

**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

DSK-22

- 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**

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- (i) Differentiate between population and sample (ii) Define variable (iii) Find median of 0, -1, -3, 3, 2
- (iv) Define mode and give an empirical relationship between mean, median and mode
- (v) Define Harmonic Mean with its formula (vi) Write down the advantages of A.M
- (vii) If the mean and G.M of two numbers are 20 and 16 respectively, then find the value of H.M
- (viii) 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
- (ix) Define Index Number (x) Write down the uses of Index Number
- (xi) If Laspayer's Index No. = 105.4, Paache's Index No. = 103.2, find Fisher's I.No. = ?
- (xii) Given  $\Sigma p_1q_0 = 900$  and  $\Sigma p_0q_0 = 897$ . Find cost of Living Index Number

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

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- (i) Distinguish between one-way and two-way classification (ii) Write a short note on pie-chart
- (iii) Explain the absolute measure of dispersion
- (iv) Given median = 8,  $n = 4$  and  $\Sigma |X - \text{median}| = 48$ . Compute median coefficient of dispersion
- (v) Given mean = 50, median = 47 and coefficient of skewness = 1, find the value of variance
- (vi) Explain positively skewed distribution in your own words (vii) Describe variance with formula
- (viii) Explain quartile deviation with formula
- (ix) 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  $P(\bar{A})$  (x) Explain sample space with example
- (xi) Describe the term compound event (xii) What do you understand by dependent events?

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

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

**SECTION-II**

8 x 3 = 24

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

- 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