CHARTERED ACCOUNTANCY PROFESSIONAL I (CAP-I)

Multiple Choice Questions Answers

Paper 3 B:
Commercial Mathematics and Statistics

Education Department
The Institute of Chartered Accountants of Nepal

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1. Basic Arithmetic and Algebra

1. Two jars of capacity 3 and 5 liters are filled with mixtures of alcohol and water. In the smaller jar 25% of the mixture is alcohol and in the larger 25% of the mixture is water. The jars are emptied into a 9 litre cask and remaining volume is filled up with water. Then percentage of alcohol in the cask will be

a) 50%
b) 37.5%
c) 75%
d) 60%

2. Two numbers are in the ratio 7: 9. If the sum of the numbers is 112, then the larger number is:

a) 42
b) 63
c) 49
d) 72

3. The length and breadth of a rectangle are in the ratio 3: 1. If the breadth is 7 cm, then the length of the rectangle is:

a) 16
b) 21
c) 18
d) 14

4. The first, second and fourth terms of a proportion are 16, 24 and 54 respectively. Then the third term is:

a) 32
b) 48
c) 36
d) 28

5. Seats for Mathematics, Physics and Biology in a college are in the ratio 5 : 7 : 8. There is a proposal to increase these seats by 40%, 50% and 75% respectively. What will be the ratio of increased seats?

a) 6 : 8 : 9
b) 6 : 7 : 8
c) 3 : 4 : 5
d) 2 : 3 : 4

6. A sum of money is to be distributed among A, B, C, D in the proportion of 5 : 2 : 4 : 3. If C gets Rs. 1000 more than D, what is B's share?

a) Rs. 2000
b) Rs.1500
c) Rs. 1000
d) Rs. 500

7. In a mixture 60 litres, the ratio of milk and water 2: 1. If this ratio is to be 1 : 2, then the quantity of water to be further added is:

a) 30 litres
b) 40 litres
c) 50 litres
d) 60 litres

8. A and B together have Rs. 1210. If 4/15 of A's amount is equal to 2/5 of B's amount, how much amount does B have?
a) Rs. 664
b) Rs. 550
c) Rs. 484
d) Rs. 460

9. Two numbers are respectively 20% and 50% more than a third number. The ratio of the two numbers is:
a) 2 : 5
b) 3 : 5
c) 4 : 5
d) 6 : 7

10. Rs. 8400 is divided among A, B, C and D in such a way that the shares of A and B, B and C, and C and D are in the ratios of 2:3, 4:5 and 6:7 respectively. The share of A is:
a) Rs. 630
b) Rs. 1280
c) Rs. 8210
d) Rs. 8400

11. The ratio of the present age of father to that of son is 7:2. After 10 years their ages will be in the ratio of 9:4. The present ages of the father is
a) 25 Years
b) 30 Years
c) 35 Years
d) 40 Years

12. The ratio of numbers of girls and boys participating in sports of a school is 4:5. If the number of girls is 212, determine the number of boys participating in the sports.
a) 251
b) 256
c) 263
d) 265

13. If A:B = 2:3, B:C = 4:5 and C:D = 6:7, then A:B:C:D is
a) 16:24:15:35
b) 16:22:30:35
c) 16:24:30:35
d) 18:24:30:35

14. Coefficient of x^2 in $4x^3 + 3x^2 - x + 1$ is:
a) -1
b) 1
c) 2
d) 3

15. If 2x+100=6x-24, what is x?
a) 16
b) 20
c) 31
d) 40

16. Solve the equation for x : 19(x + y) + 17 = 19(-x + y) – 21
a) -1
b) -2
c) 2
d) 4

17. The sum of three consecutive multiples of 7 is 357. Find the smallest multiple?
a) 112
b) 116
c) 119
d) 126

18. If 8x – 3 = 25 + 17x , then x is:
a) a fraction
b) an integer
c) a rational number
d) a real number

19. The cost of 10 kg of apples is equal to the cost of 24 kg of rice. The cost of 6 kg of flour equals the cost of 2 kg of rice. The cost of each kg of flour is Rs.20.50. Find the total cost of 4 kg of apples, 3 kg of rice and 5 kg of flour?
a) Rs. 815.50
b) Rs. 849.40
c) Rs. 877.40
d) Rs. 901.60

20. The present age of father is four times the age of his sons. After 10 years, age of father will become three times the age of his sons. Fin their present ages.
a) Present age of son = 20 and Present age of Father = 80
b) Present age of son = 30 and Present age of Father = 80
c) Present age of son = 20 and Present age of Father = 60
d) Present age of son = 40 and Present age of Father = 70

2. Percentage and their applications in Business

21. Kabir paid Rs. 9600 as interest on a loan he took 5 years ago at 16% rate of simple interest. What was the amount he took as loan?
a) Rs. 12000
b) Rs. 12500
c) Rs. 16400
d) Rs. 20000

22. Sam borrowed some money from his friend at simple interest of 6% per annum. He returned his friend Rs. 15600. After how much time did Sam return the money if he borrowed Rs. 12000?
a) 2.5 Years
b) 3.5 Years
c) 5 Years
d) 8 Years

23. Raman paid Rs. 11400 as interest after 9 years. He had borrowed some money at rate of 6% for first two years, 9% for next three years and 14% for rest of the period. How much money did he borrow?
a) Rs. 10000

b) Rs. 12000
c) Rs. 12500
d) Rs. 15000

24. Suresh for 2 years invested Rs. 500 in SBI. He also invested Rs. 300 in ICICI for 4 years. At the end he received Rs. 220 from both banks as simple interest. What must have been rate of interest?
a) 5 %
b) 9.5%
c) 10%
d) 12%

25. A man invests Rs. 8000 at some rate of interest. Being simple interest the money doubles in 5 years. Raj sees this and invests Rs. 6250 for 3 years at same rate of interest. How much interest does Raj get?
a) Rs. 6500
b) Rs. 4550
c) Rs. 3500
d) Rs. 3750

26. In 4 years the simple interest on certain sum of money is 9/25 of the principal. The annual rate of interest is :
a) 5%
b) 5.5%
c) 7.5%
d) 9%

27. Suman invested some money in a bank at rate of 6% per annum. At simple interest, after 9 years, she got Rs. 8470. How much did she invest?
a) Rs. 5000
b) Rs. 5400
c) Rs. 5500
d) Rs. 6500

28. If simple interest for 2 years for a sum is Rs. 600 and compound interest for the same sum for 2 years and same rate of interest is Rs. 645, what will be the rate of interest?
a) 9.5%
b) 12.5%
c) 15%
d) 19%

29. The compound interest on Rs. 30,000 at 7% per annum is Rs. 4347. The period (in years) is:
a) 5 Years
b) 4 Years
c) 7 Years
d) 2 Years

30. There is 60% increase in an amount in 6 years at simple interest. What will be the compound interest of Rs. 12,000 after 3 years at the same rate?
a) Rs. 2500
b) Rs. 3972
c) Rs. 4982
d) Rs. 6440

31. The difference between simple and compound interests compounded annually on a certain sum of money for 2 years at 4% per annum is Re. 1. The sum (in Rs.) is:
a) 625
b) 725
c) 675
d) 800

32. A bank offers 5% compound interest calculated on half-yearly basis. A customer deposits Rs. 1600 each on 1st January and 1st July of a year. At the end of the year, the amount he would have gained by way of interest is:
a) Rs. 115
b) Rs. 121
c) Rs. 123
d) Rs. 125

33. There is 80% increase in an amount in 8 years at simple interest. What will be the compound interest of Rs. 14,000 after 3 years at the same rate?
a) Rs. 3650
b) Rs. 3795
c) Rs. 4550
d) Rs. 4634

34. Mohan invested an amount of Rs. 20000 in a fixed deposit scheme for 2 years at compound interest rate 4 %.p.a. How much amount will Mohan get on maturity of the fixed deposit?
a) Rs. 25320
b) Rs. 21632
c) Rs. 25120
d) Rs. 22350

35. The compound interest on a certain sum for 2 years at 10% per annum is Rs. 525. The simple interest on the same sum for double the time at half the rate percent per annum is:
a) Rs. 425
b) Rs. 475
c) Rs. 500
d) Rs. 550

36. The Compound interest on Rs. 20,480 at 6.25 % per annum for 2 years 73 days, is :
a) Rs. 3025
b) Rs. 2279
c) Rs. 2959
d) Rs. 2929

37. What sum invested for 2 years at 14% compounded annually will grow to Rs. 5458.32?
a) Rs. 4200
b) Rs. 4550
c) Rs. 3320
d) Rs. 4450

38. Mr. David invested money in two schemes A and B offering compound interest @ 5 %.per annum and 10 %per annum respectively. If the total amount of interest accrued through two schemes together in two years was Rs. 2075 and the total amount invested was Rs. 15,000, find out the amount invested in Scheme A?

a) Rs. 7500
b) Rs. 10000
c) Rs. 12500
d) Rs. 12750

39. A bank offers 10% interest rate compounded annually. A person deposits Rs. 20,000 every year in his account. If he does not withdraw any amount, then how much balance will his account show after four years?
a) Rs. 102102
b) Rs. 102905
c) Rs. 102350
d) Rs. 105150

40. A sum of money becomes Rs. 2200 after three years and Rs. 4400 after six years on compound interest. The sum is:
a) Rs. 1100
b) Rs. 1300
c) Rs. 1500
d) Rs. 1550

41. A sum of money placed at compound interest doubles itself in 4 years. In how many years will it amount to 8 times?
a) 7 Years
b) 9 Years
c) 12 Years
d) 14 Years

42. A man borrows Rs. 20,000 at 10% compound interest. At the end of every year he pays Rs. 2000 as part repayment. How much does he still owe after three such installments?
a) Rs. 14500
b) Rs. 16500
c) Rs. 18500
d) Rs. 20000

43. If in a certain number of years Rs. 10000 amount to Rs. 160000 at compound interest, in half that time Rs. 10000 will amount to:
a) Rs. 35000
b) Rs. 40000
c) Rs. 45000
d) Rs. 55000

44. A sum is invested for 3 years compounded at 5%, 10% and 20 % respectively. In three years, if the sum amounts to Rs. 1386, then find the sum.
a) Rs. 950
b) Rs. 1000
c) Rs. 1250
d) Rs. 1500

45. What is the interest rate per annum, if a sum of money invested at compound interest amount to Rs. 2400 in 3 years and in 4 years to Rs. 2,520?
a) 4.5 %
b) 5 %
c) 5.5 %
d) 7.5 %

46. The effective annual rate of interest corresponding to a nominal rate of 6% per annum payable half-yearly is:
a) 6 %
b) 6.25 %
c) 6. 07 %
d) 6.09 %

47. How much money must you deposit now at 6% interest compounded quarterly in order to be able to withdraw $3,000 at the end of each quarter year for two years?
a) $22457.78
b) $20345
c) $23525.38
d) $22942.98

48. A bank loans a family $90,000 at 4.5% annual interest rate to purchase a house. The family agrees to pay the loan off by making monthly payments over a 15 year period. How much should the monthly payment be in order to pay off the debt in 15 years?
a) $ 550
b) $ 688.49
c) $ 750
d) $ 544.94

3. Permutations and combinations

49. In a class there are 27 boys and 14 girls. The teacher wants to select 1 boy and 1 girl to represent a competition. In how many ways can the teacher make this selection?
a) 41
b) 144
c) 156
d) 212

50. Given 7 flags of different colors, how many different signals can be generated if a signal requires the use of two flags, one below the other?
a) 36
b) 40
c) 42
d) 56

51. In how many ways can we arrange the word 'FUZZTONE' so that all the vowels come together?
a) 720
b) 1260
c) 2160
d) 2720

52. There are 30 people in a group. If all shake hands with one another, how many handshakes are possible?
a) 250
b) 350
c) 425
d) 435

53. How many combinations are possible while selecting four letters from the word 'SMOKEJACK' with the condition that 'J' must appear in it?

a) 51
b) 9!
c) 4! /3!
d) 41

54. In Cricket League, in first round every team plays a match with every other team. 9 teams participated in the Cricket league. How many matches were played in the first round?
a) 8!
b) 32
c) 36
d) 81

55. 17 students are present in a class. In how many ways, can they be made to stand in 2 circles of 8 and 9 students?
a) 8! X 7!
b) $^{17}C_9$ x 8! X 7!
c) $^{17}C_9$ x 9! X 8!
d) $^{17}C_8$ x 8! X 9!

56. In a room there are 2 green chairs, 3 yellow chairs and 4 blue chairs. In how many ways can Raj choose 3 chairs so that at least one yellow chair is included?
a) 64
b) 75
c) 82
d) 98

57. In Rama's bag there are 3 books of History, 4 books of Science and 2 books of Maths. In how many ways can Rama arrange the books so that all the books of same subject are together?
a) 12
b) 24
c) 1260
d) 1728

58. A locker in bank has 3 digit lock. Ramesh forgot his password and was trying all possible combinations. He took 6 seconds for each try. The problem was that each digit can be from 0 to 9. How much time will be needed to by Ramesh to try all the combinations?
a) 100 minutes
b) 60 minutes
c) 90 minutes
d) 110 minutes

59. In how many ways 8 Indians and 4, American and 4 Englishmen can be seated in a row so that all person of the same nationality sit together?
a) 3! 5!
b) 3! 5! 7!
c) 3! 4! 8! 4!
d) 4! 8! 5!

60. In a group of 6 boys and 4 girls, four children are to be selected. In how many different ways can they be selected such that at least one boy should be there?
a) 200
b) 209
c) 244
d) 312

61. There are 8 men and 10 women and you need to form a committee of 5 men and 6 women. In how many ways can the committee be formed?
a) 720
b) 8560
c) 10250
d) 11760

62. A coin is tossed 3 times. Find out the number of possible outcomes.
a) 6
b) 8
c) 36
d) 72

63. In how many different ways can the letters of the word 'JUDGE' be arranged such that the vowels always come together?
a) 12
b) 48
c) 60
d) 84

64. How many 6 digit telephone numbers can be formed if each number starts with 35 and no digit appears more than once?
a) 144
b) 420
c) 1244
d) 1680

65. An event manager has ten patterns of chairs and eight patterns of tables. In how many ways can he make a pair of table and chair?
a) 72
b) 80
c) 120
d) 144

66. A box contains 4 red, 3 white and 2 blue balls. Three balls are drawn at random. Find out the number of ways of selecting the balls of different colours?
a) 52
b) 62
c) 24
d) 72

67. In how many different ways can the letters of the word 'OPTICAL' be arranged so that the vowels always come together?
a) 144
b) 420
c) 640
d) 720

68. Out of 7 consonants and 4 vowels, how many words of 3 consonants and 2 vowels can be formed?
a) 972
b) 25200
c) 27320

d) 27625

69. Total number of words formed by 2 vowels and 3 constants taken from 4 vowels and 5 constants is equal to
a) 344
b) 960
c) 7200
d) 7500

70. The number of diagonals that can be drawn by joining the vertices of an octagon is
a) 20
b) 24
c) 36
d) 44

71. From a group of 7 men and 6 women, five persons are to be selected to form a committee so that at least 3 men are there on the committee. In how many ways can it be done?
a) 256
b) 644
c) 720
d) 756

72. The number of solutions in positive integers of $2x + 3y = 763$ is
a) 127
b) 212
c) 360
d) 520

73. Raman and Raj go for a party each having Rs. 100. If they decide to expend Rs. 150. Then in how many ways they can make the payment.
a) 21
b) 51
c) 61
d) 81

74. A polygon has 44 diagonals. The number of its sides is
a) 11
b) 12
c) 13
d) 15

75. In how many ways can 10 examination papers be arranged so that the best and the worst papers never come together?
a) 9*9!
b) 9*7!
c) 7*9!
d) 8*9!

4. Progressions

76. Arithmetic Progression whose nth term is 2n-1 is
a) 2, 4, 6, ..…
b) 1, 3, 5, ……
c) 3, 6, 9, ……
d) 4, 2, 1, ……

77. How many terms are there in 20, 25, 30, ……. 140
a) 20
b) 25
c) 27
d) 30

78. Find the 15^{th} term of the Sequence 20, 15, 10……..
a) 5
b) 0
c) - 50
d) – 55

79. Find the first term of an AP whose 8^{th} and 12^{th} are respectively are 39 and 59.
a) 4
b) 5
c) 6
d) 7

80. The sum of the first 16 term of an AP whose first term and third term are 5 and 15 respectively is
a) 550
b) 640
c) 700
d) 720

81. What is the sum of all positive integers up to 1000, which are divisible by 5 and are not divisible by 2?
a) 5,000
b) 10,000
c) 25,000
d) 50,000

82. In the given AP series the term at position 11 would be
5, 8, 11, 14, 17, 20……50.
a) 35
b) 40
c) 50
d) 25

83. If a, r and a^n are first term, common ratio and nth term respectively of G.P then a^n =
a) Ar^{n+1}
b) Ar^{n-1}
c) Ar^n
d) 0

84. 5th term of G.P 3,6,12,… is
a) 3
b) 15
c) 9
d) 48

85. Sum of n terms of G.P is
a) $a(1-r^n)/(1-r)$
b) a+b/2
c) n/2[2a+(n-1)d]
d) 2ab/(a+b)

86. If a = 3, r = 2, then nth term of G.P is
a) 3.2^n
b) 3.2^{n+1}
c) 2.3^{n-1}
d) 3.2^{n-1}

87. If a rubber ball consistently bounces back ⅔ of the height from which it is dropped, what fraction of its original height will the ball bounce after being dropped and bounced four times without being stopped?
a) 9/12
b) 4/9
c) 16/81
d) 37/81

88. Find the number of terms in the geometric progression 6, 12, 24, ..., 1536
a) 6^{th} term
b) 9^{th} term
c) 13^{th} term
d) 20^{th} term

89. How many terms of the series 1 + 3+ 9+….sum to 121.
a) 3
b) 4
c) 5
d) 6

90. The 2nd term of a G.P. is 24 and the fifth term is 81. The series is
a) 16 , 36, 24, 54
b) 16, 24, 36, 54
c) 16, 36, 54, 60
d) 24, 36, 44, 54

91. Find three numbers in G.P. whose sum is 19 and product is 216.
a) 4, 6, 9
b) 5, 6, 8
c) 3, 6, 9
d) 6, 9, 12

92. The number of terms to be taken so that 1+2+4+8+....will be 8191
a) 9
b) 13
c) 15

d) 20

93. The sum of the series 1+3+9+27....is 364. Find the number of terms.
a) 5
b) 6
c) 9
d) 11

94. The A.M of two positive numbers is 40 and their G.M. is 24. Find the numbers.
a) (72, 8)
b) (70, 10)
c) (30,30)
d) (20, 60)

95. The last term of the series x2 , x, 1, ...to 31 terms is
a) 1/x
b) x^2
c) x^{28}
d) $1/x^{28}$

5. Sources of data, presentation and use

96. The word ‘ statistics’ used as:
a) Singular
b) Plural
c) Singular and plural both
d) Primary

97. Variables whose measurement is done in terms such as weight, height and length are classified as
a) Continuous variables
b) Discrete variable
c) Measuring variable
d) Flowchart variable

98. Numerical methods and graphical methods are specialized procedures used in
a) Business statistics
b) Social statistics
c) Descriptive statistics
d) Education statistics

99. Which of the following represents data?
a) A group of values in a set
b) Only two values in a set
c) A single value
d) No value in a set

100. Statistical data are collected for,
a) Any purpose
b) A given purpose
c) Collecting data without any purpose
d) Just for record

101. Statistical results are:
a) Absolutely correct
b) Not true
c) True on average
d) Universal true

102. For the mid –values given below,
25, 34, 43, 53, 61, 70
The first class of the distribution is:
(a) 24.5-34.5
(b) 25-34
(c) 20-30
(d) 20.5-29.5

103. In an exclusive type distribution, the limits excluded are:
(a) Lower limits
(b) Upper limits
(c) Either of the lower or upper limit
(d) Lower limit and upper limits both

104. 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) No frequency distribution

105. If the lower and upper limits of a class are 10 and 40 respectively, the mid-portions of the class is:
(a) 25.0
(b) 12.5
(c) 15.0
(d) 30.0

106. Class interval is measured as:
(a) The sum of the upper and lower limit
(b) Half of the sum of lower and upper limit
(c) Half of the difference between upper and lower limit
(d) The difference between upper and lower limit.

107. The class interval of the continuous grouped data:
10-19
20-39
30-39
40-49
50-59
is:

(a) 9 (b) 10 (c) 14.5 (d) 4.5

108. A grouped frequency distribution with uncertain first or last classes is known as:
(a) Exclusive class distribution.
(b) Inclusive of class distribution
(c) Open end distribution
(d) Discrete frequency distribution

109. The income of five persons is as follows:

Person	income (Rs/Month)
Mr. A	1,700
Mr. B	2300
Mr. C	7,000
Mr. D	8,500
Mr. E	5,400

The above series is of the type :
(a) Individual series
(b) Discrete series
(c) Continuous series
(d) Time series

110. A frequency distribution can be:
(a) Discrete
(b) Continuous

(c) Discrete and continuous both
(d) Time series

111. In an individual series, each variate value:
(a) Has some frequency
(b) Has frequency one
(c) Has varied frequency
(d) Has frequency two

112. Frequency of a variable is always:
(a) In percentage
(b) A fraction
(c) An integer
(d) In average

113. 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

114. The following frequency distribution,
X: 12, 17, 24, 36, 45, 48, 52
F: 2, 5, 3, 8, 9, 6, 1 is classified as:
(a) Continuous distribution
(b) Discrete distribution.
(c) Cumulative frequency distribution.
(d) Discrete and continuous distribution

115 In an ordered series, the data are:
(a) In ascending order.
(b) In descending order
(c) Either ascending or descending
(d) Neither ascending nor descending

116 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 is less than type.

6. Measures of Central tendency

117. Mean is a measure of:
a) Location (central value)
b) Dispersion
C) Correlation
d) Index Number

118. Which of the following is a measure of central value?
a) Median
b) Standard Deviation
c) Mean deviation
d) Quartile Deviation

119. Which of the following represents median?
a) First quartile
b) Fiftieth percentile
c) Sixth decile
d) Ninth decile

120. If a constant value 50 is subtracted from each observation of a set, the mean of the set is :
a) Increased by 50
b) Decrease by 50
c) Is not affected
d) Zero

121. If a constant 5 is added to each observation of a set, the mean is:
a) Increased by 5
b) Decrease by 5
c) 5 times the original mean
d) Not affected

122. Which of the following relations among the location parameters does not hold?
a)Q2=median
b) P50= median
c) D5 =median
d) D6 = median

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

124. Geometric mean of two observations can be calculate only if:
a) Both the observations are positive
b) One of the two observations is zero
c) One of them is negative
d)both of them are zero

125. Extreme value have no effect on:
a) Average

b) Median
c) Geometric mean
d) Harmonic mean

126. Geometric mean of two numbers 1/16 and 4/25 is:
a) 1/10
b) 1/100
c) 10
d) 100

127. The average of the 7 number 7, 9, 12, x, 5, 4, 11 is 9. The missing number x is:
a) 13
b) 14
c) 15
d)8

128. The mean of seven observations is 8. A new observation 16 is added. The mean of eight observationsis:
a) 12
b) 9
c) 8
d) 24

129. If the sum of N observations is 630 and their mean is 42, then the value of N is:
a) 21
b) 30
c) 15
d) 20

130. If the two observations are 20 and -20, their arithmetic mean is:
a) 10
b) 20
c) 0
d) None of the above

131. Mode is that value in a frequency distribution which possesses:
a) Minimum frequency
b) Maximum frequency
c) Frequency one
d) None of the above

132. The value of the variable corresponding to the hight point of a frequency distribution curve represents:
a) Mean
b) Median
c) Mode
d) None of the above

133. If the modal value is not clear in a distribution, it can be ascertained by the method of:
a) Grouping
b) Guessing
c) Summarizing
d) Trial and error

134. Shoe size of most of the people in India is No. 8. Which measures of central value does it represent?
a) Mean
b) Second quartile
c) Eight decile
d) Mode

135. The median of the variate values 11, 7, 6, 9, 12, 15, 19 is:
a)9
b)12
c)15
d)11

136. The median of the variate values 48, 35, 36, 40, 42, 54, 58, 60 is:
a) 40
b) 41
c)44
d) 45

137. The variate values which divide a series (frequency distribution) into four equal parts are called:
a) Quintiles
b) Quartiles
c) Deciles
d) Percentiles

138. The variate values which divide a series (frequency distribution) into ten equal parts are called:
a) Quartiles
b) Deciles
c) Octiles
d) Percentiles

139. The variate values which divide a series (frequency distribution) into 100 equal parts are known as:
a) Octiles
b) Quartiles
c) Percentiles
d) Deciles

140. The number of partition values in case of quartiles is:
a)4
b)3
c)2
d)1

141. For deciles, the total number of partition values are:
a) 5
b) 8
c) 9
d) 10

142. For percentiles, the total number of partition values are:
a) 10

b) 59
c) 100
d) 99

143. The first quartile is also known as:
a) median
b) Lower quartile
c) Mode
d) Third decile

144. The third quartile is also called:
a) Lower quartile
b) Median
c) Mode
d) Upper quartile

145. In case of weighted mean, the accuracy or utility of the mean:
a) Decreases
b) Increases
c) is unaffected
d) Zero

146. If .3, .5, .8, .7 and 1.5 are the respective weights of the values 10,15,20,25 and 30, then the weighted mean is:
a) 20.0
b) 23.42
c) 16. 58
d) 25

147. If for a discrete series, the assumed mean A=50, $\sum fdx$=45 for $dx=x-A$, $\sum f$=12, then the mean of the series is:
a) 46.25
b) 7.92
c) 49.17
d) 53.75

148. The mean of the following discrete series (frequency distribution),
x: 7, 12, 16, 22, 25
f: 4, 5, 8, 3, 2
Is
a) 16.40
b) 15.09
c) 20.8
d) 24

149. If we plot the more than type and less than type frequency distributions of the same set of data, their graphs intersect at the point which is known as:
a) Median
b) Mode
c) Mean
d) Geomtric Mean

150. Mean of a set of values is based on:
a) All values

b) 50 per cent values
c) First and last value
d) Maximum and minimum value

151. Which mean is most affected by extreme values?
a) Geometric mean
b) Harmonic mean
c) Arithmetic mean
d) Trimmed mean

152. The partition value which divide a series into two equal parts is known as:
a) Second quartile
b) Third quintile
c) Fourth octiles
d) Sixth deciles

153. Sum of the deviations about mean is:
a) Zero
b) Maximum
c) Minimum
d) One

154. Sum of the absolute deviations about median is:
a) Zero
b) Maximum
c) Minimum
d) One

155. Sum of square of the deviations about mean is:
a) Maximum
b) Minimum
c) Zero
d) Range

156. Histogram is useful to determine graphically the value of:
a) Mean
b) Median
c) Mode
d) Dispersion

157. Graphically partition values can be determined with the help of:
a) Frequency polygon
b) Bar diagram
c) Line diagram
d) Ogive curve

158. The suitable measures of central tendency for qualitative data is:
a) mode
b) Arithmetic mean
c) Geometric mean
d) Median

159. In a frequency distribution with open ends, one cannot find out:
a) Mean

b) Median
c) Mode
d) Geometric Mean

160. The point of intersection of two cumulative frequency curves provides:
a) Mean
b) Mode
c) Median
d) First quartile

161. The percentage of items in a frequency distribution lying between upper and lower quartiles is:
a) 80%
b) 40%
c) 50%
d) 25%

7. Measures of Dispersion, skewness and kurtosis

162. Which of the following is not a measure of dispersion?
a) Mean deviation
b) Quartile deviation
c) Standard deviation
d) Average deviation from mean

163. Which of the following is a unitless measures of dispersion?
a) Standard deviation
b) Range
c) Variance
d) Coefficient of variation

164. Which one of the given measures of dispersion is considered best?
a) Standard deviation
b) Range
c) Variance
d) Coefficient of variation

165. The correct relation between variance and standard deviation (S. D.) of a variable X is:
a) S. D. = $[\text{Var}\,(X)]^2$
b) S. D. = $[\text{Var}\,(X)]^{1/2}$
c) S. D. = Var (X)
d) S. D. = $[\text{Var}\,(X)]^3$

166. Formula for coefficient of variation is:
a) C. V. = $\frac{S.D}{mean}$ x 100
b) C. V. = $\frac{mean}{S.D.}$ x 100
c) C. V. = $\frac{mean\ x\ S.D.}{100}$
d) C. V. = $\frac{100}{mean\ x\ S.D.}$

167. Out of all measures of dispersion, the easiest one to calculate is:
a) Standard deviation
b) Range
c) Variance
d) Quartile deviation

168. Formula for range (R) of a set of values $X_1, X_2, \ldots X_n$ is :
a) Coeff. of range = $\frac{X\ max - X\ min}{X\ max + X\ min}$
b) Coeff. of range = $\frac{X\ max + X\ min}{X\ max - X\ min}$
c) Coeff. of range = $\frac{X\ max}{X\ min}$
d) Coeff. of range = $\frac{X\ max - X\ min}{X\ max}$

169. Coefficient of quartile deviation is given by the formula:

a) Coeff. of Q. D. $= \frac{Q3+Q1}{Q3-Q1}$

b) Coeff. of Q. D. $= \frac{Q3+Q1}{Q1-Q3}$

c) Coeff. of Q. D. $= \frac{Q3-Q1}{Q1-Q3}$

d) Coeff. of Q. D. $= \frac{Q3-Q1}{Q3+Q1}$

170. Quartile deviation of semi inter-quartile deviation is given by the formula:

a) Q. D. $= \frac{Q3+Q1}{2}$

b) Q. D. $= Q_3-Q_1$

c) Q. D. $= (Q_3-Q_1)/2$

d) Q. D. $= (Q_3-Q_1)/4$

171. Mean deviation is minimum when deviations are taken from:

a) Mean

b) Median

c) Mode

d) Zero

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

a) Range

b) Mean deviation

c) Quartile deviation

d) Standard deviation

173. Which measure of dispersion ensures lowest degree of reliability?

a) Range

b) Mean deviation

c) Quartiledeviation

d) Standard deviation

174. Average wages of workers of a factory are Rs. 550.00 per month and the standard deviation of wages is 110. The coefficient of variation is:

a) C.V. = 30 Per cent

b) C.V. = 15 Per cent

c) C.V. = 500 Per cent

d) C.V. = 20 Per cent

175. If the mean deviation of a distribution is 20.20, the standard deviation of the distribution is:

a) 15.15

b) 25.25

c) 30.30

d) 20.25

176. If the mean and standard deviation of A and B are as, $\bar{X}_A$ =15.0, $\bar{X}_B$ =20.0 and σ^2_A=25 and σ^2_B =16, which of the two series is more consistent.

a) Series A

b) Series B

c) Series A and B are equally consistent

d) Both are non-consistent

177. If the standard deviation of a distribution is 15, the quartile deviation of the distribution is:
a) 15.0
b) 12.5
c) 10.0
d) 20.0

178. If the quartile deviation of a series is 60, the mean deviation of this series is:
a) 72
b) 48
c) 50
d) 75

179. The mean and standard deviation of a set of values are 25 and 5, respectively. If a constant value 5 is added to each valule, the coefficient of variation of the new set of values is
a) 250 per cent
b) 600 per cent
c) 20 per cent
d) 16.6 per cent

180. Which of the following measures of dispersion can attain a negative value?
a) range
b) mean deviation
c) Standard deviation
d) variance

181. The measure of dispersion which ignoredsigns of the deviations from a central value is:
a) range
b) quartile deviation
c) standard deviation
d) mean deviation

182. Which measures of dispersion is least affected by extreme values?
a) range
b) mean deviation
c) standard deviation
d) quartile deviation

183. Which measures of dispersion is more affected by extreme values?
a) range
b) mean deviation
c) standard deviation
d) quartile deviation

184. Range of a set of values is 65 and maximum value in the series is 83. The minimum value of the series is:
a) 74
b) 9
c) 18
d) 22

185. If the minimum value in a set is 9 and its range is 57, the maximum value of the set is

a) 33
b) 66
c) 48
d) 50

186. If the values of a set are measured in cm, the unit of variance will be:
a) no unit
b) cm
c) cm^2
d) cm^3

187. The average of the sum of squares of the deviation about mean is called:
a) variance
b) absolute deviation
c) standard deviation
d) mean deviation

188. Which measure of dispersion can be calculated in case of open and end intervals?
a) range
b) standard deviation
c) coefficient of variance
d) quartile deviation

189. If each value of a series is divided by 5, its coefficient of variation is reduced by:
a) 0 per cent
b) 5 per cent
c) 10 per cent
d) 20 per cent

190. If each value of a series is multiplied by 10 the coefficient of variation will be increased by:
a) 5 per cent
b) 10 per cent
c) 15 per cent
d) 0 per cent

191. For a positive skewed distribution, which of the following inequality holds?
a) Median>mode
b) Mode> mean
c) Mean> median
d) Mean>mode

192. For a negatively skewed distribution, the correct inequality is:
a) Mode<median
b) Mean< median
c)Mean< mode
d) Mean=Median=Mode

193. If a moderately skewed distribution has mean 30 and mode 36, the median of the distribution is:
a) 30
b) 28
c) 32
d) 50

194. If a moderately skewed distribution has mean 40 and median equal to 30the mode of distribution is:
a) 10
b) 35
c) 20
d) Zero

195. First and third quartiles of a frequency distribution are 30 and 75. Also its coefficient of skewness is 0.6. The median of the frequency distribution is:
a) 40
b) 36
c) 78
d) 68

196. If the first quartile $Q1=15$ and third quartile $Q3=25$, the coefficient of quartile deviation is:
a) 4
b) 1/4
c) 5/3
d) 3/5

197. If the first quartile $Q1=20$ and third quartile $Q3= 50$, the quartile deviation is:
a) 35
b) 15
c) 2.5
d) 0.8

198. In case of positive skewed distribution, the extreme values lie in the:
a) Left tail
b) Right tail
c) Middle
d) Anywhere

199. The extreme values in a negatively skewed distribution lie in the
a) Middle
b) Right tail
c) Left tail
d) Whole curve

200. 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

201. The range of the set of values, 15, 12, 27, 6, 9, 18, 21 is :
a) 21

b) 4.5
c) 0.64
d) 3

202. The standard deviation of a set of values will be:
a) Positive when the values are positive
b) Positive when the values are negative
c) Always positive
d) Always Negative

8. Regression and correlation methods:

203. If *X* and *Y* are two variates, there can be at most:
a) One regression line
b) Two regression line
c) Three regression line
d) An infinite number of regression lines

204. Scatter diagram of the variate values *(X, Y*) gives the idea about:
a) Functional relationship
b) Regression model
c) Distribution of errors
d) No relation

205. In the regression line $Y=\alpha+\beta X$, β is called the:
a) Slope of the line
b) Intercept of the line
c) No slope No intercept
d) Both slope and Intercept

206. If $\beta_{xy}>1$, then β_{xy} is:
a) Less than 1
b) Greater than 1
c) Equal to 1
d) Equal to 0

207. If $\beta_{xy}<1$, then β_{xy} is:
a) Less than 1
b) Greater than 1
c) Equal to 1
d) Equal to 0

208. If *X* and *Y* are independent, the value of regression coefficient β_{xy}equal to :
a) 0
b) 1
c) ∞
d) Any positive value

209. The lines of regression intersect at the point:
a) (*X, Y*)
b) $(\bar{X}, \bar{Y})$
c) (0, 0)
d. (1, 1)

210. The coordinates $(\bar{X}, \bar{Y})$ 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

211. Regression coefficient is independent of:
a) Origin

b) Scale
c) Both origin and scale
d) No origin and no scale

212. If the correlation between the two variables X and Y is negative, the regression coefficient of Y on X is:
a) Positive
b) Negative
c) Not certain
d) Zero

213. Given the two lines of regression 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) $\bar{X}=\frac{4}{3}, \bar{Y}=\frac{5}{4}$
d) $\bar{X}=4, \bar{Y}=4/3$

214. The range of simple correlation coefficient is:
a) 0 to ∞
b) -∞ to ∞
c) 0 to 1
d) -1 to 1

215. The relation r= $\sqrt{byx.bxy}$ is known as:
a) Mean property of regression coefficients
b) Fundamental property of regression coefficient
c) Signature property of *r*
d) properties of correlation coefficients

216. The formula for probable error is:
a) P. E. = $0.6745\frac{\sqrt{1-r2}}{n}$
b) P. E. = $0.6745\frac{\sqrt{1-r2}}{n-2}$
c) P. E. = $0.6745\frac{1-r2}{n}$
d) P. E. = $0.6745\frac{1-r2}{\sqrt{n}}$

217. The probable error is used for:
a) Measuring the error in *r*
b) Testing the significance of *r*
c) T-test
d) F-test

218. Correlation ratio is an appropriate measure of relationship between the two variables X and Y only if the functional relationship between them is:
a) Linear
b) Non-linear
c) Parabolic
d) Curvilinear

219. If the two lines of regression are x+2y-5=0 and 2x+3y-8=0, the regression line of Y on X is:

a) *x+2y-5=0*

b) *2x+3y-8=0*

c) Any of the two lines

d) Zero

220. If the two lines of regression are *x+2y-5=0* and *2x+3y-8=0*, the mean of *X* and *Y* are:

a) $\bar{X}$*=-3,* $\bar{Y}$=4

b) $\bar{X}$*=2,* $\bar{Y}$=4

c) $\bar{X}$*=1,* $\bar{Y}$=2

d) $\bar{X}$*=-3,* $\bar{Y}$= -4

221. Give the regression lines:
X+2y-5=0, 2x+3y-8=0 and value V (X) =12, the value of V (Y) is:

a) 16

b) 4

c) 3/4

d) 4/3

222. If the correlation between two variables is zero, it implies that:

a) Two variable are independent

b) Two variables do not have negative correlation

c) The two variables are not linearly related

d) Highly positive correlation

223. The correlation between two variables is unity, there is:

a) Perfect correlation

b) Perfect positive correlation

c) Perfect negative correlation

d) No correlation

224. Let the correlation coefficient between two variables *X* and *Y* be unity. Then the relation between the regression coefficients $\beta_{yx}$and β_{xy}that always holds is:

a) $\beta_{yx} > \beta_{xy}$

b) $\beta_{yx} < \beta_{xy}$

c) $\beta_{yx} = \beta_{xy}$

d) $\beta_{yx}.\ \beta_{xy}=1$

225. Given the two regression lines *X +2y=5* and *2X +3Y=8* and σ^2_y=4, the value of σ^2_x is:

a) 12

b) 27/4

c) 6

d) 7

226. If the sum of squares of the differences between ten ranks of two series is 33, then the ranks correlation coefficient is:

a) 0. 967

b) 0.725

c) 0.8

d) 0.67

227. What is the nature of correlation between the sale of woolen garments and the day temperature

a) Positive

b) Negative
c) Hi-positive
d) No correlation

228. What is the nature of correlation between the color of saree and the intelligence of ladies who wears it?
a) Positive
b) Negative
c) Hi-positive
d) No correlation

229. What is the nature of correlation between the income and experndiure?
a) Positive
b) Negative
c) Hi-positive
d) No correlation

230. The correlation coefficient is independent of
a) Change of scale
b) Change of origin
c) Change of origin and scale
d) Neither change of scale nor change of origin

231. If b_{xy} and b_{yx} are b_1 and b_2, the correlation coefficient is:
a) b_1/b_2
b) b_2-b_1
c) b_2/b_1
d) $\pm\sqrt{b1 \times b2}$

232. The correlation coefficient is used to determine:
a) A specific value of the y-variable given a specific value of the x-variable
b) A specific value of the x-variable given a specific value of the y-variable
c) The strength of the relationship between the x and y variables
d) Regression

233. If there is a very strong correlation between two variables then the correlation coefficient must be
a) any value larger than 1
b) much smaller than 0, if the correlation is negative
c) much larger than 0, regardless of whether the correlation is negative or positive
d) Zero

234. In regression, the equation that describes how the response variable (y) is related to the explanatory variable (x) is:
a) the correlation model
b) the regression model
c) used to compute the correlation coefficient
d) None of these alternatives is correct.

235. The relationship between number of beers consumed (x) and blood alcohol content (y) was studied in 16 male college students by using least squares regression. The following regression equation was obtained from this study: != -0.0127 + 0.0180x
The above equation implies that:
a) each beer consumed increases blood alcohol by 1.27%

b) on average it takes 1.8 beers to increase blood alcohol content by 1%
c) each beer consumed increases blood alcohol by an average of amount of 1.8%
d) each beer consumed increases blood alcohol by exactly 0.018

236. In regression analysis, the variable that is being predicted is the
a) response, or dependent, variable
b) independent variable
c) intervening variable
d) is usually x

237. Regression analysis was applied to return rates of sparrowhawk colonies. Regression analysis was used to study the relationship between return rate (***x***: % of birds that return to the colony in a given year) and immigration rate (***y***: % of new adults that join the colony per year). The following regression equation was obtained.
$\hat{y} = 31.9 - 0.34x$
Based on the above estimated regression equation, if the return rate were to decrease by 10% the rate of immigration to the colony would:
a) increase by 34%
b) increase by 3.4%
c) decrease by 0.34%
d) decrease by 3.4%

238. The coefficient of correlation
a) is the square of the coefficient of determination
b) is the square root of the coefficient of determination
c) is the same as r-square
d) can never be negative

239. In the case of an algebraic model for a straight line, if a value for the *x* variable is specified, then
a) the exact value of the response variable can be computed
b) the computed response to the independent value will always give a minimal residual
c) the computed value of *y* will always be the best estimate of the mean response
d) None of these alternatives is correct.

240. If two variables, *x* and *y*, have a very strong linear relationship, then
a) there is evidence that *x* causes a change in *y*
b) there is evidence that *y* causes a change in *x*
c) there might not be any causal relationship between *x* and *y*
d) None of these alternatives is correct.

241. If the coefficient of determination is equal to 1, then the correlation coefficient
a) must also be equal to 1
b) can be either -1 or +1
c) can be any value between -1 to +1
d) must be -1

242. In regression analysis, if the independent variable is measured in kilograms, the dependent variable
a) must also be in kilograms
b) must be in some unit of weight
c) cannot be in kilograms
d) can be any units

243. If the correlation coefficient is 0.8, the percentage of variation in the response variable explained by the variation in the explanatory variable is
a) 0.80%
b) 80%
c) 0.64%
d) 64%

244. If the correlation coefficient is a positive value, then the slope of the regression line
a) must also be positive
b) can be either negative or positive
c) can be zero
d) cannot be zero

245. A fitted least squares regression line
a) may be used to predict a value of y if the corresponding x value is given
b) is evidence for a cause-effect relationship between x and y
c) can only be computed if a strong linear relationship exists between x and y
d) None of these alternatives is correct.

246. Regression analysis was applied between $ sales (y) and $ advertising (x) across all the branches of a major international corporation. The following regression function was obtained.
$\hat{y} = 5000 + 7.25x$
If the advertising budgets of two branches of the corporation differ by $30,000, then what will be the predicted difference in their sales?
a) $217,500
b) $222,500
c) $5000
d) $7.25

9. Time series analysis

247. A time series consists of:
a) Two components
b) There components
c) Four components
d) Five components

248. The forecasts on the basis of a time series are:
a) Cent per cent true
b) True to a great extent
c) Never true
d) Always false

249. The component of a time series attached to long-term variations is term as:
a) Cyclic variation
b) Secular trend
c) Irregular variation
d) Seasonal Variation

250. A lock-out in a factory for a month is associated with the component of the time series:
a) Irregular variation
b) Secular trend
c) Cyclic variation
d) Seasonal Variation

251. The general decline in sales of cotton clothes is attached to the components of the time series.
a) Secular trend
b) Cyclical variation
c) Seasonal variation
d) Irregular variation

252. The sales of a departmental store on Dashin and Tihar are associated with the component of a time series:
a) Secular trend
b) Seasonal variation
c) Irregular variation
d) Cyclical variation

253. The consistent increase in production of cereals constitutes the component of a time series:
a) Secular trend
b) Seasonal variation
c) Cyclical variation
d) Irregular variation

254. 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

255. Linear trend of a time series indicates to wards:
a) Constant rate of change
b) Constant rate of growth
c) Change in geometric progression
d) No change

256. Seasonal variation means the variations occurring within:
a. A number of years
b. Parts of year
c. Parts of a month
d. Every two years

257. Trend in a time series means:
a) Long –term regular movement
b) Short-term regular movement
c) Mid term movement
d) No movement

258. An additive model of time series with the components T, S, C and I is:
a) $Y=T+S+C\,X\,I$
b) $Y=T+S\,X\,C\,X\,I$
c) $Y=T+S+C+I$
d) $Y=T+S\,X\,C+I$

259. Most frequently used mathematical model of a time series is:
a) Additive model

b) Multiplicative model
c) Mixed model
d) No any model

260. A method full of subjectivity to find out the trend line is:
a) Semi-average method
b) Moving average method
c) Free-hand method
d) Long Period

261. Semi-average method of finding trend is appropriate if the data are available for a:
a) Long period
b) Short period
c) Long and short period both
d) Period for 1 Year

262. A group for moving average consists of :
a) 5- years period
b) 3- years period
c) A period which forms a cycle
d) It may be any period

263. Moving average method of fitting trend in a time series data removes the effect of:
a) Long term movements
b) Short-term movements
c) Cyclic variations
d) Seasonal Variation

264. Moving average method of ascertaining trend is not suitable for :
a) Finding trend values
b) Projections
c) Index process
d) Regression

265. Least square method of fitting a trend is:
a) Most exact
b) Least exact
c) Full of subjectivity
d) Mathematically unsound

266. Simple average method is used to calculate:
a) Trend values
b) Cyclic variations
c) Seasonal indices
d) Irregular variation

267. For the given five values 15, 24, 18, 33, 42 the three years moving average are:
a) 19, 22, 33
b) 19, 25, 31
c) 19, 30, 31
d) 22,25,30

268. Which of the following is not a component of a time series?

a) Trend
b) Seasonal
c) Random
d) Periodic

269. If the demand is 100 during October 2016, 200 in November 2016, 300 in December 2016, 400 in January 2017. What is the 3-month simple moving average for February 2017?
a) 300
b) 350
c) 400
d) Need more information

270. Suppose you were considering a time series of data for the quarters of 1992 and 1993. The third quarter of 1993 would be coded as:
a) 2
b) 3
c) 5
d) 6

271. Suppose that Y = 10+3x describes well an annual time series for 1987-1993. If the actual value of Y for 1990 is 8, what is the percent of trend for 1990?
a) 125%
b) 112.5%
c) 90%
d) 80%

272. Which component of a time series would you mainly associate with "a fire or a strike in a factory delaying production for the weeks"?
a) Irregular
b) Seasonal
c) Cyclical
d) Secular trend

273. Which component of a time series would you mainly associate with "A decline in ice-cream sales during Mangsir to Magh"?
a) Irregular
b) Seasonal
c) Cyclical
d) Secular trend

274. If three quarterly seasonal indices of time series are 95, 98, 102, the fourth quarterly seasonal index will be
a) 103
b) 104
c) 105
d) 106

275. Which component of a time series would you mainly associate with "Increase in Money in circulation for the last 10 years"?
a) Irregular
b) Seasonal
c) Cyclical
d) Secular trend

276. If the number of bicycles sold by a wholesale dealer in Mumbai, for the year 2004, 2005 and 2006 has been 10,400, 11,000 and 11,500, the forecast for the number of bicycles to be sold in 2007 is
a) 12,150
b) 12,169
c) 12,067
d) 12,175

277. Which component of a time series would you mainly associate with "Recession"?
a) Irregular
b) Seasonal
c) Cyclical
d) Secular trend

278. A series comprises of five values, as given below:
52, 56, 60, 67, 71
Its moving averages of order 3 are:
a) 54, 60, 66
b) 55, 60, 65
c) 55, 61, 67
d) 56, 61, 66

279. Which component of a time series would you mainly associate with "A need for increased wheat production due to constant increase in population"?
a) Irregular
b) Seasonal
c) Cyclical
d) Secular trend

280. Seasonal variations repeat during a period of
a) 10 years
b) 5 years
c) 12 Months
d) 1 Month

281. Which component of a time series would you mainly associate with "An increase in employment during harvest time"?
a) Irregular
b) Seasonal
c) Cyclical
d) Secular trend

282. In the least squares linear trend equation if b is positive, it indicates
a) Rising trend
b) Declining trend
c) No trend at all

283. The most important factors causing seasonal variations are:
a) Growth of population
b) Weather and social customs
c) Depression in business
d) Irregular

284. Most superior and popular used method of measuring seasonal variations is:

a) Simple moving average
b) Ratio-to- trend method
c) Ratio to M.A. method
d) Link relative method

10. Index Numbers

285. Index number is a :
a) Measure of relative changes
b) A special type of an average
c) A percentage relative
d) Qualitative Measures

286. Index numbers are expressed:
a) In percentage
b) In ratio
c) In terms of absolute value
d) Unitless

287. Most commonly used index number is:
a) Diffusion index number
b) Price index number
c) Value index number
d) Percentage Index

288. Base period for an index number should be:
a) A year only
b) A normal period
c) A period at distant past
d) Days only

289. Most preferred type of average for index numbers is:
a) Arithmetic mean
b) Geometric mean
c) Harmonic mean
d) Median

290. Most frequently used index number formulae are:
a) Weighted formulae
b) Un-weighted formulae
c) Fixed weight formulae
d) Geometric Mean

291. Lespeyre's index formula uses the weights of the :
a) Base year
b) Current year
c) Average of the weights of a number of years
d) A normal Period

292. Lespeyre's index numbers possess:
a) Downward bias
b) No bias
c) Upward bias
d) Unbiased estimator

293. Lespeyre's index numbers is also known as:
a) Fixed base index
b) Given year method index

c) Base year method index
d) Current year method

294. The weights used in paasche's formula belong to:
a) The base period
b) The given period
c) To any arbitrary chosen period
d) No period

295. Paasche was:
a) An English mathematician
b) A French economist
c) A German Statistician
d) Nepalese economist

296. Paasche's index number was invented in the year
a) 1871
b) 1901
c) 1874
d) 1918

297. Drobish-Bowley gave the formula for price index in:
a) 1910
b) 1901
c) 1801
d) 1871

298. The Drobish-Bowley price index formula is the :
a) Geometric mean of Laspeyre's and Paasche's price index formulae
b) Arithmetic mean of Laspeyre's and Paasche's price index formulae
c) Weighted mean of Laspeyre's and Paasche's price index formulae
d) Median of Laspeyre's and Paasche's price index formulae

299. Fisher named the geometric cross formula as an ideal index formula in the year:
a) 1901
b) 1910
c) 1920
d) 1950

300. Marshall and Degeworth price index number formula utilizes the weights as:
a) Quantities of the base year
b) Quantities of the given year
c) Combined quantities of base and given year
d) Price of the base year

301. If the index number is independent of the units of measurements, then it satisfies:
a) Times reversal test
b) Factor reversal test
c) Unit test
d) Time and Unit test

302. The condition for the time reversal test to hold good with usual notations is:
a) $P_{01} \times P_{10} = 1$
b) $P_{10} \times P_{01} = 0$

c) $P_{01} / P_{10} = 1$
d) $P_{01} + P_{10} = 1$

303. Factor reversal test was invented by:
a) Walsh
b) A. L. Bowley
c) John I. Griffin
d) Irving Fisher

304. Fisher's ideal formula does not satisfy:
a) Time reversal test
b) Circular test
c) Factor reversal test
d) Unit test

305. Purchasing power of money is estimated by the formula:
a) Price index X 100
b) $\frac{\text{Money income}}{\text{Consumer price index}} \text{ X } 100$
c) $\frac{100}{\text{Price index}}$
d) $\frac{\text{Price Index}}{100}$

306. Consumer price index reflects on the price changes experienced by:
a) An individual
b) A particular family
c) All families of a population
d) Common family

307. For consumer price index, price quotations are collected from:
a) Retailers
b) Wholesale dealers
c) Fair price shop
d) Government depots

308. Factor reversal test permits the interchange of:
a) Base periods
b) Price and quantity
c) Weights
d) Current Period

309. The consumer price index in 1990 increase by 80 per cent as compared to the base 1980. A person in 1980 getting Rs. 60,000 per annum should now get:
a) Rs. 1,08000 per annum
b) Rs. 72,000 per annum
c) Rs. 54,000 per annum
d) Rs. 65, 000 Per annum

310. If the index number for 1990 to the base 1980 is 250, the index number for 1980 to the base 1990 is:
a) 4
b) 40
c) 400
d) 100

311. If Laspeyre's price index is 324 and Paasche's price index 144, then Fisher's ideal index is:
a) 234
b) 180
c) 216
d) 350

312. The index number for 1985 to the base 1980 is 125 and for 1980 to the base 1985 is 80. The given indices satisfy:
a) Time reversal test
b) Factor reversal test
c) Circular test
d) Unit test

313. If the group indices are 80, 120 and 125 and their respective group weights are 60, 20 and 20, the price index is:
a) 108.33
b) 97.00
c) 98.49
d) 150

314. Which index satisfies factor reversal test?
a) Paasche's index
b) Laspeyre index
c) Fisher's ideal index
d) Walsh Price index

315. An index number is called a simple index when it is computed from:
a) Single variable
b) Bi- variable
c) Multiple variable
d) Continuous variable

316. Index numbers are expressed in:
a) Ratios
b) Square
c) Percentages
d) Combinations

317. If all values are of equal importance, the index numbers are called:
a) Weighted
b) unweighted
c) composite
d) Value index

318. Index numbers can be sued for:
a) Forecasting
b) Fixed prices
c) Different prices
d) Constant prices

319. Index number for base period is always taken as:
a) 100

b) 1
c) 200
d) 0

320. When the prices of rice are to be compared, we compute:
a) Volume index
b) Value index
c) Price index
d) Aggregative index

321. When index number is calculated for several variables it is called:
a) composite index
a) wholesale price index
b) volume index
c) simple index

322. How many types are used for the calculation of index numbers:
a) 2
b) 3
c) 4
d) 5

323. In chain base method the base period is:
a) fixed
b) not fixed
c) constant
d) zero

324. Price relative are a percentage ratio of current year price and
a) Base year quantity
b) Previous year quantity
c) Base year price
d) Current year quantity

325. Most of the price indices are based on:
a) Laspeyre's formula
b) Paasche's formula
c) Kelly's formula
d) Fisher's formula

326. Consumer price index is released by
a) Ministry of finance
b) Nepal Rastra Bank
c) Ministry of Labor and employment
d) Ministry of transport

327. The most appropriate use of index numbers is in:
a) comparing prosperity
b) comparing standard of living
c) policy formulation at State, National and International level
d) calculations of per capita income

11. Sampling methods

328. A sample consists of :
a. All units of the population
b. 50 per cent units of the population
c. 5 per cent units of the population
d. Any fraction of the population

329. The number of possible samples of size n out of N population units without replacement is:
a. $\binom{N}{n}$
b. $(N)_n$
c. n^2
d. n !

330. The number of possible samples of size n from a population of N units with replacement is:
a. N^2
b. n^2
c. ∞
d. N !

331. The number of possible samples of size two from a population of 4 units as:
a. 2
b. 4
c. 8
d. 12

332. An unordered sample of size n can occur in:
a. N ways
b. n ! ways
c. one way
d. n^2ways

333. Sampling frame is a term used for:
a. a list of random numbers
b. a list of voters
c. a list of sampling units of a population
d. Census

334. In sample random sampling with replacement, the same sampling unit with may be included in the sample:
a. Only once
b. Only twice
c. More than once
d. Excluded

335. A population consisting of all the items which are physically present is called:
a. Hypothetical population
b. Real population
c. Infinite population
d. Finite population

336. A function of variates for estimating a parameter is called:
a. An estimate
b. An estimator
c. A frame
d. A statistic

337. The most important factor in determining the size of a sample is:
a. The availability of resources
b. Purpose of the survey
c. Heterogeneity of population
d. Homogeneous of population

338. If all observations in a set of observations are same, the variance of the set of values is:
a. Zero
b. One
c. Infinity
d. Not possible to calculate

339. As a normal practice, sampling fraction is considered to be negligible if it is:
a. Less than 10 per cent
b. Less than or equal to 5 per cent
c. More than 5 per cent
d. More than 10 per cent

340. Which one of the following statements does not hold good in case of stratified sampling?
a. Stratified sampling is convenient
b. Stratified sampling is always good
c. Enables to gather information about different stratum separately
d. Reduces error for fixed cost

341. Which one problem out of the four is not related to stratified sampling?
a. Fixing the criterion for stratification
b. Fixing the number of strata
c. Fixing the sample size
d. Fixing the points of demarcation

342. Regarding the number of strata, which statement is true?
a. Lesser the number of strata, better it is
b. More the number of strata, poorer it is
c. More the number of strata, better it is
d. Not more than ten items should be there in a stratum

343. Systematic sampling means:
a. Selection of *n* contiguous units
b. Selection of *n* units situated at equal distances
c. Selection of *n*largest units
d. Selection of *n* middle units in a sequence

344. If the number of population units N is an integral multiple of sampling size n, the systematic sampling is called:
a. Linear systematic sampling
b. Circular systematic sampling
c. Random systematic sampling
d. No-Random Sampling

345. Selected units of a systematic sample are:
a. Not easily locatable
b. Easily locateable
c. Not representing the whole population
d. Represent the whole population

346. Which of the following statements does not hold good?
a. An increase in sample size reduces the standard error
b. An increase in sample size decreases the sampling error
c. Decrease in sample size results in the reduction of population standard deviation
d. The precision of an estimate depends on sample size

347. A Population was divided into clusters and it was found that within cluster variationbetween clusters. If a sample of units was selected from each cluster, the sampling procedure used was:
a. Multistage sampling
b. Stratified sampling
c. Cluster sampling
d. Systematic sample

348. A population is perfectly homogeneous in respect of a characteristic. What size of sample would you prefer?
a. A large sample
b. A small sample
c. A single item
d. No item

349. Cluster sampling, stratified sampling and systematic sampling are types of
a) direct sampling
b) indirect sampling
c) random sampling
d) non random sampling

350. Listing of elements in population with identifiable number is classified as
a) regularity experimental frame
b) indirect experiment frame
c) direct experimental frame
d) frame for experiment

351. Type of sampling In which each element of population has equally likely chance of occurrence in a random sample is classified as
a) regular and irregular sampling
b) error free sampling
c) inertia sampling
d) simple random sampling

352. Quota sampling, judgment sampling and convenience sampling are classified as types of
a) random sampling
b) non random sampling
c) direct sampling
d) indirect sampling

353. If standard deviation of population is 35 and sample size is 9 then standard deviation of sampling distribution is

a) 12.67
b) 11.67
c) 13.67
d) 14.67

354. In systematic sampling, value of k is classified as

a) sampling interval
b) sub stage interval
c) secondary stage interval
d) multistage interval

355. Type of stratified proportion sampling in which information is gathered on convenience basis from different groups of population is classified as

a) purposive sampling
b) judgment sampling
c) quota sampling
d) convenience sampling

12. Probability

356. The outcome of tossing a coin is a :
a) Simple event
b) Mutually exclusive event
c) Complementary event
d) Compound event

357. Probability can take values
a) $-\infty$ to ∞
b) $-\infty$ to 1
c) -1 to 1
d) 0 to 1

358. Two events are said to be independent if:
a) Each outcome has equal chance of occurrence
b) There is no common point in between them
c) One does not affect the occurrence of the other
d) Both the events have only one point

359. If *A* and *B* are two events which have no point in common, the events *A* and *B* are:
a) Complementary to each other
b) Independent
c) Mutually exclusive
d) dependent

360. If A and B are two events, the probability of occurrence of either A or B is given as:
a) P (A) + P (B)
b) P (A U B)
c) P (A∩ B)
d) P (A) P (B)

361. If A and B are two events, the probability of occurrence of A and B simultaneously is given as:
a) P (A) + P (B)
b) P (A U B)
c) P (A∩ B)
d) P (A) P (B)

362. The probability of all possible outcomes of a random experiment is always equal to:
a) Infinity
b) Zero
c) One
d) -1

363. In a city 60 per cent read newspaper A, 40 per cent read newspaper B and 30 per cent read newspaper C, 20 per cent read A and B, 30 per cent read A and C, 10 per cent read B and C. Also 15 per cent read papers A, B and C. The percentage of people do not read any of these newspapers is:
a) 65 per cent
b) 15 per cent
c) 45 per cent
d) 25 per cent

364. If a bad contains 4 white and 3 black balls. Two draws of 2 balls are successively made, the probability of getting 2 white balls at first draw and 2 black balls at second draw when the balls drawn at first draw were replaced is:
a) 3/7
b) 1/7
c) 19/49
d) 2/49

365. In tossing three coins at a time, the probability of getting at most one head is:
a) 3/8
b) 7/8
c) 1/2
d) 1/8

366. There is 80 per cent chance that a problem will be solved by a statistics student and 60 per cent chance is there that the same problem will be solved by the mathematics student. The probability that at least the problem will be solved is:
a) 0.48
b) 0.92
c) 0.10
d) 0.75

367. The probability of two persons being borned on the same day (ignoring date) is:
a) 1/49
b) 1/365
c) 1/7
d) 1/10

368. An urn contains 5 red, 4 white and 3 black balls. The probability of three balls being of different colors when the ball is replaced after each draw is equal to:
a) 3/144
b) 4/144
c) 5/144
d) 1

369. From a pack of 52 cards, two cares are drawn at random. The probability that one is an ace and the other is a king is:
a) 2/13
b) 1/169
c) 16/169
d) 8/663

370. Two dice are rolled by two players A and B. A throws 10, the probability that B troughs more than A is:
a) 1/12
b) 1/6
c) 1/18
d) 1/24

371. There are two groups of students consisting of 4 boys and 2 girls: 3 boys and 1 girl. One students is selected from both the groups. The probability of one boy and one girl being selected is:
a) 1/9

b) 5/12
c) 1
d) 3/25

372. There are two bags. One bag contains 4 red and 5 black bills and the other 5 red and 4 black balls. One ball is to be drawn from either of the two bags. The probability of drawing a black ball is:
a) 1
b) 16/81
c) 1/2
d) 10/81

373. Four cards are drawn from a pack of 52 cards. The probability that out of 4 cards being 2 red and 2 black is:
a) 325/833
b) 46/833
c) 234/574
d) 46/574

374. A group consists of 4 men, 3 women and 2 boys. Three persons are selected at random. The probability that 2 men are selected is:
a) 3/28
b) 7/28
c) 5/28
d) 5/14

375. The probability that a leap year will have 53 Sunday is:
a) 1/7
b) 2/7
c) 2/53
d) 52/53

376. A coin is tossed six times. The probability of obtaining heads and tails alternately is:
a) 1/64
b) 1/2
c) 1/32
d) 1/16

377. Out of 20 employees in a company, five are graduates. Three employees are selected at random. The probability of all the three being graduates is:
a) 1/64
b) 1/125
c) 1/114
d) 1/32

378. The probability of a leap year selected at random contain 53 Sunday is:
a) 53/ 366
b) 1/7
c) 2/7
d) 53/365

379. A bag contains 3 red and 2 blue marbles. A marble is drawn at random. The probability of drawing a black ball is :
(a) 3/5

(b) 2/5
(c) 0/5
(d) 1/5

380. The probability that it will rain tomorrow is 0.85. What is the probability that it will not rain tomorrow
(a) 0.25
(b) 0.145
(c) 3/20
(d) 0.75

381. What is the probability that a number selected from the numbers (1, 2, 3,.....,15) is a multiple of 4?
a) 1/5
b) 4/5
c) 2/15
d) 1/3

382. What are the total outcomes when we throw three coins?
(a) 4
(b) 5
(c) 8
(d) 7

383. The probability that a prime number selected at random from the numbers (1,2,3, ...35) is :
(a) 12/35
(b) 11/35
(c) 13/35
(d) 14/35

384. The sum of the probability of an event and non event is :
(a) 2
(b) 1
(c) 0
(d) 0.5

385. The following probabilities are given; choose the correct answer for that which is not possible.
(a) 0.15
(b) 2/7
(c) 7/5
(d) 0.75

386. If three coins are tossed simultaneously, than the probability of getting at least two heads, is
(a) 1/4
(b) 3/8
(c) 1/2
(d) 1/8

387. A letter is chosen at random from the letters of the word ASSASSINATION. The probability that the letter chosen has:
(a) 6/13

(b) 7/13
(c) 1
(d) 8/13

388. What are the chances that no two boys are sitting together for a photograph if there are 5 girls and 2 boys?
a. 1/21
b. 4/7
c. 2/7
d. 5/7

389. What is probability of drawing two clubs from a well shuffled pack of 52 cards?
a. 13/51
b. 1/17
c. 1/26
d. 13/17

390. When two coins are tossed simultaneously, what are the chances of getting at least one tail?
a. 3/4
b. 1/5
c. 4/5
d. 1/4

391. In a drawer there are 4 white socks, 3 blue socks and 5 grey socks. Two socks are picked randomly. What is the possibility that both the socks are of same color?
a. 4/11
b. 1
c. 2/33
d. 19/66

392. In a drawer there are 5 black socks and 3 green socks. Two socks are picked randomly one after the other without replacement. What is the possibility that both the socks are black?
a. 5/14
b. 5/8
c. 3/8
d. 5/16

393. What is the possibility of having 53 Thursdays in a non-leap year?
a. 6/7
b. 1/7
c. 1/365
d. 53/365

394. A box has 5 black and 3 green shirts. One shirt is picked randomly and put in another box. The second box has 3 black and 5 green shirts. Now a shirt is picked from second box. What is the probability of it being a black shirt?
a. 4/9
b. 29/72
c. 8/72
d. 3/16

395. On rolling a dice 2 times, the sum of 2 numbers that appear on the uppermost face is 8. What is the probability that the first throw of dice yields 4?

a. 2/36
b. 1/36
c. 1/6
d. 1/5

396. A box has 6 black, 4 red, 2 white and 3 blue shirts. What is probability of picking at least 1 red shirt in 4 shirts that are randomly picked?
a. 4/15
b. 24/455
c. 69/91
d. 22/91

397. Suresh keeps all his socks in a single drawer. He has 24 pairs of white socks and 18 pairs of grey socks. Suresh picks 3 socks randomly. Find the possibility of Suresh choosing a matching pair.
a. 1/36
b. 1/108
c. 7/36
d. 1

398. Three unbiased coins are tossed. What is the probability of getting at least 2 tails?
a. 0.75
b. 0.5
c. 0.25
d. 0.2

399. Two friends A and B apply for a job in the same company. The chances of A getting selected is 2/5 and that of B is 4/7. What is the probability that both of them get selected?
a. 8/35
b. 34/35
c. 27/35
d. 9/35

400. Tickets numbered 1 to 50 are mixed and one ticket is drawn at random. Find the probability that the ticket drawn has a number which is a multiple of 4 or 7?
a. 9/25
b. 9/50
c. 18/25
d. 3/28

Answers of MCQ's

S. N.	Answer	S. No.	Answer	S. No.	Answer	S. No.	Answer	S. No.	Answer
1.	a	2.	b	3.	b	4.	c	5.	d
6.	a	7.	d	8.	c	9.	c	10.	b
11.	c	12.	d	13.	c	14.	d	15.	c
16.	a	17.	a	18.	c	19.	c	20.	a
21.	a	22.	c	23.	b	24.	c	25.	d
26.	d	27.	c	28.	c	29.	d	30.	b
31.	a	32.	b	33.	d	34.	b	35.	c
36.	d	37.	a	38.	b	39.	a	40.	a
41.	c	42.	d	43.	b	44.	b	45.	b
46.	a	47.	a	48.	b	49.	a	50.	c
51.	c	52.	d	53.	d	54.	c	55.	b
56.	a	57.	d	58.	a	59.	c	60.	b
61.	d	62.	b	63.	b	64.	d	65.	b
66.	c	67.	d	68.	b	69.	c	70.	a
71.	d	72.	a	73.	b	74.	a	75.	d
76.	b	77.	b	78.	c	79.	a	80.	b
81.	d	82.	a	83.	c	84.	d	85.	a
86.	d	87.	c	88.	b	89.	c	90.	b
91.	a	92.	b	93.	b	94.	a	95.	b
96.	c	97.	a	98.	c	99.	a	100.	b
101.	c	102.	d	103.	c	104.	a	105.	a
106.	d	107.	b	108.	c	109.	a	110.	c
111.	b	112.	c	113.	c	114.	b	115.	c
116.	d	117.	a	118.	a	119.	b	120.	b
121.	a	122.	d	123.	c	124.	a	125.	b
126.	a	127.	c	128.	b	129.	c	130.	c
131.	b	132.	c	133.	a	134.	d	135.	d
136.	d	137.	b	138.	b	139.	c	140.	b
141.	c	142.	d	143.	b	144.	d	145.	b
146.	b	147.	d	148.	b	149.	a	150.	a
151.	c	152.	a	153.	a	154.	c	155.	b
156.	c	157.	d	158.	d	159.	a	160.	c
161.	c	162.	d	163.	c	164.	a	165.	b
166.	a	167.	b	168.	a	169.	d	170.	c
171.	b	172.	d	173.	c	174.	d	175.	b
176.	b	177.	c	178.	a	179.	d	180.	a
181.	d	182.	d	183.	a	184.	c	185.	b
186.	c	187.	a	188.	d	189.	a	190.	d
191.	d	192.	c	193.	c	194.	a	195.	b
196.	b	197.	b	198.	b	199.	c	200.	b
201.	a	202.	c	203.	b	204.	a	205.	a
206.	a	207.	b	208.	a	209.	b	210.	c
211.	a	212.	b	213.	a	214.	d	215.	b
216.	d	217.	b	218.	b	219.	a	220.	c
221.	b	222.	c	223.	b	224.	d	225.	a
226.	c	227.	b	228.	d	229.	a	230.	c
231.	d	232.	c	233.	b	234.	b	235.	c

236.	a	237.	b	238.	b	239.	a	240.	c
241.	b	242.	b	243.	d	244.	c	245.	a
246.	a	247.	c	248.	b	249.	b	250.	a
251.	a	252.	b	253.	c	254.	c	255.	a
256.	b	257.	a	258.	c	259.	b	260.	c
261.	a	262.	c	263.	b	264.	b	265.	a
266.	c	267.	b	268.	d	269.	a	270.	c
271.	d	272.	a	273.	b	274.	c	275.	d
276.	c	277.	c	278.	d	279.	d	280.	c
281.	b	282.	a	283.	b	284.	c	285.	d
286.	a	287.	b	288.	b	289.	b	290.	b
291.	a	292.	c	293.	c	294.	b	295.	c
296.	c	297.	b	298.	b	299.	c	300.	c
301.	c	302.	a	303.	d	304.	b	305.	c
306.	c	307.	a	308.	c	309.	a	310.	b
311.	c	312.	a	313.	b	314.	c	315.	a
316.	c	317.	b	318.	a	319.	a	320.	c
321.	a	322.	a	323.	b	324.	c	325.	b
326.	c	327.	c	328.	d	329.	a	330.	c
331.	d	332.	b	333.	c	334.	c	335.	b
336.	b	337.	c	338.	a	339.	b	340.	b
341.	c	342.	c	343.	b	344.	a	345.	a
346.	c	347.	b	348.	c	349.	c	350.	d
351.	a	352.	b	353.	b	354.	a	355.	c
356.	a	357.	b	358.	c	359.	c	360.	b
361.	c	362.	c	363.	b	364.	b	365.	c
366.	b	367.	c	368.	c	369.	d	370.	a
371.	b	372.	c	373.	a	374.	d	375.	b
376.	c	377.	c	378.	a	379.	c	380.	c
381.	a	382.	c	383.	b	384.	b	385.	c
386.	c	387.	b	388.	d	389.	b	390.	a
391.	d	392.	a	393.	b	394.	b	395.	b
396.	c	397.	d	398.	b	399.	a	400.	a