

Q.P. Code : 04889

[Time: Two Hours thirty minutes ]

[ Marks:75]

Please check whether you have got the right question paper.

- N.B: 1. All Questions are compulsory and carry equal marks  
2. Use of simple calculator is allowed  
3. Figure to right indicate full marks to corresponding question

Q.1 A) Choose the correct alternatives form the following: ( Attempt any 8 ) 8

- 1) The following measure of dispersion considers middle 50% of observations \_\_\_\_\_  
a) Range                                      b) Quartile deviation  
c) Standard deviation                      d) None of those
- 2) The data which are collected originally for the first time are called \_\_\_\_\_  
a) Primary                                      b) Secondary  
c) Sample                                        d) Characteristic
- 3) Any feasible solution which optimizes ( minimizes or maximizes ) the objective function of the LPP is called its \_\_\_\_\_  
a) Solution                                      b) Optimal solution  
c) Non basic variables                      d) Basic feasible solution
- 4) An optimum solution is considered the \_\_\_\_\_ among feasible solution  
a) worst    b) Best  
c) Ineffective                                      d) None of the above
- 5) 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) None of those
- 6) In statistics, a population consists of \_\_\_\_\_ +  
a) All people living in a country  
b) All people living in the area under study  
c) All subject or objects whose characteristics are being studied  
d) None of the above
- 7) The total of all the observation divided by the number of observations is called \_\_\_\_\_

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- a) Arithmetic mean                      b) Geometric mean  
c) Median                                  d) Harmonic mean
- 8) Median, mode, deciles and percentiles are all considered as Measures of \_\_\_\_\_
- a) Mathematical averages              b) population averages  
c) sample average                      d) average of position
- 9) The word 'Linear' means that the relationship are represented by \_\_\_\_\_
- a) Diagonal lines                      b) curved lines  
c) straight lines                      d) slanting lines
- 10) If there are extreme values present in the data, the following measure is suitable
- a) Arithmetic mean                      b) Median  
c) Mode                                  d) None of these

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B) State whether following statement are true or false ( Attempt any 7)

- 1) The median is less affected by extreme values than arithmetic mean.
- 2) The data compiled through various published or unpublished sources is known as primary data.
- 3) The value of mode can be located graphically with the help of ogive.
- 4) Coefficient of correlation cannot be negative.
- 5) Variance is equal to the square root of the standard deviation.
- 6) Statistics can study both quantitative as well as qualitative data.
- 7) In order to solve the linear programming problem, it is required to find feasible region.
- 8) A measure of spread or scatter of data is called measures of dispersion.
- 9) Statistics cannot be used for an individual.
- 10) The difference between the actual and the estimated value is absolute error.

Q.2 A) Solve the following liner programming problems using graphical method

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Minimize  $Z = 6x + 7y$   
Subject to  $2x + 3y \geq 12$  ,  $2x + y \geq 8$  ,  $x \geq 0, y \geq 0$

B) Draw a multiple bar diagram

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Year	Consumer price index number	
	Delhi	Mumbai
1992	160	182

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1993	189	164
1994	138	143
1995	154	183
1996	148	174
1997	150	142
1998	139	152
1999	171	182

OR

P) A manufacturer has to decide on the quantities of product A and B. He must produce at least 30 units of A per week. The market cannot absorb more than 20 units of B per week. The machine time required is 2 hours per unit of A and 3 hours per unit of B. In all 100 hours are available per week the profit per unit of A is rs 8 and of B is 15 formulate the Linear Programming Problem for optimum profit. 8

Q) Prepare a frequency distributing for the following data giving the height of 30 children

125, 126, 134, 120, 144, 119, 124, 139, 121, 133, 126, 130, 148, 129, 137, 142, 127, 132, 146, 144, 118, 141, 128, 110, 136, 143, 148, 128, 142, 118 7

Q.3 A) Find the mean and standard deviation of the following grouped data Also find coefficient of variation 8

Class intervals	0-4	4-8	8-12	12-16	16-20
Frequency	2	6	10	14	18

B) Following data give the purchases made by 100 customers in a departmental store. Find the mode 7

Amount in Rs.	200-300	300-400	400-500	500-600	600-700	700-800
No. of customers	3	10	38	13	16	20

OR

P) Two groups combined together had 150 items, the mean and variance of these items are 23 and 33 respectively. If the first group had 100 item and their mean and variance were 20 and 9 respectively. Find the mean and variance of the second group. 8



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Q) Find first and third quartiles for the following data

Age in Years	20-25	25-30	30-35	35-40	40-45	45-50	50-55
No of teacher	10	40	50	18	21	9	29

Q.4 A) Mark of 6 students in a Class work and Annual Examination are given below. Find the coefficient of correlation.

Class work	12	14	23	18	10	19
Annual Examination	68	78	85	75	70	74

B) Given the following data find the two regression equations.

Average demand = 25

Average supply = 22

Standard deviation of demand = 4

Standard deviation of supply = 5

Coefficient of correlation = 0.8

OR

P) Find the two regression equations for the following data

X	3	4	5	2	6
Y	7	10	4	20	12

Also find the value of x when y = 30

Q) Calculate the coefficient of correlation given for the following data

$\Sigma x = 20$ ,  $\Sigma y = 11.58$ ,  $\Sigma x^2 = 90$ ,  $\Sigma y^2 = 27.03$ ,  $\Sigma xy = 47.13$ ,  $n = 5$

Q.5 A) Write functions of statistics

B) Define Secondary data. What are the sources of Secondary data?

OR

p) Write short notes on the following ( Attempt any Three )

- Concept of regression
- Biased and Unbiased error
- Distinguish between Graphs & Diagrams
- Merits and Demerits of Arithmetic mean
- Sampling techniques