 2, 3 and 4.

(A) 3.000 (B) 24.000

(C) 8.000 (D) 2.884

2. In a distribution lower quartiles is 30 and upper quartile is 50, find the semi-interquartile range

(A) 20 (B) 10

(C) 5 (D) $\sqrt{20}$

3. Karl Pearson's γ_2 co-efficient is equal to

(A) β_2 (B) $\beta_2 + 3$

(C) $\beta_2 - 3$ (D) $\sqrt{\beta_2}$

4. If $\beta_2 > 3$, then the associated distribution is called

(A) Mesokurtic (B) Leptokurtic

(C) Platykurtic (D) Symmetrical

5. If the rate of changes between two variables X and Y is in the same direction, the relationship between X and Y will have

(A) positive correlation (B) negative correlation

(C) no correlation. (D) $r = 0$

6. The co-efficient of correlation between two variables $r(X; Y) > 0$ when

(A) X is increasing and Y is decreasing

(B) Both X and Y are increasing

(C) X is decreasing and Y is increasing

(D) There is no change in X and Y

7. When two lines of regression become perpendicular each other, the correlation between the two variables will be

(A) perfect positive correlation

(B) perfect negative correlation

(C) no correlation

(D) either positive or negative correlation

8. In rolling of two distinct dice at a time, the variable X is defined as the number greater than 2 and the variable Y as the sum of numbers of two dice is less than 10. These bivariate distribution of (X, Y) is

(A) continuous
(B) discrete
(C) both continuous and discrete
(D) neither continuous nor discrete

9. Mark the correct answer in the following :

For two random variables X and Y, the relation $E(XY) = E(X)E(Y)$; holds good

(A) if X and Y are statistically independent
(B) for all X and Y
(C) if X and Y are identical
(D) if X and Y are dependent

10. If two dice are thrown, then the probability that the sum is greater than 8 is

(A) 1/3
(B) 1/2
(C) 5/18
(D) 7/18

11. A bag contains 3 red, 6 white and 7 blue balls, the probability that the two balls drawn are white and blue is

(A) $\frac{13}{16}$
(B) $\frac{13}{120}$
(C) $\frac{7}{20}$
(D) $\frac{1}{3}$

12. A probability curve $y = f(x)$ has a range from 0 to ∞. If $f(x) = e^{-x}$ then mean and variance are

(A) (1, 1)
(B) (1, 2)
(C) (2, 1)
(D) (2, 2)

13. The expectation of the number on a die when thrown is

(A) 7
(B) $\frac{7}{2}$
(C) $\frac{2}{7}$
(D) 2

14. If F is the distribution function of the random variable X and if $a < b$, then $P(a < X \leq b) =$

(A) $F(a) - F(b)$

(B) $F(b) - F(a-)$

(C) $F(b-) - F(a-)$

(D) $F(b) - F(a)$

15. A random variable X is distributed between the values 0 and 1 and its probability density function is given by $f(x) = kx^2(1 - x^3)$ where k is a constant. Find k.

(A) $k = 1$

(B) $k = \frac{1}{10}$

(C) $k = 6$

(D) $k = \frac{15}{1024}$

16. Two random variables X and Y are independent if

(A) $f_{xy}(xy) = f_x(x) \cdot g_x(x)$

(B) $f_{xy}(x, y) = f_x(x) \cdot g_y(y)$

(C) $f_{xy}(x, y) = f_x(x) + g_x(x)$

(D) $f_{xy}(x, y) = f_x(x) + g_y(y)$

17. If two random variables X and Y are independent, then

(A) $E(XY) = 1$

(B) $E(XY) = 0$

(C) $E(XY) = E(X) \cdot E(Y)$

(D) $E(XY) = E(X) + E(Y)$

18. Find the expectation of the number on a die when thrown

(A) $\frac{42}{2}$

(B) $\frac{6}{7}$

(C) $\frac{7}{2}$

(D) 7

19. If X is a random variable with its mean $\overline{X}$, the expression $E(X - \overline{X})^2$ represents

(A) The variance of X.

(B) Second central moment

(C) Both (A) and (B)

(D) None of (A) and (B)

20. If $X \to P(\lambda = 100)$ then by using Chebyshev's inequality the lower bound for $P(75 < X < 125)$ is

(A) 0.16 (B) 0.84

(C) 0.5 (D) 0

21. The Shewhart type control charts are very effective when we are interested in

(A) detecting the quantum of error

(B) detecting the larger shifts in the process characteristics

(C) detecting the smaller shifts in the process characteristics

(D) detecting the sample size

22. If X is uniformly distributed with mean 1 and variance 4/3 then the value of $P(X < 0)$ is

(A) 1/4 (B) 1/2

(C) 3/4 (D) 1

23. The probability density function of standard normal variate is

(A) $\frac{1}{\sigma\sqrt{2\pi}} e^{-z^2/2}; \ -\infty < z < \infty$ (B) $\frac{1}{\sigma} e^{-z^2/2}; \ -\infty < z < \infty$

(C) $\frac{1}{\sqrt{2\pi}} e^{-z^2/2}; \ -\infty < z < \infty$ (D) $\frac{1}{\sqrt{2\pi}} e^{-z/2}; \ -\infty < z < \infty$

24. The moment generating function of normal distribution is

(A) $e^{\mu t - \frac{1}{2} t^2 \sigma^2}$ (B) $e^{\mu t + \frac{1}{2} t \sigma}$

(C) $e^{\mu t + \frac{1}{2} t^2 \sigma^2}$ (D) $e^{\mu t - \frac{1}{2} t \sigma}$

25. The number of accidents that occurs during the various days of the week are 14, 16, 8, 12, 11, 9, 14. The chi-square value of test whether the accidents are uniformly distributed is

(A) 7 (B) 84

(C) 12 (D) 4.17

26. Cyclic pattern of sample points in the control charts indicate towards assignable causes which is due to

(A) Materials and machines (B) Bad weather

(C) Unskilled labour (D) Temperature

27. If X and Y are independent Poisson variates, then the conditional distribution of X given $X+Y$, is

(A) Normal distribution
(B) Binomial distribution
(C) Geometric distribution
(D) Hyper-geometric distribution

28. The mode of Poisson distribution when λ is an integer is given by

(A) $(\lambda+1)$ and λ
(B) $\lambda-1$
(C) $(\lambda-1)$ and λ
(D) λ

29. In Poisson distribution with unit mean, mean deviation about mean is –

(A) $\frac{e}{2}\times$ standard deviation
(B) $\frac{1}{e}\times$ standard deviation
(C) $\frac{2}{e}\times$ standard deviation
(D) $2\times$ standard deviation.

30. Moment generating function of Binomial distribution is

(A) $(q+pe^{t})^{-n}$
(B) $(qe^{t}+p)^{n}$
(C) $(q+pe^{t})^{n}$
(D) $(q+pe^{-t})^{n}$

31. A minimum variance unbiased estimator T_n is said to be unique if for any other estimator T_n^*

(A) $Var(T_n)=Var(T_n^*)$
(B) $Var(T_n)\le Var(T_n^*)$
(C) $Var(T_n)\ge Var(T_n^*)$
(D) $Var(T_n)\ne Var(T_n^*)$

32. Let $\{T_n\}$ be a sequence of estimators such that for all $\theta\in\Theta$

$E_\theta(T_n)\to r(\theta)$, as $n\to\infty$ and

$Var_\theta(T_n)\to 0$, as $n\to\infty$ then

(A) T_n is a inconsistent estimator of $r(\theta)$
(B) T_n is a unbiased estimator of $r(\theta)$
(C) T_n is a consistent estimator of $r(\theta)$
(D) T_n is a biased estimator of $r(\theta)$

33. Let $X_1, X_2, \ldots, X_n$ be a random sample from a population with pdf. $f(x, \theta) = \theta x^{\theta-1}$; $0 < X < 1$, $\theta > 0$. The sufficient estimator for θ is

(A) $\sum_{i=1}^{n} x_i$

(B) $\bar{x}$

(C) $\prod_{i=1}^{n} x_i$

(D) $\sum_{i=1}^{n} x_i^2$

34. T is a sufficient statistic for θ if and only if the likelihood function L can be expressed as

(A) $g_\theta(t(x))$

(B) $h(x)$

(C) $g_\theta[t(x)]\,h(x)$

(D) $g_\theta[t(x)]/h(x)$

35. If T is the MLE of θ and $\varphi(\theta)$ is one to one function of θ, then $\varphi(T)$ is the MLE of $\varphi(\theta)$. This property is known as

(A) Invariance property of MLE

(B) Cramer - Rao theorem

(C) Hazoor Bazar's theorem

(D) Asymptotic normality of MLE's

36. Let $x_1, x_2, \ldots, x_n$ be a random sample from the uniform distribution with p.d.f $f(x, \theta) = \frac{1}{\theta}$, $0 < x < \theta$; $\theta > 0$. Then MLE for θ is

(A) $\hat{\theta} = x_{(1)}$

(B) $\hat{\theta} = \frac{1}{x}$

(C) $\hat{\theta} = x_{(n)}$

(D) $\hat{\theta} = \bar{x}$

37. Let $x_1, x_2, \ldots, x_n$ be a random sample from the rectangular population $f(x, \alpha, \beta) = \frac{1}{\beta - \alpha}$, $\alpha < x < \beta$. The MLE for β is

(A) $x_{(1)}$

(B) $x_{(n)}$

(C) $\bar{x}$

(D) s^2

38. Any consistent solution of the likelihood equation provides a maximum of the likelihood with probability tending to unity as the sample size $n \to \infty$. This statement is related to

(A) Invariance property
(B) Cramer-Rao theorem
(C) Hazoor Bazar's theorem
(D) Asymptotic Normality of MLE

39. The critical value of the test statistic at level of significance α for a two-tailed test is given by the equation

(A) $p(z > z_\alpha) = \alpha$
(B) $p(z < -z_\alpha) = \alpha$
(C) $p(|z| > z_\alpha) = \alpha$
(D) $p(z > -z_\alpha) = \alpha$

40. If a basic solution also satisfies the non-negativity restriction of an L.P.P., then that solution is called

(A) Infeasible solution
(B) Basic feasible solution
(C) Basic infeasible solution
(D) Optimum solution

41. For testing $H_0 : \theta = \theta_0$ against $H_1 : \theta = \theta_1$, the critical region w and the test based on it is said to be unbiased if

(A) power of the test = size of the critical region
(B) power of the test $\neq$ size of the critical region
(C) power of the test < size of the critical region
(D) power of the test $\geq$ size of the critical region

42. Comment on the following statements on asymptotic properties of likelihood ratio test.

Statement (1) : Under certain conditions, $-2\log_e \lambda$ has an asymptotic F distribution.

Statement (2) : Under certain conditions, likelihood ratio test is inconsistent.

(A) Both (1) and (2) are correct
(B) (1) is correct but (2) is wrong
(C) (1) is wrong but (2) is correct
(D) Both (1) and (2) are wrong

43. To test the equality of variances of several normal populations, which of the following test is used?

(A) t-test
(B) F-test
(C) Chi-square test
(D) Fisher's test

44. A random sample of 500 pineapples were taken from a large consignment and 65 were found to be defective. The standard error of the proportion of defective ones in the sample is

(A) 0.13
(B) 0.87
(C) 0.015
(D) 0.5

45. If x is a chi-square variate with n degrees of freedom then for large n, $\sqrt{2x}$ follows

(A) $N(0, 1)$
(B) $N(\mu, \sigma^2)$
(C) $N(\sqrt{2n}, 1)$
(D) $N(\mu, 1)$

46. Comment on the following statements regarding the assumptions of t-test for difference of means.

Statement (1) : Parent populations from which the samples have been drawn are normally distributed

Statement (2) : The population variances are equal and unknown.

(A) Both (1) and (2) are incorrect
(B) (1) is correct but (2) is incorrect
(C) (1) is incorrect but (2) is correct
(D) Both (1) and (2) are correct

47. On examining the sample of a particular stuff we arrive at a decision of purchasing or rejecting that stuff. The error involved in such approximation is known as

(A) Standard error
(B) Type I error
(C) Type II error
(D) Sampling error

48. Comment on the following statements :

"Let $k > 0$, be a constant and w be a critical region of size α such that

Statement (1) : $w = \left\{ x \in s : \dfrac{L_1}{L_0} \leq k \right\}$

Statement (2) : $\overline{w} = \left\{ x \in s : \dfrac{L_1}{L_0} > k \right\}$"

(A) Both (1) and (2) are correct
(B) (1) is correct but (2) is incorrect
(C) (1) is incorrect but (2) is correct
(D) Both (1) and (2) are incorrect

49. The technique of drawing a sample, each unit of the population has an equal chance of being included in the sample is called

(A) stratified sampling (B) cluster sampling

(C) quota sampling (D) simple random sampling

50. A strata is a

(A) non-homogeneous sub-group of the population

(B) sample of the population

(C) homogeneous sub-group of the population

(D) overlapping sub-group of the population

51. In SRSWOR, calculate $V(\overline{y}_n)_R$ where $N = 300$ $n = 30$ $s^2 = 802.68$

(A) 24.08 (B) 20.08

(C) 25.06 (D) 22.04

52. If the population consists of a linear trend then

(A) $V(\overline{y}_{st}) > V(\overline{y}_{sys}) > \text{var}(\overline{y}_n)_R$ (B) $V(\overline{y}_{sys}) < V(\overline{y}_n)_R < V(\overline{y}_{st})$

(C) $V(\overline{y}_{st}) \le \text{var}(\overline{y}_{sys}) \le V(\overline{y}_n)_R$ (D) $V(\overline{y}_n)_R \le V(\overline{y}_{st}) \le V(\overline{y}_{st})$

53. The standard error of sample mean $\overline{x}$ is equal to

(A) $\frac{\sigma}{\sqrt{n}}$ (B) $\sqrt{\frac{\sigma^2}{2n}}$

(C) $\sqrt{\frac{PQ}{n}}$ (D) $\sigma^2\sqrt{\frac{2}{n}}$

54. Completely Randomized designs are suitable in the situation when :

(A) some units are likely to fail to respond

(B) all the experimental units are not homogeneous

(C) number of treatments is large

(D) plot sizes are very large

55. Randomized block design is not suitable for

(A) smaller number of treatments
(B) smaller experimental units
(C) large number of treatments
(D) field experiment

56. If n units are selected in a sample from N population units, the sampling fraction is

(A) $\frac{1}{N}$
(B) $\frac{1}{n}$
(C) $\frac{n}{N}$
(D) $\frac{N}{n}$

57. In C.R.D. if the M.S.S. due to treatment $S_T^2 = \frac{S_T^2}{v-1}$ and M.S.S due to error $S_E^2 = \frac{S_E^2}{n-v}$ then the ratio $\frac{S_T^2}{S_E^2}$ follows

(A) F distribution (central) with $(n-v, v-1)$ d.f.
(B) F distribution (central) with $(v-1, n-v)$ d.f.
(C) F distribution (non-central) distribution
(D) F distribution (central) with $(v, n+v)$ d.f.

58. In ANOVA for two way classification with one observation per cell (Fixed effect model) the Error Mean sum of squares is given by

(A) $\frac{S_E^2}{h-1}$
(B) $\frac{S_v^2}{k-1}$
(C) $\frac{S_E^2}{(h-1)(k-1)}$
(D) $\frac{S_E^2}{kh}$

59. When $s_t^2 = \frac{S.S.T}{k-1}$ and $s_E^2 = \frac{S.S.E}{N-k}$ which are unbiased estimates of σ_e^2 under $H_{01}: \mu_1 = \mu_2 ... = \mu_k$; $H_{02}: \alpha_1 = \alpha_2 = ... = \alpha_k = 0$. The variance ratio $\frac{s_t^2}{s_E^2}$ follows

(A) Snedecor's F (central) distribution $(N+k)$ d.f.
(B) Snedecor's F (non-central) distribution
(C) Snedecor's F (central) distribution with $((k-1), N-k)$ d.f.
(D) Snedecor's F (central) distribution with $\{(N-k), (k-1)\}$ d.f.

60. Which of the following is not the Assignable causes of variation, given the variation due to

(A) voltage fluctuations and variation in temperature

(B) defective raw material

(C) negligence of operators

(D) improper handing of machine

61. If μ' and σ' are known, specific value of μ and σ respectively. The $3-\sigma_t$ control limits are given by

(A) $\mu' \pm A\,\sigma'$ where $A = \frac{3}{\sqrt{n}}$

(B) $\mu' \pm A\,\sigma'$ where $A = \frac{2}{\sqrt{n}}$

(C) $\mu' \pm A\,\sigma'$ where $A = \frac{2}{\sqrt{n-1}}$

(D) $\mu' \pm A\,\sigma'$ where $A = \frac{3}{\sqrt{n-1}}$

62. The value of D_3 in LCL_R of R – chart is given by (when σ in unknown)

(A) $D_3 = 1 + 3\frac{d_2}{d_3}$

(B) $D_3 = 1 - 3\frac{d_2}{d_3}$

(C) $D_3 = 1 - 3\frac{d_3}{d_2}$

(D) $D_3 = 1 + 3\frac{d_3}{d_2}$

63. A process is said to be running out of control if the sample points of the interested characteristics

(A) Falls within the control limits

(B) Falls outside the control limits

(C) Shows Random pattern within the control limits

(D) Shows Irregular pattern within the control limits

64. Given the values of Ranges of 10 samples (sub group size $n = 5$)

Range : 5 6 5 7 7 4 8 6 4 6

Construct UCL_R of R chart, given $d_2 = 2.326$, $d_3 = 0.864$

(A) 10.263

(B) 12.263

(C) 11.263

(D) 13.263

65. For a single sampling plan $\{N, n, c\}$, the producer's risk is given by

(A) $P_P = \sum_{d=C+1}^{n} \left\{ \binom{Np_1}{d}\binom{N-Np_1}{n-d} \Big/ \binom{N}{n} \right\}$

(B) $P_P = \sum_{d=C+1}^{\infty} \left\{ \binom{Np_1}{d}\binom{N-Np_1}{n-d} \Big/ \binom{N}{n} \right\}$

(C) $P_P = \sum_{d=C-1}^{n} \left\{ \binom{Np_1}{d}\binom{N-Np_1}{n-d} \Big/ \binom{N}{n} \right\}$

(D) $P_P = \sum_{d=C-1}^{\infty} \left\{ \binom{Np_1}{d}\binom{N-Np_1}{n-d} \Big/ \binom{N}{n} \right\}$

66. In a Double sampling plan denoted by $\{N, c_1, c_2, n_1, n_2\}$ with d_1, d_2, denoting the no. of defectives in the sample of size n_1 and n_2 respectively the Average sample Number (ASN) is given by

(A) $ASN = n_2 + n_1 P_1$

(B) $ASN = n_1 + n_2 P_1$

(C) $ASN = n_2 + n_1 (1 - P_1)$

(D) $ASN = n_1 + n_2 (1 - P_1)$

Where P_1 is the probability of a decision (acceptance or Rejection of the lot) on the basis of 1st sample.

67. In canonical form of L.P.P. the objective function is of

(A) Minimization type

(B) Maximization type

(C) Equality type

(D) Inequality type

68. A set of values $[x_1, x_2, \ldots, x_n]$ satisfying all the constraints of L.P.P except the non-negativity restriction is called

(A) Solution

(B) Feasible solution

(C) Optimum solution

(D) Infeasible solution

69. If in a basic feasible solution, all the basic variables are positive (> 0) and remaining non-basic variables are zero, then that solution is called

(A) Non-degenerate basic feasible solution

(B) Degenerate basic feasible solution

(C) Optimum solution

(D) Infeasible solution

70. Two measures of cyclical variation are

(A) Percent of trend and $Y = a + bX$

(B) Relative cyclical residual and least squares method

(C) Percent of trend and moving average method

(D) Percent of trend and Relative cyclical residual

71. Using seasonal indices to remove effects of seasonality from a time-series is known as ———— the time series.

(A) seasonalizing

(B) deseasonalizing

(C) translating

(D) coding

72. The Multiplicative model of time series is expressed as

(A) $T \times S \times C$

(B) $T \times C \times I$

(C) $T \times S \times C \times I$

(D) $T + S + C + I$

73. An Additive model of time series with the components T, S, C and I is denoted as

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

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

(C) $T + S + C + I$

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

74. For the given five values 15, 24, 18, 33, 42 the 3-yearly moving averages are

(A) 19, 22, 33

(B) 19, 25, 31

(C) 19, 30, 31

(D) 19, 20, 33

75. The data is divided into 2 equal parts and average are calculated for both the parts. These averages are called

(A) Graphic method

(B) Moving average

(C) Semi averages

(D) Ratio to moving average

76. The moving averages in a time series are free from the influences of

(A) Trend and random variations

(B) Trend and cyclical variations

(C) Seasonal and irregular variations

(D) Seasonal and cyclic variations

77. Irregular variations are

(A) Predictable

(B) Unpredictable

(C) Cyclic

(D) Periodic

78. A time series consist of

(A) Two components

(B) Three components

(C) Four components

(D) Five components

79. Reed-Merrel method is one of the principal methods used for the construction of

(A) Life table

(B) Abridged life table

(C) Radix of table

(D) Statistical table

80. Population census is conducted at regular intervals of times, usually

(A) Every five years

(B) Ten years

(C) Every year

(D) Every fifteen years

81. The circular test is satisfied by

(A) Simple aggregative index

(B) Kelly's index

(C) Laspeyre's

(D) Paasche's index

82. The formula for value index number are value index $V =$

(A) $V = \frac{\Sigma p_0 q_0}{\Sigma p_1 q_1} \times 100$

(B) $V = \frac{\Sigma p_1 q_1}{\Sigma p_0 q_0} \times 100$

(C) $V = \frac{\Sigma q_0 p_1}{\Sigma q_1 p_0} \times 100$

(D) $V = \frac{\Sigma q_1 p_0}{\Sigma q_0 p_1} \times 100$

83. Simple aggregative method of constructing unweighted index numbers is

(A) Ratio of current year prices and base year quantities multiplied by 100

(B) Ratio of current year quantities and base year quantities multiplied by 100

(C) Ratio of current year quantities and base year prices multiply by 100

(D) The total of current year prices for the various commodities is divided by the total of base year prices and the quotient is multiplied by 100

84. Consider the following statements:

(X) : The base period under the construction of index number should be a normal period

(Y) : Time reversal test of the index numbers in $P_{01} \times Q_{01} = 1$

(A) Both the statements (X) and (Y) are correct

(B) Both the statements (X) and (Y) are incorrect

(C) (X) is correct, (Y) is incorrect

(D) (X) is incorrect, (Y) is correct

85. The Dorbish and Bowley's price index formula is the

(A) Geometric mean of Laspeyre's and Paasche's price index formula

(B) Arithmetic mean of Laspeyre's and Paasche's price index formula

(C) Weighted mean of Laspeyre's and Paasche's price index formula

(D) Harmonic mean of Laspeyre's and Paasche's price index formula

86. Consider the following statements :

(M) : Fisher's index is the geometric mean of Laspeyre's and Paasche indices

(N) : Index numbers are economic barometers

(A) Both the statements (M) and (N) are correct

(B) (M) is correct, (N) is incorrect

(C) (M) is incorrect, (N) is correct

(D) Both the statements (M) and (N) are incorrect

87. Index numbers are also known as

(A) Economic barometers (B) Signs and guide posts

(C) Both (A) and (B) (D) Neither (A) nor (B)

88. If Laspeyre's and Paasche's index numbers are 183 and 177 respectively then the value of price index by Dorbish and Bowley is

(A) 100 (B) 140

(C) 180 (D) 160

89. Comment on the following statements : "Fertility rates are affected by

1. : Marriage
2. : Migration"

(A) Both (1) and (2) (B) Only (1)

(C) Only (2) (D) Either (1) or (2)

90. The component SAS/INSIGHT deals with

(A) Operations research (B) Time series analysis

(C) Quality control (D) Data mining

91. The bivariate frequency table generated using SAS command TABLES variable1 * variable2 under PROC FREQ contains by default

(A) Cell percent alone

(B) Row and column percentages

(C) Cell, row and column percentages

(D) Cell and row percentages

92. To carryout multiple regression analysis in SAS, which of the following command is used.

(A) PROC MULTIPLE (B) PROC MUL

(C) PROC REG (D) PROC SIM

93. To carryout correlation analysis in SAS, which of the following command is used?

(A) PROC COREL (B) PROC CORR

(C) PROC ROW (D) PROC MEANS

94. To sub-set the data in minitab, which of the following paths is more appropriate?

(A) Data → Subset worksheet

(B) Data → Stack → Rows

(C) Data → Stack → Columns

(D) Data → Stack → Blocks of Columns

95. In Minitab variable charts for subgroups are generated using which of the following paths?

(A) Stat → Quality control → Variable charts

(B) Stat → Control charts → Variable charts for subgroups

(C) Stat → Quality tools → Variable chart for subgroups

(D) None of these

96. In Minitab conversion from Numeric to text code can be carried out using which of the following paths?

(A) Stat → Code → Numeric to Text

(B) Data → Code → Numeric to Text

(C) Edit → Code → Numeric to Text

(D) Stat → Change data type

97. Which of the following is not a logical function used in Excel?

(A) AND (B) IF

(C) IF ELSE (D) OR

98. In EXCEL two matrices can be multiplied using the function

(A) MMAT (B) MATM

(C) MATMUL (D) MMULT

99. Sort and filter options are available in Excel under which of the following menus?

(A) Data (B) Add-Ins

(C) Insert (D) Formulas

100. Primary data are

(A) always more reliable compared to secondary data

(B) less reliable compared to secondary data

(C) depends on the care with which data have been collected

(D) depends on the agency collecting the data

101. Which of the following represent data?

(A) A single value

(B) Only two values in a set

(C) A group of values in a set

(D) None of the above

102. Data taken from the publication 'Agricultural situation in India' will be considered as

(A) Primary data

(B) Secondary data

(C) Primary data and secondary data

(D) Neither primary nor secondary data

103. When data are observed ————————, the type of classification is known as chronological classification.

(A) over a period of time

(B) in an area-wise

(C) according to some attributes

(D) interms of magnitude

104. The headings of the rows given in the first column of the table are called

(A) stubs

(B) captions

(C) titles

(D) head note

105. Mean is a measure of

(A) Location

(B) Dispersion

(C) Correlation

(D) Regression

106. The point of intersection of the less than and the more than ogive corresponds to the

(A) Mean

(B) Median

(C) Mode

(D) Geometric Mean

107. In a straight line equation $Y = a + bX$, the constant b reperesent the

(A) intercept of the line

(B) slope of the line

(C) mean

(D) correlation co-efficient between X and Y

108. If the coefficients of variation of two series are 75% and 90% and their standard deviations are 15 and 18 respectively, then their mean values are,

(A) (20, 20) (B) (5, 20)

(C) (20, 5) (D) (20, 30)

109. 10 is the mean of a set of 7 observations and 5 is the mean of a set of 3 observations. The mean of the combined set is given by

(A) 15 (B) 10

(C) 8.5 (D) 7.5

110. When the correlation coefficient $r = \pm 1$, then the two regression lines

(A) are perpendicular to each other (B) coincide

(C) are parallel to each other (D) do not exist

111. Mean of 100 observations is found to be 40. If at the time of computation two items are wrongly taken as 30 and 27 instead of 3 and 72, then the correct mean is

(A) 40.18 (B) 39.82

(C) 40.66 (D) 39.28

112. The normal equations to find the parameters 'a' and 'b' in fitting the straight line of the form $y = a + bx$ by the principle of least squares are,

(A) $na + b\Sigma x = \Sigma y$ and $a\Sigma x + b\Sigma x^2 = \Sigma xy$

(B) $a\Sigma x + b\Sigma x^2 = \Sigma y$ and $a\Sigma x + b\Sigma x^2 = \Sigma xy$

(C) $na + b\Sigma x = \Sigma y$ and $a\Sigma x + b\Sigma y = \Sigma xy$

(D) $na + b\Sigma y = \Sigma x$ and $a\Sigma x + b\Sigma x^2 = \Sigma xy$

113. The joint probability density function of a two dimensional random variable (X, Y) is given by, $f(x, y) = \begin{cases} 2; \ 0 < x < 1, 0 < y < x \\ 0; \text{elsewhere} \end{cases}$, the marginal density function of y is

(A) $(1 - y); 0 < y < 1$ (B) $2(y - 1); 0 < y < 1$

(C) $2(1 - y); 0 < y < 1$ (D) $2x; 0 < x < 1$

114. If $B \subset A$, then $P(A \cap \overline{B}) =$

(A) $P(B) \leq P(A)$ (B) $P(B) - P(A)$

(C) $P(A) - P(B)$ (D) $P(A) \leq P(A)$

115. The probability of drawing any one spade card from a pack of card is

(A) $\frac{1}{52}$ (B) $\frac{1}{13}$

(C) $\frac{4}{13}$ (D) $\frac{1}{4}$

116. In Bayes, theorem, $P(E_i / A)$ is known as

(A) Prior probability (B) Posterior probability

(C) Likelihoods (D) Expectation

117. Match the following with suitable option.

	List I		List II
(a)	Both events A and B occur	1.	$W \in A \cap B$
(b)	Events A and B are mutually exclusive	2.	1
(c)	Sample space	3.	$A \cap B = \phi$
(d)	$P(S)$	4.	S

	(a)	(b)	(c)	(d)
(A)	1	3	4	2
(B)	2	3	4	1
(C)	2	1	4	3
(D)	1	2	3	4

118. Probability distribution of X is given by

x :	0	1	2	3	4
$p(x)$:	$\frac{1}{16}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{4}$	$\frac{1}{16}$

Calculate the expected value of X.

(A) 2 (B) 3

(C) 4 (D) 5

119. If $\text{var}(X) = 1$, then $\text{var}(2X \pm 3) =$

(A) 8 (B) 3

(C) 5 (D) 4

120. If (X, Y) is a bivariate finite discrete random variable, the number of values taken by $X - Y$ is

(A) countably infinite (B) finite

(C) uncountably infinite (D) none of the above

121. Recurrence relation for moments of Poisson distribution is

(A) $\mu_{r+1} = \lambda\left[\frac{d\mu_r}{d\lambda} + r \cdot \mu_{r-1}\right]$ (B) $\mu_{r+1} = \lambda\left[\frac{d\mu_r}{d\lambda} - r \cdot \mu_{r-1}\right]$

(C) $\mu_{r+1} = \lambda\left[\frac{d\mu_r}{d\lambda} + \mu_{r-1}\right]$ (D) $\mu_{r+1} = \lambda\left[\frac{d\mu_r}{d\lambda} - \mu_{r-1}\right]$

122. For which distribution the moment generating function does not exist

(A) Student's t distribution

(B) Chi-square distribution

(C) Binomial distribution

(D) Normal distribution

123. For a binomial distribution if $n = 6$ and if $9P(X = 4) = P(X = 2)$ then the value of P is

(A) 0 (B) 0.25

(C) 0.5 (D) 1

124. If X is a uniform variate on the interval $(-a, a)$, then the p.d.f. $f(x)$ is given by

(A) $\frac{1}{a}, -a < x < a$

(B) $\frac{1}{3a}, -a < x < a$

(C) $\frac{1}{2a}, -a < x < a$

(D) $a, -a < x < a$

125. If two independent random variates X and Y are both normally distributed with means 1 and 2 and standard deviations 3 and 4 respectively, then $Z = X - Y$ is distributed as

(A) $N(-1, 7)$

(B) $N(1, 25)$

(C) $N(-1, 25)$

(D) $N(1, 7)$

126. The mean deviation about the mean for normal distribution is approximately equal to

(A) $\frac{4}{5}\sigma$

(B) $\frac{3}{5}\sigma$

(C) $\frac{1}{4}\sigma$

(D) $\frac{1}{5}\sigma$

127. Moment generating function of normal distribution is

(A) $e^{\mu t + t^2\sigma^2}$

(B) $e^{\mu t + \frac{1}{2}t^2\sigma^2}$

(C) $e^{\frac{1}{2}\mu t + t^2\sigma^2}$

(D) $e^{\mu t - \frac{1}{2}t^2\sigma^2}$

128. Hypergeometric distribution tends to binomial distribution as

(A) $N \to \infty$ and $M \to P$

(B) $N \to 0$ and $\frac{M}{N} \to P$

(C) $N \to \infty$ and $\frac{M}{N} \to P$

(D) $N \to \infty$ and $\frac{M}{N} \to 2P$

129. The moment generating function of geometric distribution is

(A) $\frac{p}{qe^t}$

(B) $\frac{p}{1 + qe^t}$

(C) $\frac{p}{1 - qe^t}$

(D) $\frac{p}{1 - e^t}$

130. Estimate and estimators are

(A) Synonyms (B) Different

(C) Proportional (D) Inversely proportional

131. If an estimator T_n of population parameter θ converges in probability to θ as n tends to infinity then T_n is said to be

(A) unbiased (B) efficient

(C) consistent (D) sufficient

132. Let $x_1, x_2, \ldots x_n$ be a random sample from a uniform population on $[0, \theta]$. The sufficient estimator for θ is

(A) $T = \Sigma x_i$ (B) $T = \Sigma x_i^2$

(C) $T = \max\limits_{1 \le i \le n} x_i$ (D) $T = \min\limits_{1 \le i \le n} x_i$

133. If X_1, X_2 and X_3 is a random sample of size 3 from a population with mean μ and variance σ^2. Find the value of λ such that $T = \frac{1}{3}(\lambda X_1 + X_2 + X_3)$ is unbiased estimator for μ.

(A) 1 (B) 3

(C) 0 (D) 2

134. Comment on the following statement :

Statement (1) : MLE's are always consistent estimators but need not be unbiased.

Statement (2) : MLE's are always consistent and unbiased estimators.

(A) Both (1) and (2) are correct (B) (1) is correct and (2) is wrong

(C) (2) is correct and (1) is wrong (D) Both (1) and (2) are wrong

135. Comment on the following statement :

Statement (1) : In Cauchy's distribution mean is a consistent estimator for μ.

Statement (2) : In Cauchy's distribution median is a consistent estimator for μ.

(A) Both (1) and (2) are correct (B) Both (1) and (2) are wrong

(C) (1) is correct but (2) is wrong (D) (1) is wrong but (2) is correct

136. The p.d.f of Pearson's type III distribution is $f(x, \alpha, \beta) = \frac{\beta^{\alpha}}{\sqrt{\alpha}} x^{\alpha-1} e^{-\beta x}$, $0 \le x < \infty$. What is the value of μ_1'?

(A) $\frac{1}{\alpha}$ (B) $\frac{\beta}{\alpha}$

(C) $\frac{\alpha}{\beta}$ (D) $\frac{\alpha}{\beta^2}$

137. If $P(c_1 < \theta < c_2 / t) = 1 - \alpha$, then c_1 and c_2 are known as

(A) Confidence interval (B) Confidence coefficient

(C) Fiducial limits (D) Upper limits and lower limits

138. If the sample size n is small then the distribution of $z = \frac{\bar{x} - \mu}{s / \sqrt{n}}$ is

(A) $N(0, 1)$ (B) $N(\mu, \sigma^2)$

(C) $N(0, \sigma^2)$ (D) Not $N(0, 1)$

139. In the Poisson distribution the 95% confidence interval (for the large samples) for the parameter λ is

(A) $\bar{x} \pm 2.58\sqrt{\bar{x}/n}$ to the order $n^{-1/2}$ (B) $\bar{x} \pm 2.58\sqrt{s/\sqrt{n}}$ to the order $n^{-1/2}$

(C) $\bar{x} \pm 1.96\sqrt{\bar{x}/n}$ to the order $n^{-1/2}$ (D) $\bar{x} \pm 1.96\sqrt{s/\sqrt{n}}$ to the order $n^{-1/2}$

140. Any function of the random sample $x_1, x_2, ..., x_n$ say $T_n(x_1, x_2, ...x_n)$ is called

(A) Parameter (B) Statistic

(C) Unbiased estimator (D) Parameter space

141. Comment on the following statement.

Statement (1) : In $N(\mu, \sigma^2)$, the sample mean is consistent estimator of μ.

Statement (2) : In Cauchy's population, the sample mean is not a consistent estimator of μ.

(A) (1) is correct and (2) is wrong (B) (1) is wrong and (2) is correct

(C) Both (1) and (2) are correct (D) Both (1) and (2) are wrong

142. The formula which is used for 2×2 contingency table $\begin{array}{|c|c|} \hline a & b \\ \hline c & d \\ \hline \end{array}$; $N = a + b + c + d$ is

(A) $\dfrac{N(ad+bc)^2}{(a+b)(a+c)(b+d)(c+d)}$

(B) $\dfrac{N(ad-bc)^2}{(a-b)(a-c)(b-d)(c-d)}$

(C) $\dfrac{N(ad-bc)^2}{(a+b)(a+c)(b+d)(c+d)}$

(D) $\dfrac{N(ad+bc)^2}{(a-b)(a-c)(b-d)(c-d)}$

143. Match the following :

(a) t - test — 1. $(n_1 - 1, n_2 - 1)$ d.f.

(b) F - test — 2. $(r-1, c-1)$ d.f

(c) Goodness of fit — 3. $(n_1 + n_2 - 2)$ d.f

(d) Independence of attributes — 4. $(n-1)$ d.f

	(a)	(b)	(c)	(d)
(A)	4	1	2	3
(B)	4	3	2	1
(C)	3	1	4	2
(D)	3	2	4	1

144. Comment on the following statements for paired t-test.

Statement (1) : The sample sizes are equal.

Statement (2) : The two sample observations are independent.

(A) Both (1) and (2) are correct

(B) (1) is correct but (2) is wrong

(C) (1) is wrong but (2) is correct

(D) Both (1) and (2) are wrong

145. Match the following :

(a) Population mean — 1. F-test

(b) Population S.D. — 2. Normal test

(c) Population variances — 3. Chi-square test

(d) Population proportion — 4. t-test

	(a)	(b)	(c)	(d)
(A)	4	2	3	1
(B)	4	1	2	3
(C)	4	3	1	2
(D)	4	3	2	1

146. ————— hypothesis is the hypothesis which is tested for possible rejection.

(A) Complementary hypothesis (B) Alternative hypothesis

(C) Null hypothesis (D) Composite hypothesis

147. In properties of likelihood ratio test, under certain conditions, $-2\log_e \lambda$ has an asymptotic

(A) chi-square distribution (B) F-distribution

(C) normal distribution (D) student's 't' distribution

148. The square of a standard normal variate is known as a

(A) Gamma variate (B) Log normal variate

(C) Cauchy variate (D) Chi-square variate

149. Critical region is also known as

(A) Level of significance (B) Region of rejection

(C) Sample space (D) Acceptance region

150. Probability of first kind of error is called the ————— of the test.

(A) Power (B) Size

(C) One tailed test (D) Critical region

151. The range of χ^2 variate is

(A) $-\infty$ to $+\infty$ (B) 0 to ∞

(C) 0 to 1 (D) $-\infty$ to 0

152. A finite subset of statistical individuals in a population is called a —————.

(A) population (B) sample

(C) sample size (D) parameter

153. The standard deviation of the sampling distribution of a statistic is known as —————.

(A) sample proportion (B) sample standard deviation

(C) standard error (D) coefficient of variation

154. In the statistical analysis of data of a randomized block design with b block and t treatments, the error degrees of freedom are

(A) $b(t-1)$ (B) $t(b-1)$

(C) $bt-1$ (D) $(b-1)(t-1)$

155. In a Latin square design, number of treatments and number of replications are

(A) different (B) not necessarily equal

(C) equal (D) rarely equal

156. The formula for estimating one missing value in a $m \times m$ Latin square design with usual notations is

(A) $(R+C+T-S)/(m-1)(m-2)$ (B) $m(R+C+T-S)/(m-1)^2(m-2)^2$

(C) $[m(R+C+T)-2S]/(m-1)(m-2)$ (D) $m(R+C+T-2S)/(m^2-1)$

157. The layout

A B D C

B A C D

D C B A

C D A B

stands for

(A) Randomized block design (B) Factorial design

(C) Latin square design (D) Completely randomised design

158. Assignable causes are

(A) beyond the human control (B) controlled by human endeavours

(C) uncontrollable bias (D) natural variations

159. Two contrast of the same treatments are said to be orthogonal iff

(A) they are at right angles

(B) both of them have equal coefficients but opposite in sign

(C) both of them have same coefficients of the treatments

(D) the sum of the cross product of the coefficients of the same treatment is zero

160. Let $X_1, X_2, \ldots, X_N$ denote a random sample from normal $N(0, \sigma^2)$. Let the sum of the squares of these values be $\sum_{i=1}^{n} X_i^2 = Q_1 + Q_2 + \ldots + Q_k$ where $Q_j (j = 1$ to $k)$ is a quadratic form in $X_1, X_2, \ldots, X_n$ with rank 'r_j'. The r.vs $Q_1, Q_2, \ldots Q_k$ are mutually independent then Q_j / σ^2 follows

(A) F-distribution with (r_j, r_k) d.f.

(B) χ^2 - distribution with r_j d.f. iff $\sum_{i=1}^{k} r_j = n$

(C) χ^2 - distribution with r_j d.f. iff $\sum_{i=1}^{k} r_j > n$

(D) χ^2 - distribution with r_j d.f. iff $\sum_{i=1}^{k} r_j < n$

161. Consumer's risk is the probability of

(A) reject the lot when it is good

(B) accept the lot when it is bad

(C) reject the lot when it is bad

(D) accept the lot when it is good

162. Comment on the following statements :

"The control chart for variables is

1. $\overline{X}$ -chart.

2. R - chart."

(A) both (1) and (2)

(B) only (1)

(C) only (2)

(D) either (1) or (2)

163. Expected time for each activity can be computed using the formula

(A) $t_e = \left(\frac{t_p - t_o}{6}\right)^2$

(B) $t_e = \left(\frac{t_o - t_p}{6}\right)^2$

(C) $t_e = \frac{4t_p + t_o + t_m}{6}$

(D) $t_e = \frac{t_p + 4t_m + t_o}{6}$

164. Given the values of Ranges of 12 samples (subgroup size $n = 5$)

Range : 45 48 62 48 36 81 78 42 69 84 48 75

Construct UCL_R of R chart, given and it is given by $D_4 = 2.11$

(A) 127.904

(B) 125.904

(C) 135.904

(D) 128.904

165. The 3σ – control limits for fraction defective (p) chart when standards are not specified is

(A) $\bar{p} \pm 3\sqrt{n\bar{p}(1-\bar{p})}$

(B) $\bar{p} \pm 2\sqrt{\bar{p}(1-\bar{p})}$

(C) $\bar{p} \pm 3\sqrt{\dfrac{\bar{p}(1-\bar{p})}{n}}$

(D) $\bar{p} \pm 3\sqrt{\bar{p}(1-\bar{p})}$

166. Acceptance sampling plans refers to

(A) Process Control

(B) Product Control

(C) Modified Control

(D) Random Control

167. In a single sampling plan the probability of acceptance for the incoming lot quality 'p' is $P_a(p) = \sum_{x=0}^{c} \left\{ \binom{Np}{x}\binom{N-Np}{n-x} \Big/ \binom{N}{n} \right\}$ when $p < .10$ and $\frac{n}{N} < .10$, the above probability follows and n – sample size, N – not size

(A) Binomial distribution

(B) Normal distribution

(C) Poisson distribution

(D) Geometric distribution

168. For a single sampling plan $\{N, n, c\}$, calling for 100% inspection of the rejected lots, the Average outgoing quality, AOQ is given by

(A) $AOQ = P \cdot \left(\dfrac{N-n}{N}\right) P_a(p)$

(B) $AOQ = P \cdot \left(\dfrac{N-1}{n}\right) P_a(p)$

(C) $AOQ = P \cdot \left(\dfrac{N-n}{n}\right) P_a(p)$

(D) $AOQ = P \cdot \left(\dfrac{N-1}{N}\right) P_a(p)$

169. In a simplex method, while solving L.P.P of maximization type the condition of optimality test that the solution to be optimum is

(A) $(z_j - c_j) \geq 0$ (B) $(z_j - c_j) < 0$

(C) $(z_j - c_j) \leq 0$ (D) $(z_j - c_j) + 1 > 0$

170. In a balanced Assignment problem the decision variable will take values as

(A) $x_{ij} \geq 0$ (B) $x_{ij} = 0$ or 1

(C) $x_{ij} = 1$ (D) $x_{ij} = c_i$ or b_j

171. Time series analysis is used to detect ———— in statistical information over regular intervals of time.

(A) Mean (B) Variance

(C) Change (D) Patterns of change

172. The percent of trend should not be used for predicting future

(A) Seasonal variations

(B) Cyclical variations

(C) Irregular variations

(D) Secular trend

173. Suppose you are considering a time series of data for the Quarters of 2015 and 2016. The Third Quarter of 2016 would be coded as

(A) 2 (B) 3

(C) 5 (D) 6

174. Assume that you have been given quarterly sales data for a 5 year period. To use the ratio to moving-average method of computing seasonal index, your first step would be

(A) Compute the 4–quarter moving average

(B) Discard highest and lowest value for each quarter

(C) Calculate 4-quarter moving total

(D) None of these

175. In simple exponential growth curve the equation $\frac{dy}{dt} = ab^t \log b$ the rate of growth continue upto certain level called

(A) Level of momentum
(B) Level of retarding
(C) Level of saturation
(D) Level of transition

176. Comment on the following statements

Statement (1) : Secular trend refers to the long-term movement

Statement (2) : When we shift the trend origin the value of b remains the same

(A) (1) is correct and (2) is wrong
(B) (1) is wrong and (2) is correct
(C) Both (1) and (2) are correct
(D) Both (1) and (2) are wrong

177. A method full of subjectivity to find out the trend line is

(A) Moving average method
(B) Free-hand method
(C) Semi-average method
(D) Ratio-to trend method

178. Ratio-to-Trend method is also known as

(A) Percentage-to trend method
(B) Link relative method
(C) Moving average method
(D) Simple average method

179. A time series is a set of values arranged in ———— order.

(A) Geographical
(B) Qualitative
(C) Quantitative
(D) Chronological

180. The equation $y = a + bx + cx^2$ represents

(A) Hyperbola
(B) Cardioid
(C) Second degree parabola
(D) Cubic parabola

181. Sex Ratio is defined as the

(A) $\frac{\text{male}}{\text{female}} \times 1000$

(B) $\frac{\text{female}}{\text{male}} \times 1000$

(C) $\frac{\text{male}}{\text{total population}} \times 1000$

(D) $\frac{\text{female}}{\text{total population}} \times 1000$

182. The registration of birth, death and marriages are

(A) A part of medical research

(B) Census

(C) A legal document

(D) Pilot survey

183. Time reversal test is classified when

(A) $P_{01} \times Q_{01} = 1$

(B) $P_{10} \times Q_{10} = 1$

(C) $P_{01} \times P_{10} = 1$

(D) $Q_{10} \times Q_{01} = 1$

184. In aggregate expenditure method, cost of living index formula is equal to

(A) Fisher's Ideal index

(B) Paasches index number

(C) Bowley's index number

(D) Laspeyre's price index number

185. In index number, base shifting in New base Index number is

(A) $\frac{\text{Old index no. of New base year}}{\text{Previous year fixed base}} \times 100$

(B) $\frac{\text{Current year's fixed base index number}}{\text{Previous year fixed base index number}} \times 100$

(C) $\frac{\text{Old index number of current year}}{\text{Old index number of new base year}} \times 100$

(D) Current year price × Previous year price

186. To measure changes in total monetary worth, one should calculate a

(A) Price Index (B) Quantity index

(C) Value index (D) None of these

187. The ———— combines price and quantity changes to present a more informative index

(A) Price index (B) Composite index

(C) Quantity index (D) Value index

188. Comment on the following statements regarding cost of living index :

Statement 1 : (Aggregative expenditure method) = $\frac{\sum p_1 q_0}{\sum p_0 q_0} \times 100$

Statement 2 : (Family budget method) = $\frac{\sum p_1 q_1}{\sum p_0 q_1} \times 100$

(A) Both (1) and (2) are correct

(B) (1) is correct but (2) is incorrect

(C) (1) is incorrect but (2) is correct

(D) Both (1) and (2) are incorrect

189. Match the following :

(a) Time reversal test 1. $\frac{\sum p_1 q_0}{\sum p_0 q_0} \times 100$

(b) Factor reversal test 2. $\frac{\sum p_1 q_1}{\sum p_0 q_0}$

(c) Laspeyre's method 3. $\frac{\sum p_1 q_1}{\sum p_0 q_1} \times 100$

(d) Paasche's method 4. $p_{01} \times p_{10} = 1$

	(a)	(b)	(c)	(d)
(A)	4	1	2	3
(B)	4	2	3	1
(C)	4	2	1	3
(D)	4	3	1	2

190. Pivot table option is available in Excel under which of the following menus?

(A) Data

(B) Home

(C) Insert

(D) Formulas

191. T.DIST in Excel returns the

(A) Left-tailed probability of student's t-distribution

(B) Right-tailed probability of student's t-distribution

(C) Two-tailed probability of student's t-distribution

(D) Value in the interval [0, 1]

192. What-If analysis in Excel is available in which of the following menus?

(A) Data

(B) Function

(C) Formula

(D) Insert

193. The range of arguement of ASIN function in Excel is

(A) $[-1, 1]$

(B) $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$

(C) $(-1, 1)$

(D) $\left(0, \frac{\pi}{2}\right)$

194. The option of removing duplicates in Excel is available under which of the following menus?

(A) Insert

(B) Data

(C) View

(D) Review

195. The syntax used to create a two-way table and its corresponding chi-square test, in SAS, under proc freq is given by

(A) two way var1 * var2 / expected chisq ;

(B) cross tab var1 * var2

(C) chisq var1 * var2

(D) tables var1 * var2 / expected chisq ;

196. .spv extension in SPSS refers to

(A) Output files
(B) Input files
(C) Program files
(D) Syntax files

197. For variables value labels can be added in SPSS under variable view in the ———— column.

(A) Label
(B) Measure
(C) Values
(D) Type

198. In SPSS variable properties can be changed under

(A) Data view
(B) Variable view
(C) Both views
(D) None of these

199. Simple and multiple regressions can be carried out in SPSS using which of the following paths?

(A) Analyze → Regression → Simple

(B) Analyze → Regression → Multiple

(C) Analyze → Regression → Ordinal

(D) Analyze → Regression → Linear

200. To find out frequency distribution in SPSS, which of the following paths is more appropriate?

(A) Analyze → Descriptive statistics → Frequencies

(B) Analyze → Frequency distribution

(C) Analyze → Frequencies → Descriptive Statistics

(D) Analyze → Data → Frequencies
