Question Bank for Statistics Part – 1

Chapter – 1

1. Define statistics.
2. Define population and sample.
3. Define population.
4. Write down characteristics of statistics.
5. Define statistics and data.
6. What is primary data?
7. Define secondary data.
8. Distinguish between primary and secondary data.
9. What is discrete variable?
10. Describe any two uses of statistics.
11. Define variable.
12. What is constant?
13. Define discrete variable.
14. Define descriptive statistics.

Chapter – 2

1. What do you meant by the term ‘classification’?
2. Define tabulation.
3. Differentiate between class limits and class boundaries.
4. What is meant by relative frequency of a class?
5. Define frequency distribution.
6. Define class marks.
7. Define histogram.
8. What is the table?
9. Define class boundaries.
10. What are class limits?
11. What is grouped data?
12. What is simple classification?

Chapter – 3

1. What is central tendency?
2. What is meant by measures of central tendency?
3. Write the types of averages.
4. What are two qualities of a good average?
5. Mean of 5 values is 70. Find the sum of values.
6. The mean of 10 values is 20. If one more value is included, the mean becomes 22, find included value?
7. In a moderately skewed distribution, the values of mean and median are 120 and 110 respectively, find the value of mode.
8. Given $u = (x - 170)/5$, $\sum fu = 100$, $\sum f = 200$, find arithmetic mean.
9. Write down any two mathematical properties of arithmetic mean.
10. Define mode and give its formula in case of grouped data.
11. Find the mode of 3, 3, 7, 8, 10, 11, 10, 12.
12. Define the median with formula.
13. Define quartiles; also write down its formulas.
14. If the value of Q_2, D_5 and P_{50} are equal to 72.32 then find the median of the distribution.
15. Define geometric mean with formula.
16. If geometric mean of 3 items is 7, find the product of all items?
17. Find harmonic mean of 5, 10, 20.
18. Define weighted mean.
19. Define harmonic mean.
20. Calculate geometric mean of X = 1, 1, 27.
21. Write down any two demerits of geometric mean.
22. In a moderately skewed distribution, mean =100, mode = 95 and S.D. = 10. Find coefficient of skewness.
23. Write two properties of A.M.
24. Write down any two demerits of harmonic mean.
25. Write two properties of G.M.
26. Write down any two demerits of Arithmetic mean.
27. Find A.M. if $\sum fx = 500$ and $\sum f = 50$.
28. If G.M. of two values is 3. Find the product of two values.
29. Illustrate the graphically positions of mean, median and mode for frequency curve which are skewed to the right and left.
30. What are the merits of mode?
31. If $\bar{y}_1 = 3$ with $n_{1=}$ 3and $\bar{y}_2 = 4$ with $n_{2=}2$, then find $\bar{y}_c$.
32. Define average.
33. Identify arithmetic mean, geometric mean and harmonic mean from the following figures 29.5, 32.9 and 18.4.
34. For a certain frequency distribution, the mean was 40.5 and median 36. Find mode by using of empirical relation.

Chapter – 4

1. Write any two advantages of the range.
2. Define relative dispersion.
3. What is quartile deviation?
4. Define mean deviation.
5. Write any two properties of standard deviation.
6. Give two properties of variance.
7. Given that mean = 156.17, median = 153.50 and standard deviation = 19.03. Calculate coefficient of skewness.
8. What is the use of coefficient of variation?
9. What do you say about the relative dispersion of 5, 5, 5, 5?
10. If $S^2 = 36$ and $\overline{X} = 18$, what is coefficient of variation?
11. If variance of the value of '*X*' is 25, what is the standard deviation of *X*?
12. If S.D(X) = 10, then find the standard deviation of 5X?
13. What is meant by symmetry?
14. Explain the moments about mean.
15. Define skewness.
16. Distinguish between positive and negative skewness with diagrams.
17. What are four types of measures of dispersion?
18. Define the term variance.
19. For a symmetrical distribution S.D. = 2. What is value of 4^{th} moment about mean for mesokurtic data?
20. What do you know about kurtosis?
21. If $b_2 = 3$ and $m_4 = 1875$, then what will be the standard deviation?
22. What is meant by absolute dispersion?
23. Write four measures of relative dispersion.
24. If $s_x^2 = 5$, and y =2x, then what will be the value of variance of y?
25. Write down the bowley's formula of coefficient of skewness.
26. If first moment about number 2 is equal to 5, then find mean.
27. Calculate lower quartile from the given data: 13, 3, 7, ,15, 17, 5, 23, 27
28. Compute coefficient of quartile deviation if $Q_1 = 10.20$ and $Q_3 = 58.29$
29. Define standard deviation.
30. What is meant by dispersion?
31. Define measure of dispersion.
32. Define range.
33. What is the range of Bowley's coefficient of skewness?
34. If $u_2 = 4$ and $u_4 = 56$, find β_2.
35. If var(X) = 4, then find var(3X).
36. What are the measures of absolute dispersion?
37. If var(x) = 10 and y = 5x + 20, then find var(y).
38. S.D. of a distribution is 4. Find second moment about mean.

Chapter – 5

1. Define price index number.
2. Define index number.
3. Give any two uses of index numbers.
4. Define base period.
5. Define composite index number
6. Define price relative.
7. Define un-weighted index number.
8. What is the relationship between Laspeyre's, Paasche's and Fisher's ideal index number?
9. Given $\sum P_0$ =2550 and $\sum P_n$ = 2590. Find price index number using simple aggregative method.
10. Given $\sum p_0 q_n$ = 1000 and $\sum p_n q_n$ = 1360, find current year weighted index.
11. Given $\sum p_0 q_0$ = 850, $\sum p_1 q_0$ = 1170. Find Laspayre's price index number.
12. If $\sum p_1 q_1$ = 480, $\sum p_0 q_1$ = 410, find current year weighted index number?
13. If $\sum p_0 q_0$ = 322; $\sum p_1 q_0$ = 340; $\sum p_1 q_1$ = 362 and $\sum p_0 q_1$ = 326, find Fisher's price index number?
14. Which averages are used in index numbers? Name any two.
15. Define consumer price index number.
16. Differentiate between fixed base and chain base method.
17. Given Laspayre's price index number = 120 and Paasche's price index number = 119.6, then find Fisher's index number.
18. If Paasche's index number is 105.72 and Laspeyre's index number is 107.22, then find Fisher's index number?
19. Given ∑w = 20, ∑wI = 1800. Find the cost of living index number by weighted average of relatives method.
20. Define simple and composite index numbers.
21. Define paasche's index numbers.
22. Given $\sum p_0 = 660$, $\sum p_1 = 924$ and $\sum p_2 = 1056$, then compute simple aggregative price index number.
23. Given $\sum p_1 q_o = 1250$ and $\sum p_o q_o = 1200$, find base year weighted index number.
24. Define weighted index number.
25. If $\sum p_o q_o$ =362, $\sum p_1 q_o = 428$, $\sum p_o q_1 = 398$, $\sum p_1 q_1 = 470$, then compute fisher's index number.
26. Write down two advantages of chain base method.
27. Find paasche's price index number given that: $\sum p_1 q_1 = 1210$ and $\sum p_o q_1 = 850$
28. Find C.P.I. if ∑w = 70, ∑wI = 800
29. Why fisher index number is called ideal?
30. Given $\sum p_n q_o = 240$ and $\sum p_o q_o = 210$, find base year weighted index number.
31. Define link relative.
32. What are limitations of index numbers?
33. Find fisher's index number if laspeyer's = 108.78 and paasche's = 109.21

Chapter – 6

1. What is meant by equally likely events?
2. What is meant by exhaustive events?
3. What is meant by permutation?
4. Give classical definition of probability.
5. Define sample space.
6. What is sample point?
7. Define composite event.
8. What are independent events?
9. What is meant by dependent events?
10. Differentiate between simple event and compound event.
11. State addition law of probability for mutually exclusive events.
12. What do you mean by not-mutually exclusive events?
13. Explain mutually exclusive events.
14. If $P(A) = 1/3$, $P(AUB) = ½$ and $P(AnB) = 1/10$, find $P(B)$.
15. If $P(A) = 0.4$, $P(B) = 0.25$, $P(AnB) = 0.38$, compute $P(Á)$ and $P(AUB)$?
16. If $P(A) = ½$ and $P(B) = 1/3$, find $P(AnB)$, if '*A*' and '*B*' are independent events?
17. Given $P(A) = 0.3$, $P(B) = 0.4$ and $P(A \text{ and } B) = 0.20$. Are '*A*' and '*B*' statistically independent?
18. What is the probability of getting both sixes when two fair dice are thrown simultaneously?
19. A fair die is rolled, what is the probability of getting an odd number?
20. What is a venn diagram?
21. For two mutually exclusive events A and B if P(A) = 0.25 and P(B) = 0.40, then find P(AUB).
22. Define non-mutually exclusive events.
23. Define event.
24. What will be the sample space if two coins are tossed?
25. A card is selected from 52 playing cards. What is probability that the card is king?
26. If P(A) = 0.5 and P(B) = 0.2, find P(AUB) when 'A' and 'B' are mutually exclusive events.
27. Find P(B/A) if $P(A \cap B) = 0.3$ and P(A) = 0.7.
28. What is the range of probability?
29. Define the term combination.

Chapter – 7, 8

1. What is discrete random variable?
2. What is a random variable?
3. Define continuous random variable.
4. What is distribution function?
5. Define probability density function.
6. What are the properties of discrete probability distribution?
7. What is meant by mathematical expectation of a random variable?
8. Enlist two properties of expectation.
9. Given $X = 0, 1, 2$ and $P(X) = 9/16, 6/16, 1/16$, find variance of X.
10. Given the probability distribution. Find K.
    $X = 0, 1, 2, 3, 4$ and $P(X) = 1/210, 20/210, K, 70/210, 10/210$.
11. Given that $f(x) = x/10$, x = 1, 2, 3, 4. Show that $f(x)$ is a probability function.
12. Given $f(x) = k/x^2$, $x = 1, 2$, find k.
13. Given $x = 0, 2, 3$ and $f(x) = |1 - X|/4$, find $E(X)$.
14. Given $E(X) = 0.63$ and $Var(X) = 0.2331$ then find $E(X^2)$.
15. Given $E(X) = 5$ and $Var(X) = 1$, find $E(2 - 3X)$ and $Var(2 - 3X)$.
16. Given $X = 1, 2, 3, 4, 5$ and $P(X) = 1/10, 3/10, P, 2/10, 1/10$. Find the value of P.
17. Find the probability distribution of the number of heads when two coins are tossed.
18. Define random experiment.
19. Enlist properties of probability mass function.
20. Enlist two properties of expectations.
21. If E(X) = 1.4, then find E(5x – 4).
22. Define mathematical expectation of a random variable.
23. Given: E(x) = 0 and $E(x^2) = 8/9$. Find $E(3x^2 - 2x + 5)$.
24. Given: E9x) = 0.56, var(x) = 1.36 and if y =2x + 1, then find E9y) and var(y).

Chapter – 9

1. Define a Bernoulli trial.
2. Define random experiment.
3. Define binomial distribution.
4. Define binomial probability distribution.
5. Define binomial experiment.
6. A random variable X has a binomial distribution with $n = 5$ and $p = 0.2$, find $P(X = 2)$.
7. A random variable *'X'* is binomially distributed when $n = 15$ and $p = 0.4$. Find mean and variance of *'X'*.
8. In binomial distribution, mean = 6 and Var = 2.4, find parameters of binomial distribution.
9. Find the number of trails of a binomial distribution which has mean = 12 and S.D = 2
10. A coin is tossed 5 times. What is the probability of getting exactly 3 heads?
11. Define hypergeometric experiment.
12. What are the properties of hypergeometric distribution?
13. What are the parameters of the hypergeometric distribution?
14. What is mean and variance of hypergeometric distribution with parameters *N, n, K*?
15. State the formula of variance of hypergeometric distribution.
16. What are the properties of binomial distribution?
17. Given $N = 10$, $n = 4$ and $K = 5$, find $E(X)$.
18. In a hypergeometric distribution $N = 10$, $n = 2$ and $k = 3$, find $P(X=0)$
19. If $N = 11$, $n = 5$, $k = 7$, find variance of the hypergeometric distribution?
20. If 'x' is a binomial random variable with n = 9 and p = 1/3, then find S.D.(3+2x)?
21. In a binomial distribution mean = 36 and q = 0.83, find 'n' and 'p'?
22. Given N = 10, n = 4 and K = 5. Find P(X=1).