
	<b>OBJECTIVE</b>	<b>MARKS: 17</b>
<b>NOTE</b> 	You have four choices for each objective type question as A, B, C and D. The choice which you think is correct; fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.	

**QUESTION NO. 1** 11th Class Statistics Objective Paper DG Khana Board 2024

1	Statistical results are (A) exact (B) always true (C) not true (D) true on average
2	If C is a constant, then $\sum_{i=1}^8 C$ is equal to (A) $8 + C$ (B) $8 - C$ (C) $8 C$ (D) $\frac{8}{C}$
3	The number of items of data in a class is called (A) Frequency (B) Variable (C) Parameter (D) Mid point
4	Ogive can be used for the calculation of (A) Mean (B) Median (C) Mode (D) Harmonic mean
5	Mode of the series 10, 13, 12, 10, 20, 11, 15, 10, 14, 12 is (A) 10 (B) 12 (C) 15 (D) 20
6	If $\sum_{i=1}^{10} (x_i - 50) = 100$ , then sample mean $\bar{X}$ will be (A) 10 (B) 50 (C) 60 (D) 100
7	Second moment about mean is (A) Zero (B) Variance (C) Range (D) Mode
8	Mean deviation of values 6, 6, 6, 6, 6, 6 is (A) 36 (B) 6 (C) 1 (D) 0
9	Cost of living index numbers are (A) Simple index (B) Composite index (C) Chain index (D) Unweighted index
10	The most suitable average in chain base method is (A) Median (B) Mode (C) Arithmetic mean (D) Geometric mean
11	The orderly arrangement of units is called (A) Permutation (B) Combination (C) Probability (D) Factorial
12	A set of all possible outcomes of an experiment is called (A) Combination (B) Sample point (C) Sample space (D) Simple event
13	A discrete probability function $f(x)$ is always (A) Non-negative (B) Negative (C) One (D) Zero
14	The appropriate graph of probability density function is (A) Polygon (B) Curve (C) Histogram (D) Histogram
15	In a Bernoulli trial the experiment is performed (A) Once (B) Twice (C) Thrice (D) More than once
16	The parameters of the binomial distribution are (A) n and x (B) p and x (C) p and q (D) n and p
17	In a hypergeometric distribution $N = 6$ , $n = 4$ and $K = 3$ , then mean is equal to (A) 1 (B) 2 (C) 3 (D) 4



**QUESTION NO. 2 Write short answers to any Eight (8) parts of the following** **16**

(i) Define Discret Variable.	(ii) Describe the importance of Statistic in Economics.
(iii) Write any two characteristics of Statistics.	(iv) Enlist any two advantages of mode.
(v) Find Geometric Mean (G.M) If $\sum f \log x = 170.69902$ , $\sum f = 80$	(vi) If median = 65 & mode = 85 Find the value of mean.
(vii) Define Harmonic Mean (H.M)	(viii) Find Mode 2, 5, 7, 11, 3, 5, 11, 13, 5
(ix) Given $\sum p_0 q_1 = 402$ & $\sum p_1 q_1 = 481$ Find current year Weighted index number.	(x) Given $\sum p_1 q_0 = 900$ & $\sum p_0 q_0 = 897$ Find Cost of Living index number.
(xi) Define Fisher's Ideal index number.	(xii) Write any two uses of index Number

**QUESTION NO. 3 Write short answers to any Eight (8) parts of the following** **16**

(i) Define relative frequency.	(ii) What is one way and two way classification?
(iii) Differentiate between class limits and class boundaries.	(iv) Compute coefficient of quartile deviation if $Q_1 = 12$ , $Q_3 = 48$
(v) Define mean deviation.	(vi) Describe any two demerits of Range.
(vii) Given $\bar{x} = 12$ and $\text{Var}(x) = 3$ , Find $\bar{y}$ and $\text{Var}(\bar{y})$ When $y = 2x - 3$	(viii) Compute coefficient of variation if mean = 1.2 and $S = 1.307$
(ix) Make a sample space if we toss a fair coin three times.	(x) How many permutations can be formed from the word "STATISTICS".
(xi) Give the statement of addition law of probability for two non-mutually exclusive events.	(xii) If $P(A) = \frac{1}{4}$ , $P(B) = \frac{1}{3}$ and $P(A/B) = \frac{1}{6}$ , then find $P(B/A)$ .

**QUESTION NO. 4 Write short answers to any Six (6) parts of the following** **12**

(i) Explain the continuous random variable with example.	(ii) Write the properties of Distribution function.
(iii) For the probability function $f(x) = Ax$ , $x = 1, 2, 3$ , Compute the value of A.	(iv) Check whether $f(x) = \frac{x}{10}$ , $x = 1, 2, 3, 4$ is a probability density function.
(v) Find the E(X) for a binomial distribution with $n = 6$ and $p = \frac{3}{5}$	(vi) Describe the shape of binomial distribution with $p = 0.5$
(vii) A hypergeometric distribution has parameters $N = 8$ , $k = 4$ and $n = 3$ Give its mean.	(viii) Enlist any two properties of hypergeometric distribution
(ix) Give the range of the hypergeometric random variable.	

**SECTION-II**

**Note: Attempt any Three questions from this section**

**8×3 = 24**

Q. 5	<p>(A) Find Median and <math>D_7</math> from the given data 15, 7, 3, 0, 9, 6, 4, 5</p> <p>(B) Find Mode from the following distribution.</p> <table border="1" data-bbox="464 1288 1219 1350"> <tr> <td>Height (in)</td><td>60 – 62</td><td>63 – 65</td><td>66 – 68</td><td>69 – 71</td></tr> <tr> <td>No. of Students</td><td>5</td><td>18</td><td>27</td><td>8</td></tr> </table>	Height (in)	60 – 62	63 – 65	66 – 68	69 – 71	No. of Students	5	18	27	8																			
Height (in)	60 – 62	63 – 65	66 – 68	69 – 71																										
No. of Students	5	18	27	8																										
Q. 6	<p>(A) Find Standard Deviation and Variance.</p> <table border="1" data-bbox="333 1384 1348 1447"> <tr> <td>Classes</td><td>10 – 20</td><td>20 – 30</td><td>30 – 40</td><td>40 – 50</td><td>50 – 60</td><td>60 – 70</td><td>70 – 80</td></tr> <tr> <td>f</td><td>02</td><td>03</td><td>04</td><td>20</td><td>15</td><td>07</td><td>05</td></tr> </table> <p>(B) From the data 1, 4, 7, 8, 10 calculate first four moments about mean.</p>	Classes	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80	f	02	03	04	20	15	07	05													
Classes	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80																							
f	02	03	04	20	15	07	05																							
Q. 7	<p>(A) Compute the index numbers of price , taking 1962 as base (i) Mean (ii) G.M are used as average.</p> <table border="1" data-bbox="430 1527 1248 1684"> <tr> <th rowspan="2">Years</th><th colspan="4">Commodities</th></tr> <tr> <th>Fire wood</th><th>Short cake</th><th>Kerosene oil</th><th>Matches</th></tr> <tr> <td>1962</td><td>3.25</td><td>2.50</td><td>0.20</td><td>0.06</td></tr> <tr> <td>1963</td><td>3.44</td><td>2.80</td><td>0.22</td><td>0.06</td></tr> <tr> <td>1964</td><td>3.50</td><td>2.00</td><td>0.25</td><td>0.06</td></tr> <tr> <td>1965</td><td>3.75</td><td>2.50</td><td>0.25</td><td>0.06</td></tr> </table> <p>(B) From a well shuffled pack of 52 playing cards, two cards are drawn at random, what is the probability (i) One is a king and other is queen (ii) both are aces (iii) both are black (iv) both are spade cards ?</p>	Years	Commodities				Fire wood	Short cake	Kerosene oil	Matches	1962	3.25	2.50	0.20	0.06	1963	3.44	2.80	0.22	0.06	1964	3.50	2.00	0.25	0.06	1965	3.75	2.50	0.25	0.06
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1965	3.75	2.50	0.25	0.06																										
Q. 8	<p>(A) Given that</p> <table border="1" data-bbox="643 1796 1032 1874"> <tr> <td>X</td><td>2</td><td>4</td><td>6</td></tr> <tr> <td>P(X)</td><td><math>\frac{2}{6}</math></td><td><math>\frac{2}{6}</math></td><td><math>\frac{2}{6}</math></td></tr> </table> <p>Find (i) <math>E(X)</math> (ii) <math>E(X^2)</math></p> <p>(B) A continuous random variable X which can assume values between <math>X = 2</math> and <math>X = 8</math> inclusive has a density Function , <math>f(x) = A(x+3)</math> , where 'A' is constant , Find (i) A (ii) <math>P(3 \leq x \leq 5)</math></p>	X	2	4	6	P(X)	$\frac{2}{6}$	$\frac{2}{6}$	$\frac{2}{6}$																					
X	2	4	6																											
P(X)	$\frac{2}{6}$	$\frac{2}{6}$	$\frac{2}{6}$																											
Q. 9	<p>(A) A fair die is thrown 6 times. Let X be a random variable showing number of sixes. Find (i) <math>P(X = 2)</math> (ii) <math>P(X = 6)</math></p> <p>(B) A Committee of size 3 is selected from 4 men and 2 women. Obtain the probability distribution by the hypergeometric experiment for the number of men in the committee.</p>																													



**OBJECTIVE**

NOTE: You have four choices for each objective type question as A , B , C and D . The choice which you think is correct , fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

**QUESTION NO. 1**

- 1 Correlation co-efficient between X and X is  
(A) 0 (B) -1 (C) +1 (D) -1 to +1
- 2 Co-efficient of association Q lies between  
(A) 0 to +1 (B) -1 and +1 (C) -∞ and +1 (D) -∞ to +∞
- 3 The shape of  $\chi^2$  - distribution depends upon  
(A) Mean (B) Degrees of freedom (C) Number of cells (D) S.D
- 4 A sudden decrease in supplies due to floods is  
(A) Secular trend (B) Seasonal variations (C) Cyclical variations (D) Irregular variations
- 5 A sequence which follow regular variations is called  
(A) Signal (B) Noise (C) Model (D) Trend
- 6 One byte equals  
(A) 8 bits (B) 4 bits (C) 6 bits (D) 12 bits
- 7 Shape of normal curve is  
(A) J (B) L (C) Bell (D) Circle
- 8 In a normal distribution  $E(x - \mu)^2$  is  
(A) Q.D (B) S.D (C) Variance (D) M.D
- 9 The maximum ordinate of standard normal curve is at  
(A) 0 (B) 1 (C)  $\mu$  (D)  $\sigma$
- 10 In sampling with replacement the population becomes  
(A) Infinite (B) Existent (C) Finite (D) Hypothetical
- 11 Non probability form of sampling is  
(A) Quota sampling (B) Random sampling (C) Stratified sampling  
(D) Systematic sampling
- 12 In sampling with replacement  $\sigma_{\bar{x}} = \dots\dots\dots$   
(A)  $\frac{\sigma}{n}$  (B)  $\frac{\sigma}{\sqrt{n}}$  (C)  $\frac{\sigma^2}{n}$  (D)  $\frac{\sigma}{\sqrt{n}} \cdot \frac{N-n}{N-1}$
- 13 A formula or function used to estimate a parameter is called  
(A) Estimate (B) Estimation (C) Bias (D) Estimator
- 14 Which of the following cannot be null hypothesis  
(A)  $\theta \leq \theta_0$  (B)  $\theta \geq \theta_0$  (C)  $\theta = \theta_0$  (D)  $\theta \neq \theta_0$
- 15 Probability of rejecting true hypothesis is called  
(A) Critical region (B) Level of significance (C) Test statistic (D) Power of test
- 16 In the regression equation  $Y = a + bx$  , “a” is the  
(A) Y-intercept (B) Slope (C) X-intercept (D) Trend
- 17 In least squares regression line  $\Sigma(Y - \hat{Y})^2$  is always  
(A) Negative (B) Non-negative (C) Zero (D) Fractional



**QUESTION NO. 2 Write short answers any Eight (8) parts of the following**



- Describe relationship between Mean, Median and Mode of the normal distribution
- If  $X \sim N(15, 4)$ , Find the value  $Z$ , if  $x = 18$
- What is standard normal distribution?
- Write down the lower and upper quartile of the normal distribution
- In normal distribution,  $\mu = 9$ ,  $Q_3 = 171$  Find standard deviation
- Define Estimation
- What is point estimation?
- Explain statistical inference
- Define composite hypothesis
- What is type-I error?
- Define input devices
- Distinguish between hardware and software

**QUESTION NO. 3 Write short answers any Eight (8) parts of the following**

16

- Find standard error of  $\bar{X}$  if  $N = 5$ ,  $n = 2$ ,  $\sigma^2 = 10$  if sampling is done without replacement
- Define probability sampling and non-probability sampling
- Define simple random sampling and stratified random sampling
- Write formulae of mean and variance of sampling distribution of mean without replacement
- What are two disadvantages of non-probability sampling?
- Distinguish between probability and non-probability sampling
- What is objective of correlation and of regression?
- Write any two properties of intercept  $a_{yx}$
- How would you interpret  $a_{yx} = 3$ ?
- Find  $\gamma$  if  $b_{xy} = 4$ ,  $S_y = 2$ ,  $S_x = 10$
- Write any two real life applications of regression
- Define intercept and slope of a regression line. Write formulae of  $a_{yx}$

**QUESTION NO. 4 Write short answers any Six (6) parts of the following**

12

- Define ultimate class frequency
- Discuss negative association
- The value of  $r_s = 0.19$  for 8 students in two subjects. Find  $\Sigma d^2$
- Give two examples of secular trend
- What is seasonal variation?
- Write down the components of time series
- What is Histogram?
- What do you mean by analysis of time series?
- Given  $\hat{y} = 50 + 2x$  with origin at 1983 and unit of  $x$  is one year. Shift the origin at 1980

**SECTION-II**

**Note: Attempt any Three questions from this section**

**8×3 = 24**

- Q. 5(a)** Let  $X$  be normally distributed with mean 8 and standard deviation 4. Find (i)  $P[4 \leq X \leq 12]$  (ii)  $P[X \leq 3]$
- (b)** Let  $X \sim N(40, 64)$  then find the single point which has 90 % area below it
- Q. 6(a)** The random variable  $X$  has the following probability distribution
- |        |     |     |     |     |
|--------|-----|-----|-----|-----|
| $x$    | 4   | 5   | 6   | 7   |
| $P(x)$ | 0.2 | 0.4 | 0.3 | 0.1 |
- Find the mean  $\mu_x$ , variance  $\sigma_x^2$  and standard errors  $\sigma_{\bar{x}}$  of the mean  $\bar{X}$  for a random sample of size 36
- (b)** Suppose that 60 % of a city population favours public finding for a proposed recreational facility. If 150 persons are to be randomly selected and interviewed, what is the mean and standard errors of the sample proportion favouring this issue
- Q. 7(a)** A random sample of size 36 is taken from a normal population with a known variance  $\sigma^2 = 25$ . If the mean of the sample is 42.6, find 95 % confidence limits for the population mean
- (b)** A random sample of nine from the men of a large city gave a mean height of 68" and variance  $s^2 = 4.5$  (inches)<sup>2</sup>. Test  $H_0: \mu = 68.5$  against  $H_1: \mu \neq 68.5$
- Q. 8(a)** Find regression equation of  $Y$  on  $X$  of the following data
- |     |   |   |    |    |    |
|-----|---|---|----|----|----|
| $X$ | 1 | 2 | 3  | 4  | 5  |
| $Y$ | 5 | 8 | 14 | 13 | 18 |
- (b)** Find the correlation co-efficient  $r_{xy}$  for a given set of data of two regression lines
- $$\hat{Y} = 20.8 - 0.219 X$$
- $$\hat{X} = 16.2 - 0.785 Y$$
- Also show that  $r$  is symmetrical and interpret the results
- Q. 9(a)** Find the rank correlation co-efficient for the following set of data
- |          |   |   |    |    |   |   |   |   |   |   |   |
|----------|---|---|----|----|---|---|---|---|---|---|---|
| Rank (X) | 8 | 3 | 10 | 11 | 5 | 9 | 7 | 1 | 4 | 2 | 6 |
| Rank (Y) | 6 | 1 | 10 | 11 | 2 | 9 | 8 | 5 | 7 | 3 | 4 |
- (b)** Fit a linear trend to the following information for the year 1986 to 1992 (both inclusive)
- $\Sigma x = 0$ ,  $\Sigma y = 245$ ,  $\Sigma x^2 = 28$  and  $\Sigma xy = 66$ . Also compute the trend values



**NOTE:** You have four choices for each objective type question as A , B , C and D . The choice which you think is correct , fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

**QUESTION NO. 1**

- 1 Research journals and newspapers are the sources of  
(A) Primary data (B) Secondary data (C) Grouped data (D) Un-grouped data
- 2 The number of values falling against a particular class is called  
(A) Mid point (B) Class mark (C) Class limit (D) Frequency
- 3 In the construction of ogive ..... are marked along Y-axis  
(A) Frequency (B) Class boundaries (C) Cumulative frequency  
(D) upper class boundaries
- 4 First quartile is equal to .....  
(A)  $P_{25}$  (B)  $D_3$  (C)  $D_5$  (D) Median
- 5 For open end frequency distribution ..... cannot be calculated  
(A) Median (B) Arithmetic mean (C) Mode (D) Upper quartile
- 6 Harmonic mean cannot be computed if any value in the data is  
(A) Negative (B) Fractional (C) Positive (D) Zero
- 7 Second moment about mean is  
(A) Zero (B) One (C) Variance (D) Standard deviation
- 8  $SD(bx) = \dots\dots\dots$   
(A)  $|b| SD(x)$  (B)  $bSD(x)$  (C)  $SD(x)$  (D)  $b^2SD(x)$
- 9 A frequency distribution is leptokurtic if  
(A)  $b_2 < 3$  (B)  $b_2 > 3$  (C)  $b_2 = 3$  (D)  $b_1 = 0$
- 10 Most suitable average for index numbers is  
(A) Mean (B) Median (C) Mode (D) G.M
- 11 Base year quantities are used as weights in  
(A) Fisher's ideal index No. (B) Paasche's index No. (C) Laspeyere's index No.  
(D) Chain index No.
- 12 Probability of drawing red card of spade from a pack of playing cards is  
(A) 0 (B) 1 (C)  $\frac{1}{2}$  (D)  $\frac{1}{4}$
- 13 For mutually exclusive events A and B  $P(A \cap B)$  is  
(A)  $P(A)P(B|A)$  (B)  $P(A)P(B)$  (C)  $P(B)P(A|B)$  (D) 0
- 14 For a random variable X,  $\sum P(x) = \dots\dots\dots$   
(A) 0 (B) 1 (C)  $< 1$  (D)  $> 1$
- 15  $Y = 2x - 8$  and  $Var(x) = 3$  then  $Var(y) = \dots\dots\dots$   
(A) 3 (B) 6 (C) 12 (D) 20
- 16 Variance of binomial distribution is  
(A) npq (B) np (C)  $n^2p$  (D)  $(npq)^2$
- 17 A hyper geometric distribution has parameters 15 , 5 and 3 , its mean is  
(A) 15 (B) 5 (C) 3 (D) 1



**QUESTION NO. 2** Write short answers any Eight (8) parts of the following **DG Khan Board-2022** 16

- Differentiate between population and sample
- Define variable
- Find median of 0, -1, -3, 3, 2
- Define mode and give an empirical relationship between mean, median and mode
- Define Harmonic Mean with its formula
- Write down the advantages of A.M
- If the mean and G.M of two numbers are 20 and 16 respectively, then find the value of H.M
- For a frequency distribution of a variable X, it is given  $X = 10 + 5u$ ,  $\Sigma f = 125$ ,  $\Sigma fu = -45$ . Find the value of mean
- Define Index Number
- Write down the uses of Index Number
- If Laspeyres's Index No. = 105.4, Paache's Index No. = 103.2, find Fisher's I.No. = ?
- Given  $\Sigma p_1 q_0 = 900$  and  $\Sigma p_0 q_0 = 897$ . Find cost of Living Index Number

**QUESTION NO. 3** Write short answers any Eight (8) parts of the following

16

- Distinguish between one-way and two-way classification
- Write a short note on pie-chart
- Explain the absolute measure of dispersion
- Given median = 8,  $n = 4$  and  $\Sigma |X - \text{median}| = 48$ . Compute median coefficient of dispersion
- Given mean = 50, median = 47 and coefficient of skewness = 1, find the value of variance
- Explain positively skewed distribution in your own words
- Describe variance with formula
- Explain quartile deviation with formula
- If  $P(A) = \frac{1}{3}$ ,  $P(A \cup B) = \frac{1}{2}$  and  $P(A \cap B) = \frac{1}{10}$ . Find  $P(B)$  and  $P(\bar{A})$
- Explain sample space with example
- Describe the term compound event
- What do you understand by dependent events?

**QUESTION NO. 4** Write short answers any Six (6) parts of the following

12

- How can random number be generated?
- State any two properties of expectation
- Find the probability distribution of number of heads when two coins are tossed
- Given  $x: 0, 1, 2$   $P(x) = 9/16, 6/16, 1/16$  Find  $E(x)$
- If  $\text{Var}(x) = 2$  and  $\text{Var}(y) = 5$ , where 'x' and 'y' are independent variables then find  $\text{Var}(2x - y)$
- State any two properties of hypergeometric experiment
- Find the number of trials if mean is 20 and probability of success in binomial distribution is 0.20
- If  $p = q$  and  $n = 10$ . Find out mean and variance of binomial distribution
- Write the p.d.f. of Hypergeometric distribution

### SECTION-II

**Note:** Attempt any Three (3) questions from this section

8 x 3 = 24

**Q.5. (a)** A bus travelling 200 miles has 5 stages at equal intervals. The speed of bus in various stages was observed to be : 10, 15, 20, 25 and 20. Find average speed at which the bus travels

**(b)** Find lower quartile for the given distribution

Classes	2-4	4-8	8-12	12-16	16-22
Frequency	5	10	12	6	4

**Q.6. (a)** Find the coefficient of S.D from the following data

x	5	10	15	20	25	30
f	3	7	20	10	6	4

**(b)** If  $\Sigma f = 200$ ,  $\Sigma fx^2 = 12080$ ,  $\Sigma fx = 1520$ ,  $\Sigma fx^3 = 16070$  then find first three moments about the mean

**Q.7 (a)** Compute index number of prices from the following data taking 1981 as base and using median as an average

Year	A	B	C
1981	18	85	52
1982	22	76	60
1983	28	80	66
1984	31	95	80

**(b)** A digit is selected at random from the first 10 natural numbers. Find the probability that the selected digit is (i) Greater than 6 (ii) A complete square (iii) Multiple of 3

**Q.8. (a)** Given the following probability distribution

x	-1	0	1	2	3
p(x)	0.125	0.500	0.200	0.050	0.125

Verify  $E(2x + 3) = 2E(x) + 3$

**(b)** A continuous random variable x has a probability density function  $f(x) = cx$  for  $0 < x < 2$  Find (i) C (ii)  $P(1 < x < 1.5)$

**Q.9. (a)** In a binomial distribution  $n = 20$  and  $p = 3/5$  Find Mean, Variance and Standard deviation. Also find  $P(x = 3)$

**(b)** Five balls are drawn without replacement from a bag containing 4 white and 7 black balls. Find probability distribution for number of white balls



OBJECTIVE

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**QUESTION NO. 1**

- 1 The group data is also called  
(A) Primary data (B) Secondary data (C) Raw data (D) Collected data
- 2 The midpoint of the group 5.5 – 7.5 is  
(A) 6 (B) 6.5 (C) 7 (D) 13
- 3 The difference between the upper and lower class boundaries of a class is called.  
(A) Midpoint (B) Class interval (C) Class frequency (D) Class boundary
- 4 Average is easy to  
(A) Calculate (B) Read (C) Remember (D) Write
- 5 If  $n = 10$  and  $\bar{Y} = 20$  than  $\Sigma Y$  is  
(A) 150 (B) 120 (C) 200 (D) 250
- 6 It is necessary to arrange the values in an array before finding  
(A) Arithmetic Mean (B) Mode (C) Median (D) Harmonic mean
- 7 Variance is always calculated from  
(A) Mean (B) Median (C) Geometric Mean (D) Mode
- 8 The lack of symmetry is called  
(A) Uniformity (B) Kurtosis (C) Skewness (D) Dispersion
- 9 The range of data 1, 2, 3, 4, 5 is  
(A) 1 (B) 5 (C) 4 (D) 3
- 10 Index No. has .....types.  
(A) Two (B) Three (C) Four (D) Five
- 11 The most suitable average for index number is  
(A) A.M (B) G.M (C) H.M (D) Median
- 12  ${}^5P_3$  is equal to  
(A) 40 (B) 50 (C) 60 (D) 70
- 13 Probability of any event lies between  
(A) -1 and +1 (B) 0 and +1 (C) -1 and 0 (D) 0 and 2
- 14 A random variable may be discrete or  
(A) Experimental (B) Functional (C) Given (D) Continuous
- 15 A discrete random variable only assumes the values which are  
(A) Countable (B) Uncountable (C) Infinite (D) None of these
- 16  $1-P$  is equal to  
(A)  $1-q$  (B)  $p+q$  (C)  $p-q$  (D)  $q$
- 17 In hyper-geometric distribution the trials are  
(A) Independent (B) Controlled (C) Allocated (D) Dependent



**SECTION-I**

- QUESTION NO. 2** Write short answers any Eight (8) questions of the following 16
- (1) Define descriptive statistics. (2) Define secondary data (3) Define harmonic mean
  - (4) Given data  $\sum f u_i = -1$ ,  $\sum f = 30$  and  $u_i = \frac{x_i - 98}{5}$  Find arithmetic mean of 'X'
  - (5) What are advantages of Median? (6) What are demerits of arithmetic mean?
  - (7) In moderately skewed distribution, mode = 15, median = 12, find its mean
  - (8) Define link relatives. (9) Define composite index number (10) Define un-weighted index number
  - (11) Find Paasche's index number if Laspeyre's = 118.8 and Fisher's = 115.8
  - (12) What are the uses of an index number.

- QUESTION NO. 3** Write short answers any Eight (8) questions of the following 16
- (1) What is "Tabulation"? (2) Define "Class limits".
  - (3) Define "Absolute measure" of dispersion". (4) Define "Relative measure of dispersion"
  - (5) Write down any "Two Properties of variance"
  - (6) If  $Q_1 = 13.73$ ,  $Q_3 = 38.29$ , Compute Quartile deviation
  - (7) Calculate range of 13, 3, 7, 15, 17, 5, 23, 27. (8) Define "sample Space". (9) Define "Simple event"
  - (10) Define "Mutually exclusive events". (11) Define "Equally likely events".
  - (12) For two independent events A and B, if  $P(A) = 0.25$ ,  $P(B) = 0.40$  then find  $P(A \cap B) = ?$

- QUESTION NO. 4** Write short answers any Six (6) questions of the following 12
- (1) Differentiate between discrete random variable and continuous random variable.
  - (2) Give properties of a probability density function.
  - (3) Given  $E(X^2) = 400$ ,  $S.D(x) = 12$ , then find  $E(X)$
  - (4) Write down the formula for computing the area of a triangle of a continuous r.v.
  - (5) Define a distribution function
  - (6) Write down any two properties of binomial distribution.
  - (7) In a binomial distribution with  $n = 5$ , what is the value of 'P' if  $P(x=0) = P(x=1)$
  - (8) Define a Hyper-geometric probability distribution.
  - (9) If  $N = 40$ ,  $n = 5$ ,  $K = 4$ , then find values of mean and variance of Hyper-geometric distribution

**SECTION-II**

Note: Attempt any Three (3) questions from this section

8 x 3 = 24

Q.5.(a) Given data on income, Find mean income. Also find  $Q_1$

X	1-10	11-20	21-30	31-40
f	13	10	5	2

(b) Find median and mode of data given in Q.5 (a)

Q.6.(a) Find the mean deviation about mean

Classes	10-19	20-29	30-39	40-49	50-59
frequency	2	4	10	11	3

(b) The first three moments of a distribution about the value 2 are 1, 8 and 20.  
Find (i) Variance (ii) Is the distribution positively or negatively skewed?

Q.7.(a) Given the following information.  $\sum p_0 q_0 = 3600$ ,  $\sum p_1 q_0 = 4300$ ,  $\sum p_1 q_1 = 4890$  &  $\sum p_0 q_1 = 4100$   
Find Fisher price index number & Paasche' index number

(b) If, A and B are mutually exclusive events and  $P(A) = 0.4$ ,  $P(B) = 0.5$  then,  
find  $P(A \cup B)$  also find  $P(\bar{A})$  &  $P(\bar{B})$

Q.8.(a) A continuous random variable 'X' has probability density function given below.

$$f(x) = A(x+5) \text{ where } 2 \leq x \leq 4$$

$$= 0 \text{ other wise}$$

Find (i) A (ii)  $P(2 \leq x \leq 3)$

(b) Given the discrete probability distribution

X	0	1	2	3	4
P(x)	0.1	0.2	0.3	0.2	0.2

Compute mean, variance and Coefficient of variance

Q.9.(a) If X is a binomial random variable with  $E(x) = 1.44$  and  $S.D.(X) = 0.96$ .

Find the parameters of the binomial distribution and  $P(X=2)$

(b) In hyper-geometric distribution,  $n = 4$ ,  $K = 4$ ,  $N = 12$ , then make probability distribution of 'X'



NOTE: You have four choices for each objective type question as A , B , C and D . The choice which you think is correct , fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

**QUESTION NO. 1**

- 1 A single numerical fact is called  
(A) Statistics (B) Variable (C) Datum (D) Data
- 2 The process of arranging data into rows and columns is called  
(A) Tabulation (B) Classification (C) Grouped data (D) Frequency distribution
- 3 A pie diagram is represented by  
(A) Square (B) Circle (C) Triangle (D) Rectangle
- 4 Sum of deviations is zero when deviations are taken from  
(A) Mean (B) Median (C) Mode (D) Geometric Mean
- 5 Geometric Mean of two numbers 4 and 16 is  
(A) 4 (B) 10 (C) 16 (D) 8
- 6 Quartile Deviation of 8,8,8 is  
(A) Zero (B) One (C) Positive (D) Negative
- 7 If  $SD(x) = 5$  then  $SD(2x+1)$  is equal to  
(A) 10 (B) 5 (C) 15 (D) 2
- 8 If moment ratio  $b_1 = 0$  then distribution is  
(A) Skewed (B) symmetrical (C) J-shaped (D) U-shaped
- 9 An index number computed for a single commodity is called  
(A) Simple index (B) Composite index (C) Weighted index (D) Consumer price index
- 10 If Laspeyre's index = 118.8 , Paasche's index = 112.8 then Fisher's ideal index is equal to  
(A) 112.8 (B) 114.8 (C) 118.8 (D) 115.8
- 11 A coin is tossed three times , then total number of sample points will be  
(A)  $2^2$  (B)  $2^3$  (C)  $3^2$  (D)  $3^3$
- 12 If  $P(A \cap B) = 1/3$  ,  $P(B) = 1/2$  then  $P(A/B)$  is equal to  
(A)  $1/2$  (B)  $3/2$  (C)  $2/3$  (D)  $1/3$
- 13 Distribution Function is always  
(A) zero (B) one (C) increasing (D) decreasing
- 14  $E[X - E(x)]$  is equal to  
(A) Variance (B) Standard deviation (C) Mean (D) zero
- 15 If  $Y_i = ax_i + b$  then  $Var(Y_i) =$   
(A)  $a Var(x_i) + b$  (B)  $Var(x_i)$  (C)  $a Var(x_i)$  (D)  $a^2 Var(x_i)$
- 16 If  $n = 20$  ,  $p = 0.6$  then variance of binomial distribution is equal to  
(A) 12 (B) 4.8 (C) 1 (D) zero
- 17 Hyper-geometric distribution has parameters  
(A) One (B) Two (C) Three (D) Four



**NOTE:** You have four choices for each objective type question as A , B , C and D . The choice which you think is correct , fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

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