MATHEMATICAL TECHNIQUES FOR MANAGEMENT -116C
MULTIPLE CHOICE QUESTIONS

1. Elements that are in one set and not in another set is possible when we do _____ operation
   a. Difference
   b. Complement
   c. Union
   d. Interaction

 Answer:A

2. In a class of 120 students numbered 1 to 120, all even numbered students opt for Physics, whose numbers are divisible by 5 opt for Chemistry and those whose numbers are divisible by 7 opt for Math. How many opt for none of the three subjects?
   a. 19.
   e. 41.
   f. 21.
   g. 71.

   Answer:B

3. In a survey of 5000 persons, it was found that 2,800 read Indian express and 2,300 read statesman while 400 read both papers. How many read neither Indian express nor statesman?
   a. 400.
   b. 100.
   c. 300.
   d. 200.

   Answer:C

4. Given U = {1,2, 3, 4, 5, 6, 7,8,10} X = {1, 2, 6, 7} and Y = {1, 3, 4, 5, 8}, X U Y=
   a. {1, 2, 3, 4, 5, 6, 7, 8}.
   b. {1, 2, 3, 4, 5,}.
   c. {4, 5, 6, 7, 8}.
   d. {3, 4, 5, 6, 7, 8}.

   Answer:A

5. Given U = {1, 2, 3, 4, 5, 6, 7, 8, 10}, X = {1, 6, 9} and Y = {1, 3, 5, 6, 8, 9}, X U Y =
a. {1, 2, 3, 4}.
b. {1, 3, 5, 6, 8, 9}   .
c. {4, 5, 6, 7, 8}.
d. {3, 4, 5, 6}.

   Answer:C

The next sets of questions refer to the following situation:
Given U = {$x : 1 \leq x \leq 10, x$ is an integer}, A = The set of odd numbers, B = The set of factors of 24 and C = {3, 10}.
6. (A U B) ''=

a. {1, 2}.
b. {8, 9}.
c. {10}.
d. {4}.
Answer:C

7. $(A \cup C)^{"} =$
a. {2, 4, 6, 8}.
b. {8, 9}.
c. {3,710}.
d. {4,6,8}.
Answer:A

8. $(A \cup B \cup C)^{"} =$
a. {2}.
b. {9}.
c. {10}.
d. { }.   Answer:D

The next sets of questions refer to the following situation:
Given that $U = \{x : 1 \le x \le 10, x \text{ is an integer}\}$, $G = \{x : x \text{ is a prime number}\}$,
$H = \{x : x \text{ is an even number}\}$, $P = \{1, 2, 3, 4, 5\}$.

9. $G \cap H \cup P$
a. {2,4,6}.
b. {1, 2, 3, 4, 5}.
c. {6,7,8,9,10}.
d. {7,8,9,10 }.
Answer:B

10. $(G \cap P)^{"} \cup H$
a. {2,4,6}.
b. {1, 2, 3, 4, 5}.
c. {2, 3, 4, 5, 6, 8, 10}.
d. {7,8,9,10 }.
Answer:B

11. $H' \cap (G \cup P)$
a. {2,4,6}.
b. {1, 2, 3, 4, 5}.
c. {6,7,8,9,10}.
d. {1, 3, 5, 7}.
Answer:D

12. $(P \cup H \cup G)' \cap (G \cap H)$
a. {2}.
b. {1}.
c. { }.
d. {10 }.
Answer:C

13. Suppose U = set of positive integers less than 10, $X = \{1, 2, 5, 6, 7\}$ and
$Y = \{1, 3, 4, 5, 6, 8\}$, $(X \cap Y)^{"} =$
a. {1,2,3,4,5}.
b. {2, 3, 4, 7, 8, 9}.

c. {4,7,8,9 }.
d. {13,4,5,6}.
Answer:B

14. $X = \{1, 2, 5, 6, 7, 9\}$, $Y = \{1, 3, 4, 5, 6, 8\}$ and $Z = \{3, 5, 6, 7, 8, 10\}$,
$X \cap Y \cap Z =$
   a. {,4,5}.
   b. {2, 3 }.
   c. {8,9 }.
   d. {5,6}.
Answer:D

15. Find the odd one out from the following
   a. Roster Method
   b. Set Builder Method
   c. Tabulation Method
   d. Fisherman's Method
Answer:D

16. A_____is a square matrix that has all its elements zero except the elements in its principle diagonal positions.
   a. rectangular matrix.
   b. diagonal matrix.
   c. orthogonal matrix.
   d. Row matrix
Answer:B

17. A _____ is a diagonal matrix whose elements in the diagonal are all ones.
   a. null matrix.
   b. rectangular matrix.
   c. diagonal matrix.
   d. unit matrix.
Answer:D

18. The order of the matrix [1 2 3] is _____ .
   a. 3X1.
   b. 1X3.
   c. 3X3.
   d. 1X1.
Answer:B

19. Find the determinant of the matrix
$$\begin{bmatrix} 5 & -2 & 3 \\ 4 & -1 & -5 \\ 6 & 7 & 9 \end{bmatrix}$$
   a. 365.
   b. 364.
   c. 366.
   d. 410.
Answer:B

20. Find the cofactor, $_{A23,}$ of the matrix A

$$\begin{bmatrix} 5 & -2 & 7 \\ 6 & 1 & -9 \\ 4 & -3 & 8 \end{bmatrix}$$

a. 5.

b. 6.

c. 7.

d. 9.

Answer:B

21. if $A = \begin{bmatrix} 1 & 3 \\ 5 & 7 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -1 \\ -1 & 1 \end{bmatrix}$ which one is True?

a. $A + B = \begin{bmatrix} 2 & 4 \\ -5 & 8 \end{bmatrix}$

b. $A - B = \begin{bmatrix} 0 & 2 \\ 4 & 6 \end{bmatrix}$

c. $A\ B = \begin{bmatrix} -2 & 2 \\ -2 & 2 \end{bmatrix}$

d. $AB = \begin{bmatrix} 4 & 2 \\ 12 & 2 \end{bmatrix}$

Answer:C

22. The arrangement of data elements in rows and columns is called as_____
.

a. Rows and columns

b. Orthogonal Structure

c. Matrix

d. Dimension

Answer:C

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23. In matrix notation, the elements are represented by small letters with double subscripts, those subscripts denote_____

a. Number of Rows and Columns

b. Number of Columns and Rows

c. Determinant Value of a Matrix

b. Order of the Matrix

Answer:A

24. If A is 1 X 3 matrix and B is 2 X 3 matrix, which one of the following is TRUE?

a. Addition can be performed

b. Subtraction can be performed

c. Multiplication can be performed

d. Multiplication cannot be performed

Answer:D

25. The ShortHolder bank pays 5.60%, compounded daily (based on 360 days), on a 9-month certificate of deposit. If you deposit $20,000 you would expect to earn around _____ in interest.
   a. $840.
   b. $858.
   c. $1,032.
   d. $1,121.
   Answer:B

26. With continuous compounding at 8 percent for 20 years, what is the approximate future value of a $20,000 initial investment?
   a. $52,000.
   b. $93,219.
   c. $99,061.
   d. $915,240.
   Answer:C

27. In 2 years you are to receive $10,000. If the interest rate were to suddenly decrease, the present value of that future amount to you would   .
   a. Fall.
   b. Rise.
   c. remain unchanged.
   d. The correct answer cannot be determined without more information.
   Answer:B

28. Assume that the interest rate is greater than zero. Which of the following cash-inflow streams totaling $1,500 would you prefer? The cash flows are listed in order for Year 1, Year 2, and Year 3 respectively.
   a. $700 $500 $300 .
   b. $300 $500 $700 .
   c. $500 $500 $500 .
   d. Any of the above, since they each sum to $1,500.
   Answer:A

29. You are considering investing in a zero-coupon bond that sells for $500. At maturity in 8 years, it will be redeemed for $1,000. During the life of the bond NO interest coupons will be paid. Using the Rule of 72, what approximate annual rate of growth does this represent?
   a. 8 percent.
   b. 9 percent.
   c. 12 percent.
   d. 25 percent.
   Answer:B

30. To increase a given future value, the discount rate should be adjusted   .
   a. upward .
   b. downward.
   c. first upward and then downward.
   d. None of the above answers are correct; you should use PVIF
   Answer:A

31. For $1,000 you can purchase a 5-year ordinary annuity which will pay you a yearly payment of $263.80 for 5 years. What is the annual interest rate implicit in this investment to the nearest whole percentage point?
   a. 8 percent.
   b. 9 percent.
   c. 10 percent.
   d. 11 percent.
   Answer:C

32. You are considering borrowing $100,000 for 30 years at a compound annual interest rate of 9 percent. The loan agreement calls for 30 equal annual payments, to be paid at the end of each of the next 30 years. (Payments include both principal and interest.) What is the annual payment that will fully amortize the loan?
   a. $3,333.33.
   b. $6,400.30.
   c. $9,733.63 .
   d. $12,333.33.
   Answer:C

33. Interest paid (earned) on only the original principal borrowed (lent) is often referred to as _____ .
   a. present value .
   b. simple interest.
   c. future value .
   d. compound interest.
   Answer:B

34. Interest paid (earned) on both the original principal borrowed (lent) and previous interest earned is often referred to as _____ .
   a. present value.
   b. simple interest.
   c. future value .
   d. compound interest.
   Answer:D

35. You are going to place $12,500 into a certificate of deposit (CD) at a 6% annual rate (compounded annually) with a maturity of 30 months. How much money will you receive when the CD matures?
   a. Necessary information is not available to solve the problem.
   b. $14,460.
   c. $14,491.
   d. $14,518.
   Answer:B

36. You have just graduated and have decided to purchase a brand new sports car to enjoy your newfound freedom. Your local credit union will provide financing for 60 months at a 9 percent annual rate, compounded monthly. You will give 15 percent of the $26,000 purchase price in cash to the dealer. The credit union will be used to finance the remaining 85 percent of the purchase price with the first payment due 1 month from today. What will be your monthly payment?
   a. $539.71.
   b. $458.76.
   c. $433.33.
   d. $368.33.

Answer:B
37. You have just agreed to a new loan and have purchased a $3,000 computer today. The loan has a 19.6% annual interest rate, compounded monthly. The minimum monthly payment is $58 and you do not expect to ever pay more than the minimum payment. Assuming no additional charges or costs will occur with this loan, approximately what will you owe on the loan at the end of 3 years (36 months) when you expect to need another new computer?
   a. $2,676 .
   b. $2,564 .
   c. $2,304 .
   d. $2,088.
   Answer:B
38. What is the present value of a $1,000 ordinary annuity that earns 8% annually for an infinite number of periods?
   a. $80.
   b. $800 .
   c. $1,000 .
   d. $12,500.
   Answer:D
39. You want to have $1,000,000 when you retire in 30 years. You expect to earn 12% compounded monthly over the entire 30-year period. How much extra money per month must you deposit if you choose to fund using an ordinary annuity technique rather than an annuity due technique?
   a. $2.84 .
   b. $37.00 .
   c. $286.13 .
   d. $443.97.
   Answer:A
40. You expect to deposit the following cash flows at the end of years 1 through 5, $1,000; $4,000; $9,000; $5,000; and $2,000 respectively. What is the future account value at the end of year 6 if you can earn 10% compounded annually?
   a. $15,633.62.
   b. $21,000.00 .
   c. $25,178.10 .
   d. $27,695.91.
   Answer:D
41. Which of the following investment alternatives would provide the greatest ending wealth for your investment?
   a. 10% compounded daily (360 days).
   b. 10.5% compounded annually.
   c. 10.25% compounded quarterly.
   d. There is not sufficient information to determine the best alternative from the above information.
   Answer:C
42. You won a contest at a local business that has paid you a single $5,000. At 22, you have decided to invest these funds for 45 years until you retire. During this time your account will earn 13%, compounded annually, every year. As soon as you retire (exactly 45 years from today) you will start withdrawing retirement funds every year for an additional 33 years, but you are investing more conservatively at 8%

compounded annually. How much can you withdraw each year in retirement?

a. $23,306.
b. $106,237 .
c. $282,201.
d. $1,223,207.

Answer:B

43. Which of the following will decrease the present value of the mixed cash flows for years 1 through 5 of $1,000; $4,000; $9,000; $5,000; and $2,000 respectively given a 10% discount rate?

   a. Decrease the discount rate by 2%.
   b. Switch cash flows for years 1 and 5 so that year 1 is $2,000 and year 5 is $1,000.
   c. Switch cash flows for years 2 and 4 so that year 2 is $5,000 and year 4 is $4,000.
   d. Switch cash flows for years 2 and 5 so that year 2 is $2,000 and year 5 is $4,000.

   Answer:D

44. Which of the following statements is most correct?

   a. The future value of an annuity due is greater than an otherwise identical ordinary annuity.
   b. A reduction in the discount rate will increase the future value of an otherwise identical cash flow stream.
   c. Continuous compounding will result in a higher present value relative to an otherwise identical investment that is compounded monthly at the same nominal rate.
   d. The FVIFA (i%, N periods) equals the sum of the PVIF(i%, n) for n=1 to N periods.

   Answer:A

45. You expect to deposit the following cash flows at the end of years 1 through 5, $1,000; $4,000; $9,000; $5,000; and $2,000 respectively. Alternatively, you could deposit a single amount today at the beginning of year 1 (end of year 0). How large does the single deposit need to be today if you can earn 10% compounded annually? Hint: the present value today (t=0) is identical to the single cash flow amount.

a. $15,633.62.
b. $21,000.00 .
c. $25,178.10 .
d. $27,695.91.

   Answer:A

46. Braun invested a certain sum of money at 8% p.a. simple interest for 'n' years. At the end of 'n' years, Braun got back 4 times his original investment. What is the value of n?

   a. 50 years.
   b. 25 years .
   c. 12 years 6 months .
   d. 37 years 6 months .

   Answer:D

47. Shawn invested one half of his savings in a bond that paid simple interest for 2 years and received $ 550 as interest. He invested the remaining in a bond that paid compound interest, interest being compounded annually, for the same 2 years at the same rate of interest and received $605 as interest. What was the value of his total savings before investing in these two bonds?

   a. $ 5500.

b. $ 11000 .

c. $ 22000 .

d. $ 2750.

Answer:D

48. Ann invested a certain sum of money in a bank that paid simple interest. The amount grew to $240 at the end of 2 years. She waited for another 3 years and got a final amount of $300. What was the principal amount that she invested at the beginning?

a. $ 200.

b. $ 150.

c. $ 210.

d. $ 175.

Answer:A

49. Peter invested a certain sum of money in a simple interest bond whose value grew to $300 at the end of 3 years and to $ 400 at the end of another 5 years. What was the rate of interest in which he invested his sum?

a. 12.5%

b. 6.67%   Answer:D

50. c. 6.25% A father left a will of Rs.35 lakhs between his two daughters aged 8.5

d. 8.33% and 16 such that they may get equal amounts when each of them reach the age of 21 years. The original amount of Rs.35 lakhs has been instructed to be invested at 10% p.a. simple interest. How much did the elder daughter get at the time of the will?

a. Rs. 17.5 lakhs.

b. Rs. 21 lakhs.

c. Rs. 15 lakhs.

d. Rs. 20 lakhs.

Answer:D

51. What will Rs.1500 amount to in three years if it is invested in 20% p.a. compound interest, interest being compounded annually?

a. 2400.

b. 2592.

c. 2678.

d. 2540.

Answer:B

52. If a sum of money grows to 144/121 times when invested for two years in a scheme where interest is compounded annually, how long will the same sum of money take to treble if invested at the same rate of interest in a scheme where interest is computed using simple interest method?

a. 9 years.

b. 22 years.

c. 18 years.

d. 33 years.

Answer:B

53. The population of a town was 3600 three years back. It is 4800 right now. What will be the population three years down the line, if the rate of growth of population has been constant over the years and has been compounding annually?

a. 6000.

b. 6400.

c. 7200.

d. 9600.

Answer:B

54. A man invests Rs.5000 for 3 years at 5% p.a. compound interest reckoned yearly. Income tax at the rate of 20% on the interest earned is deducted at the end of each year. Find the amount at the end of the third year.

a. 5624.32.

b. 5630.50.

c. 5788.125.

d. 5627.20.

Answer:A

55. A stairway 10ft high is such that each step accounts for half a foot upward and one-foot forward. What distance will an ant travel if it starts from ground level to reach the top of the stairway?

a. Rs.41,000.

b. Rs.40,000.

c. Rs.12,000.

d. Rs.20,000.

Answer:B

56. A sum of money invested for a certain number of years at 8% p.a. simple interest grows to Rs.180. The same sum of money invested for the same number of years at 4% p.a. simple interest grows to Rs.120 only. For how many years was the sum invested?

a. 25 years.

b. 40 years.

c. 33 years and 4 months.

d. 45 years.

Answer:A

57. How long will it take for a sum of money to grow from Rs.1250 to Rs.10,000, if it is invested at 12.5% p.a simple interest?

a. 8 years.

b. 64 years.

c. 72 years.

d. 56 years.

Answer:D

58. Rs. 5887 is divided between Shyam and Ram, such that Shyam's share at the end of 9 years is equal to Ram's share at the end of 11 years, compounded annually at the rate of 5%. Find the share of Shyam.

a. 2088.

b. 2000.

c. 3087 .

d. 4098.

Answer:C

59. The question for the day is from the topic simple and compound interest. Shawn invested one half of his savings in a bond that paid simple interest for 2 years and received Rs.550 as interest. He invested the remaining in a bond that paid compound interest, interest being compounded annually, for the same 2 years at the same rate of

interest and received Rs.605 as interest. What was the value of his total savings before investing in these two bonds?

a. Rs.5500.

b. Rs.11000.

c. Rs.22000.

d. Rs.2750.

Answer:D

60. Of the 200 candidates who were interviewed for a position at a call center, 100 had a two-wheeler, 70 had a credit card and 140 had a mobile phone. 40 of them had both, a two-wheeler and a credit card, 30 had both, a credit card and a mobile phone and 60 had both, a two wheeler and mobile phone and 10 had all three. How many candidates had none of the three?

a . 0

b . 10

c . 20

d . 30

Answer:B

61. Who stated that statistics is a branch of applied mathematics which specializes in data?

a. Horace Secrist.

b. R.A Fisher.

c. Ya-Lun-Chou.

d. L.R. Connor.

Answer:B

62. The word ‟statistics" is used as_____ .

a. Singular.

b. Plural.

c. Singular and Plural.

d. None of above.

Answer:C

63. Out of various definitions, given by the following workers, which definition is considered to be more exact?

a. R .A. Fisher.

b. A.L.Bowley.

c. M.G.Kendall.

d. Cecil H.Meyers.

Answer:A

64. The statement, "designing of an appropriate questionnaire itself wins half the battle", was given by _____ .

a. A.R.Ilersic.

b. 2.W.I.King.

c. 3.H.Huge.

d. 4.H.Secrist.

Answer:C

65. Method of complete enumeration is applicable for   .

a. Knowing the production.

b. Knowing the quantum of export and import.

c. Knowing the population.

d. All of above.

Answer:D

66. Which of the following example does not constitute an infinite population?
    a. Population consisting of odd numbers.
    b. 2.Population of weights of newly born babies.
    a. Population of heights of 15 year old children.
    c. 4.Population of head and tails in tossing a coin successfully.
    Answer:C

67. A study based on complete enumeration is known as_____ .
    a. Sample survey.
    b. Pilot survey.
    c. Census survey.
    d. None of above.
    Answer:C

68. Stastistical results are _____.
    a. Absolutely correct.
    b. Not true.
    c. True on average.
    d. Universally true.
    Answer:C

69. The figure 32, 64, 616.8 approximated to the tenth place by the method of discarding figure is _____ .
    a. 32, 64, 615.8.
    b. 32, 64, 616.
    c. 32, 64, 620.
    d. 32, 64, 610.
    Answer:D

70. The figure 47, 616 approximated to hundredth place by adding figure is:
    a. 47630
    b. 47620
    c. 47700
    d. 7600
    Answer:C

71. Whether classification is done is done first or tabulation?
    a. classification follows tabulation.
    b. classification precedes tabulation.
    c. both are done simultaneously.
    d. no criterion.
    Answer:B

72. A series showing the sets of all distinct values individually with their frequencies is known as   .
    a. grouped frequency distribution.
    b. simple frequency distribution.
    c. cumulative frequency distribution.
    d. none of the above.
    Answer:B

73. A series showing the sets of all values in classes with their corresponding frequencies is known as_____ .
    a. grouped frequency distribution.
    b. simple frequency distribution.

c. cumulative frequency distribution.
d. none of the above.
Answer:A

74. In a grouped data, the number of classes preferred are _____ .
   a. minimum possible.
   b. Adequate.
   c. maximum possible.
   d. any arbitrarily chosen number.
   Answer:B

75. Class interval is measured as _____.
   a. the sum of the upper and lower limit.
   b. half the sum of upper and lower limit.
   c. half the difference between upper and lower limit.
   d. the difference between upper and lower limit.
   Answer:D

76. A grouped frequency distribution with uncertain first or last classes is known as_____ .
   a. exclusive class distribution.
   b. inclusive class distribution.
   c. open end distribution.
   d. discrete frequency distribution.
   Answer:D

77. Frequency of a variable is always _____.
   a. in percentage.
   b. a fraction.
   c. an integer.
   d. none of the above.
   Answer:C

78. The data given as 5, 7, 12, 17, 79, 84, 91 will be called as   .
   a. a continuous series.
   b. a discrete series.
   c. an individual series.
   d. time series.
   Answer:C

79. In an ordered series, the data are _____ .
   a. in ascending order.
   b. in descending order.
   c. either (a) or (b).
   d. neither (a) or (b).
   Answer:C

80. The following frequency distribution,

CLASSES	FREQUENCY
0-10	3
0-20	8
0-30	14
0-40	20
0-50	25

   Is known as _____ .
   a. continuous frequency distribution.

b. discrete frequency distribution.

c. cumulative distribution in more than type.

d. cumulative distribution in less than type.

Answer:D

81. Trilinear chart is used to portray simultaneously _____ .

    a. two variables.

    b. three variables.

    c. four variables.

    d. any number of variables.

    Answer:B

82. Which of the following statements is not correct?

    a. The bars in a histogram touch each other.

    b. The bar in a column chart touch each other.

    c. There are bar diagrams which are known as broken bar diagrams.

    d. Multiple bar diagrams also exist.

    Answer:B

83. Ogives for more than type and less than type distributions intersect at _____ .

    a. Mean.

    b. Median.

    c. Mode.

    d. Origin.

    Answer:B

84. In case of frequency distribution with classes of unequal widths, the heights of bars of a histogram are proportional to_____.

    a. class frequency.

    b. class intervals.

    c. frequencies in percentage.

    d. frequency densities.

    Answer:D

85. Yearwise production of rice, wheat and maize for the last ten years can be displayed By_____ .

    a. simple column chart.

    b. subdivided column chart.

    c. broken bar diagram.

    d. multiple column chart.

    Answer:D

86. When we have the number of court cases of different categories and information About number of cases settled, the information can be better portrayed through___ .

    a. sliding bar diagram.

    b. Histogram.

    c. paired bar diagram.

    d. column chart.

    Answer:A

87. Pictograms are _____ .

    a. very accurate.

    b. least accurate.

    c. mostly used.

    d. scientifically correct.

    Answer:B

88. When there are a large number of values in an individual series, preference for portraying the data goes to _____.
    a. bar diagram.
    b. column chart.
    c. line chart.
    d. scatter diagram.
    Answer:C

89. Pie chart represents the components of a factor by _____ .
    a. percentages.
    b. Angels.
    c. Sectors.
    d. Circles.
    Answer:C

90. The immigration and out migration of people in a number of countries and also the net migration can be better displayed by _____ .
    a. duo-directional column chart.
    b. gross-deviation column chart.
    c. net deviation column chart.
    d. range chart.
    Answer:B

91. If a constant 5 is added to each observation of a set, the mean is _____ .
    a. increased by 5.
    b. decreased by 5.
    c. 5 times the original mean.
    d. not affected.
    Answer:A

92. If each observation of a set is multiplied by 10, the mean of the new set of Observations_____ .
    a. remains the same.
    b. is 10 times the original mean.
    c. is one-tenth the original mean.
    d. is increased by 10.
    Answer:B

93. If each value of a series is multiplied by 10, the median of the coded values is_____ .
    a. not affected.
    b. 10 times the original median value.
    c. one-tenth of the original median value.
    d. increased by 10.
    Answer:B

94. If the grouped data has open end classes, one cannot calculate:
    a. median.
    b. Mode.
    c. Mean.
    d. Quartiles.
    Answer:C

95. Extreme value have no effect on _____ .
    a. Average.
    b. Median.

c. geometric mean.

d. harmonic mean.

Answer:B

96. What percentage of values is greater the 3rd quartile?

   a. 75%.

   b. 50%.

   c. 25%.

   d. 0%.

Answer:C

97. Shoe size of most of the people in India is No. 8. Which measure of central value does it represent?

   a. Mean.

   b. second quartile.

   c. Eighthdecile.

   d. Mode.

Answer:D

98. The median of the variate values 11, 7, 6, 9, 12, 15, 19 is   .

   a . 9 .

   b . 12.

   b. 3.15.

   a. 11 .

Answer:D

99.The median of the variate values 48, 35, 36, 40, 42, 54, 58, 60 is   .

   a. 40.

   b. 41.

   c. 44.

   d. 45.

Answer:D

100. The number of partition values in case of quartiles is   .

   a. 4.

   b. 3.

   c . 2 .

   d. 1 .

Answer:B

101. Which of the following is a unitless measure of dispersion?

   a. standard deviation.

   b. mean deviation.

   c. coefficient of variation.

   d. Range.

Answer:C

102. Which one of the given measures of dispersion is considered best?

   a. standard deviation.

   b. Range.

   c. Variance.

   d. coefficient of variation.

Answer:A

103. Out of all measures of dispersion, the easiest one to calculate is _____.

   a. standard deviation.

   b. Range.

     c. Variance.

     d. quartile deviation.

    Answer:B

104. Mean deviation is minimum when deviations are taken from _____ .

     a. mean.

     b. Median.

     c. Mode.

     d. Zero.

    Answer:B

105. Which measure of dispersion ensures highest degree of reliability?

     a. Range.

     b. mean deviation.

     c. quartile deviation.

     d. standard deviation.

    Answer:D

106. Which measure of dispersion is least affected by extreme values?

     a. Range.

     b. mean deviation.

     b. standard deviation.

     c. quartile deviation.

    Answer:D

107. The average of the sum of squares of the deviations about mean is called_____ .

     a. variance.

     b. absolute deviation.

     c. standard deviation.

     d. mean deviation.

    Answer:A

108. For a negatively skewed distribution, the correct inequality is _____ .

     a. mode<median.

     b. mean<median.

     c. mean<mode.

     d. none of the above.

    Answer:C

109. For a negatively skewed frequency distribution curve, the third central moment ___ .

     a. $\mu_3 > 0$.

     b. 2.$\mu_3 < 0$.

     c. 3.$\mu_3 = 0$.

     d. 4.μ_3 does not exist.

    Answer:B

110. Variance of the following frequency distribution,

CLASSES	FREQUENCY
2-4	2
4-6	5
6-8	4
8-10	1

    Is approximately equal to _____ .

     a. 2.5

     b. 2.9.

     c. 5.0.

d. none of the above.

Answer:B

111. If X and Y are two variates, there can be atmost _____.
    a. one regression line.
    b. two regression lines.
    c. three regression lines.
    d. an infinite number of regression lines.

Answer:B

112. Scatter diagram of the variate values (X,Y) give the idea about _____ .
    a. functional relationship.
    b. regression model.
    c. distribution of errors.
    d. none of the above.

Answer:C

113. If βyx and βxy are two regression coefficients, they have _____ .
    a. a same sign.
    b. opposite sign.
    c. either same or opposite signs.
    d. nothing can be said.

Answer:A

114. The property if X and Y are independent, then $\beta yx=\beta xy=0$ is called_____ .
    a. fundamental property.
    b. mean property.
    c. independence property.
    d. magnitude property.

Answer:C

115. The coordinates (X, Y) satisfy the lines of regression of _____ .
    a. Y on X.
    b. X on Y.
    c. both the regression lines.
    d. none of the two regression lines.

Answer:C

116. If $\rho=0$, the angle between the two lines of regression is _____ .
    a. zero degree.
    b. ninety degree.
    c. sixty degree.
    d. thirty degree.

Answer:B

117. The idea of product movement correlation was given by _____ .
    a. R.A.Fisher.
    b. Sir Frances Galton.
    c. Karl Pearson.
    d. Spearman.

Answer:C

118. If ρ is the simple correlation, the quantity($1-\rho^2$) is called _____ .
    a. coefficient of determination.
    b. coefficient of non determination.
    c. coefficient of alienation.
    d. none of the above.

Answer:B
119. The value of correlation ratio varies from   .
    a. -1 to 1.
    b. -1 to 0.
    c. 0 to 1.
    d. 0 to ∞.
Answer:C
120. If each group consists of one observation only, the value of correlation ratio is____ .
    a. 0.
    b. 1.
    c. between 0 and 1.
    d. between -1 and 1.
Answer:B
121. A time series consist of _____ .
    a. two components.
    b. three components.
    c. four components.
    d. five components.
Answer:C
122. The general decline in sales of cotton clothes is attached to the component of the
    time series _____ .
    a. secular trend.
    b. cyclical variation.
    c. seasonal variation.
    d. all of the above.
Answer:A
123. Secular trend is indicative of long term variation towards _____ .
    a. increase only.
    b. decrease only.
    c. either increase or decrease.
    d. none of the above.
Answer:C
124. Method of least squares to fit in the trend is applicable only if the trend
    is   .
    a. linear.
    b. Parabolic.
    c. both (a) and (b).
    d. neither (a) nor (b).
Answer:C
125. Cyclic variations in a time series are caused by   .
    a. lockouts in a factory.
    b. war in a country.
    c. floods in the states.
    d. none of the above.
Answer:D
126. Trend in a time series means _____ .
    a. long term regular movement.
    b. short term regular movement.
    c. both (a) and (b).

d.neither (a) nor (b).

Answer:B

127. The terms prosperity, recession, depression and recovery are in particular attached To .
    a. secular trend.
    b. seasonal fluctuations.
    c. cyclic movements.
    d. irregular variations.

Answer:C

128. An additive model of time series with the components T, S, C and I is _____ .
    a. $Y=T+S+C*I$.
    b. $Y=T+S*C*I$.
    c. $Y=T+S+C+I$.
    d. $Y=T+S*C+I$.

Answer:C

129. Moving average method of ascertaining trend is not suitable for:
    a. finding trend values.
    b. Projections.
    c. both (a) and (b).
    d. neither (a) nor (b).

Answer:B

130. Moving average method suffers from_____ .
    a. loss of information.
    b. the element of subjectivity.
    c. the decision about the number of years in groups.
    d. all of the above.

Answer:D

131. Link relatives in a time series remove the influence of_____.
    a. the trend.
    b. cyclic variation.
    c. irregular variations.
    d. all the above.

Answer:A

132. First difference method for isolating cycles is applicable if observations pertain to_ .
    a.yearly data.
    b.quarterly   data.
    c.monthly   data.
    d.any data.

Answer:A

133. In percentage ratio method of measuring cyclic variations one finds   .
    a.actual changes.
    b.relative changes.
    c.percent ratio changes.
    d.all the above.

Answer:C

134. Reference cycle analysis method of measuring cycles is applicable to _____ .
    a.current time series.
                        b.past time series.
                        c.both (a) and (b).

d.neither (a) nor (b).

Answer:B

135. To which component of the time series, the term recession is attached?
    a. Trend.
    b. Seasonals.
    c. Cycles.
    d. random variation.

    Answer:C

136. If the slope of the trend line is positive, it shows _____ .
    a. rising trend.
    b. declining trend.
    c. Stagnation.
    d. all of the above.

    Answer:A

137. Index numbers are also known as _____ .
    a. economic barometers.
    b. signs and guide posts.
    c. both a and b
    d. neither a nor b

    Answer:C

138. Index number is a _____ .
    a. measure of relative changes .
    b. a special type of an average.
    c. a percentage relative.
    d. all the above.

    Answer:D

139. Most commonly used index number is _____ .
    a. diffusion index number.
    b. price index number.
    c. value index number.
    d. none of the above.

    Answer:D

140. Base period for an index number should be _____ .
    a. a year only.
    b. a normal period.
    c. a period of distant past.
    d. none of the above.

    Answer:B

141. Laspeyres index numbers possess _____ .
    a. downward bias.
    b. no bias.
    c. upward bias.
    d. none of the above.

    Answer:C

142. The difference between the index numbers based on n selected items and total
    number of items is called _____ .
    a. formula error.
    b. sampling error.
    c. homogeneity error.

d. none of the above.

Answer:B

143. Sampling error in respect of index numbers can be reduced by _____ .
    a. taking a random sample of items.
    b. including large number of items.
    c. both a and b
    d. neither a nor b.

    Answer:C

144. The range of homogeneity error in reference to index numbers is _____.
    a. 0 to 1.
    b. 0 to ∞.
    c. -1 to 1
    d. $-\infty$ to ∞

    Answer:A

145. Combining of two index number series having different base periods into one series with common base period is known as .
    a. Splicing.
    b. base shifting.
    c. both (a) and (b).
    d. neither (a) nor (b).

    Answer:A

146. An appropriate method for working out consumer price index is _____ .
    a. weighted aggregate expenditure method.
    b. family budget method.
    c. price relatives method.
    d. none of the above.

    Answer:B

147. Index of industrial production measures the changes in _____
    a. the quantum production.
    b. the value of products.
    c. the demand of industrial goods.
    d. none of the above.

    Answer:A

148. Factor reversal test permits the interchange of   .
    a. base periods.
    b. price and quantity.
    c. Weights.
    d. none of the above.

    Answer:C

149. If the group indices are 80, 120 and 125 and their respective group weights are 60, 20 and 20, the consumer price index is.
    a. 108.33.
    b. 97.00.
    c. 98.49.
    d. none of the above.

    Answer:B

150. If A = { 0 }, B = { 0, 1, 2 }, C = { 0,2 }, AUBUC =   .
    a. A
    b. B
    c. C
    d. Φ.
    Answer:B
151. If A = { 0,1,2,3,4,5,6 }, B ={ 0,1,4,5 }, A∩B is   .
    a.   A.
    b.   B.
    c.   U.
    d.   Φ.
    Answer:B
152.   If every element of A is an element of B and every element of B is an element
    of A, A and B are_____ .
    a. equal sets.
    b. universal sets.
    c. null sets.
    d. infinite sets.
    Answer:B
153.   A = { 0 } is _____ .
    a. an universal set.
    b. an infinite set.
    c. a singleton set.
    d. a null set.
    Answer:A
154.   n(AUB) =_____ .
    a.   0.
    b.   n(A∩B).
    c.   N.
    d.   n(A) + n(B) − n(A∩B).
    Answer:C
155.   If the number of rows of a matrix is greater than the number of columns, it
    is _____ .
    a. a row matrix.
    b. a column matrix.
    c. a rectangular matrix.
    d. a square matrix.
    Answer:C
156.   A square matrix A is an orthogonal matrix, if   .
    a. $AA' = I$
    b. $A.A^{-1}$
    c. $A = A^{-1.}$
    d.   A

    Answer: C

157. If $A = \begin{pmatrix} 2 & 3 \\ -1 & 4 \end{pmatrix}$ ·And $B = \begin{pmatrix} 5 & -2 \\ 1 & -3 \end{pmatrix}$ Find A+B = ?

a. $\begin{pmatrix} 7 & 1 \\ 2 & 7 \end{pmatrix}$

b. $\begin{pmatrix} 7 & 1 \\ 0 & 1 \end{pmatrix}$.

c. $\begin{pmatrix} -3 & 5 \\ -2 & 7 \end{pmatrix}$.

d. $\begin{pmatrix} -3 & 1 \\ 0 & 1 \end{pmatrix}$ ·

Answer:B

158.. If $A = \begin{pmatrix} 2 & 3 \\ -1 & 4 \end{pmatrix}$ And $B = \begin{pmatrix} 5 & -2 \\ 8 & 4 \end{pmatrix}$ Find (A+B)' = ?

a. $\begin{pmatrix} 7 & 1 \\ 2 & 7 \end{pmatrix}$

b. $\begin{pmatrix} 7 & 1 \\ 0 & 1 \end{pmatrix}$

c. $\begin{pmatrix} -3 & 5 \\ -2 & 7 \end{pmatrix}$

d. $\begin{pmatrix} -3 & 1 \\ 0 & 1 \end{pmatrix}$

Answer:B

159. If A is a Singular matrix, then ————Det A = ?

a.0

b.1

c. ∞.

d.2

Answer:A

160. India‟s foreign exchange rate system is?
   a. Free float.
   b. Managed float.
   c. Fixed.
   d. Fixed target of band.
   Answer:B

161. The simple interest on Rs.5000 at 10% for 3 years is _____ .
   a. Rs.500.
   b. Rs.1000.
   c. Rs.1500.
   d. Rs.6500.
   Answer:C

162. Calculate the exact simple interest for Rs.1000 for 73 days at 10% p.a. _____ .
   a. Rs.15.
   b. Rs.20.
   c. Rs.40.
   d. Rs.7300.
   Answer:B

163. The simple interest is found as _____ .
   a. Pni.
   b. Pnr.

a. Rs.2000.

b. Rs.2100.

c. Rs.2200.

d. Rs.12,000. Answer:B

165. Under compound interest _____ .
    a. $A = P(1+ni)$.
    b. $A = P(1+i)$.
    c. $A = Pnr/100$.
    d. $A = P(1+i)^n$.
    Answer:D

166. The present value of perpetuity of Rs.5000 at 20% p.a. is _____ .
    a. Rs.1000.
    b. Rs.6000.
    c. Rs.25,000.
    d. Rs.1,00,000.
    Answer:C

167. The present value under annuity due is _____ .

    a. $\frac{A}{i} [1-(1+i)^{-n}]$.

    b. $A+\frac{A}{i}[1-(1+i)^{-(n-1)}]$.

    c. $\frac{A}{i} [1-(1+i)^{n}-1]$.

    d. $\frac{A}{i} (1+i) [(1+i)^{n}-1]$.

    Answer:B

168. Banker"s Discount
    a.   And.
    b.   Ad.
    c.   Pnd.
    d.   Pd.
    Answer:A

169. Face value of a bill of exchange is _____
    a. And.
    b. nd.
    c. 3. $\frac{100A}{100+nr}$
    d.4. $\frac{B.DXT.D}{B.D-T.D}$

    Answer : D

Answer:A

170. A formula for Banker's gain is

a. $\dfrac{An^2r^2}{100(100+nr)}$

b. $\dfrac{Anr}{100)}$

c. $\dfrac{100A}{100+nr}$

d. $\dfrac{Anr}{100+nr}$

Answer:A

171. The statement, "Statistics is both a science and an art", was given by _____ .
   a. R.A.Fisher.

   b. Tippet.

   c. L.R. Connor.

   d. A.L.Bowley.

Answer:B

172. Which of the following can be classified as hypothetical population?
   a.   all labourers of a factory.

   b.   female population of a country.

   c.   population of real numbers between 0 and 100.

   d.   students of the world.

Answer:C

173. Mailed questionnaire method of enquiry can be adopted if respondents _____.
   a.   live in cities.

   b.   have high income.

   c.   are educated.

   d.   are known.

Answer:C

174. Numerical data presented in descriptive form called   .
   a. classical presentation.

   b. tabular presentation.

   c. graphical presentation.

   d. textual presentation.

Answer:D

175. In an exclusive type distribution, the limits excluded are _____ .
   a. lower limits.

   b. upper limits.

   c. either of the lower or upper.

   d. lower and upper limits both.

Answer:C

176. The column headings of a table are known as_____ .
   a. sub – titles.

   b. Stubs.

   c. reference notes.

Answer:A

d. Captions.
Answer:D

177. Which of the followings is **<u>NOT</u>** a two-dimensional diagram?
    a. bar diagram.
    b. Pie-chart.
    c. Cylinderr.
    d. a graph.
    e. Answer:A

178. Profit and loss of a firm during various years can be displayed through _____ .
    a. simple bar diagram.
    b. duo-directional bar diagram.
    c. deviation bar chart.
    d. multiple bar diagram.
    Answer:C

179. It is necessary to find commutative frequencies in order to draw an _____ .
    a. Histogram.
    b. frequency polygon.
    c. ogive curve.
    d. column chart.
    Answer:C

180. The suitable chart to emphasize the difference between two time series, which one is at higher level, is _____.
    a. range chart.
    b. deviation bar chart.
    c. paired bar diagrams.
    d. band chart.
    Answer:D

181. Mean is a measure of   .
    a. Location.
    b. Dispersion.
    c. Correlation.
    d. Regression.
    Answer:A

182. Which of the following is a measure of central value?
    a. Median.
    b. Standard deviation.
    c. Mean deviation.
    d. Quartile deviation.
    Answer:A

183. Geometric mean is better than other means_____.
    a. When the data are positive as well as negative.
    b. When the data are in ratios or percentages.

Answer:A

c. When the data are binary.
d. When the data are on interval scale.
Answer:B

184. The correct relationship between A.M, G.M and H.M is_____ .
a. A.M=G.M=H.M.
b. G.M ≥A.M≥H.M.

c. H.M≥G.M≥A.M.
d. A.M≥G.M≥H.M. Answer:D
185. Which mean is most affected by extreme values?
a. Geometric mean.
b. Harmonic mean.
c. Arithmetic mean.
d. Trimmed mean. Answer:C
186. Graphically partition be determined with the help of_____.
a. frequency polygon.
b. bar diagram.
c. line diagram.
d. ogive curve.
Answer:D
187. Formula for coefficient of variation is _____
a.$CV = \frac{S.D}{Mean}X100$

b.$CV = \frac{Mean}{S.D}X100$

c.$CV = \frac{S.D}{Mean}$

d.$CV = SD \times Mean$

Answer:A
188. The measure of dispersion which ignores signs of the deviations from central value is _____ .
a. Range.
b. Quartile deviation.
c. Standard deviation.
d. Mean deviation.
Answer:D
189. In a case of positive skewed distribution the relation between mean, median and mode that hold is _____ .

a. median > mean > mode.

b. mean > median > mode.

c. mean = median = mode.

d. mean < median < mode. Answer:D

190. If for a distribution, coefficient of kurtosis $_2 \gtrless 0$, the frequency curve is   .

   a. Leptokurtic.

   b. Platykurtic.

   c. Mesokurtic.

   d. normal curve.

191. The average of two regression coefficients is always greater than or
equal to the correlation coefficient is called _____ .

   a. fundamental property.

   b. signature property.

   c. magnitude property.

   d. mean property.

Answer:D

192. If r is called simple correlation coefficient, the quantity r^2 is known as _____ .

   a. Coefficient of determination.

   b. Coefficient of non determination.

   c. Coefficient of alienation.

   d. Coefficient of variation.

Answer:A

193. The range of simple correlation coefficient is_____ .

   a. 0 to ∞.

   b. -∞ to ∞.

   c. 0 to 1.

   d. -1 to 1.

Answer:D

194. The sales of a departmental store on Dushera and Diwali are associated
With the component of a time series _____ .

   a. Secular trend.

   b. Seasonal variation.

   c. Irregular variation.

   d. Cyclical variation.

Answer:B

195. Least squart method of fitting a trend is _____ .

   a. Most exact.

   b. Least exact.

   c. Full of subjectivity.

   d. Mathematically unsound.

Answer:A

196. If the trend line with 1975 as origin is Y = 20.6 + 1.68X, the trend line with

Answer:A

1971 as origin is _____ .
    a. Y = 20.6 + 6.72X.
    b. Y = 13.88 + 1.68X.
    c. Y = 34.61 + 1.68X.
    d. Y = 34.61 – 1.68X.
Answer:B

197. Consumers price index number is constructed for _____ .
    a.   a well defined section of people.
    b.   all people.
    c.   factory workers only.
    d.   in a group of peoples.

198. Laspeyre"s index formula uses the weights of the base year.
    a. current year.
    b. average of the weights of a number of years.
    c. to any arbitary chosen year.
Answer:A

199. The weights used in Paaches formula belong to _____ .
    a. the base period.
    b. the given period.
    c. to any arbitary chosen period.
    d. average of the weights of a number of periods.
Answer:B

200. Fishers ideal formula does not satisfy _____ .
    a.   time reversal test.
    b.   circular test.
    c.   factor reversal test.
    d.   unit test.
    e.   Answer:A

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