

8. (a) Ten competitors in a beauty contest are ranked by three judges in the following order :

Judge 1: 1 5 4 8 9 6 10 7 3 2

Judge 2: 4 8 7 6 5 9 10 3 2 1

Judge 3: 6 7 8 1 5 10 9 2 3 4

Use Rank correlation to discuss which pair of judges have the nearest approach to common tastes in beauty.

Or

- (b) Calculate coefficient of skewness from the following :

Marks above: 0 10 20 30 40 50 60 70 80

No. of students: 150 140 100 80 80 70 30 14 0

9. (a) From the following table, calculate the correlation coefficient by Karl Pearson's method.

X: 43 44 46 40 44 42 45 42 38 40 42 57

Y: 29 31 19 18 19 27 27 29 41 30 26 10

Or

- (b) Fit a straight line trend for the following series :

Year: 1990 1991 1992 1993 1994 1995 1996

Production of stock: 60 72 75 65 80 85 95

10. (a) State merits and demerits of Sampling.

Or

- (b) The following are the marks in Statistics (X) and Mathematics (Y) of ten students :

X: 56 55 58 58 57 56 60 64 69 57

Y: 68 67 67 70 65 68 70 66 68 66

Calculate the coefficient of correlation and estimate the marks in Mathematics of a student who secures 62 marks in Statistics.

S.No. 5498

P 8 MBA 3

(For candidates admitted from 2008–2009 onwards)

M.B.A. DEGREE EXAMINATION, NOVEMBER 2014.

Business Administration

MATHEMATICS AND STATISTICS

Time : Three hours

Maximum : 75 marks

PART A — (5 × 5 = 25)

Answer ALL questions.

1. (a) An animal feed company must produce 200 lbs of a mixture containing the ingredients X_1 and X_2 . X_1 costs Rs.3 per lb and X_2 costs Rs.8 per lb. Not more than 80 lbs. If X_1 can be used and minimum quantity to be used for X_2 is 60 lbs. Find how much of each ingredients should be used in the company wants to minimise the cost. Formulate the problem into L.P.P.

Or

- (b) A problem in business statistics is given to five students A, B, C, D and E. Their chances of solving it are $1/2$, $1/3$, $1/4$, $1/5$ and $1/6$. What is the probability that the problem will be solved?

2. (a) Find the mode of the following frequency distribution :

Size (X): 1 2 3 4 5 6 7 8 9 10 11

Frequency (f): 3 8 15 23 35 40 32 28 20 45 14

Or

- (b) State the merits and demerits of standard deviation.
3. (a) Write the requisites for an ideal measure of central tendency.

Or

- (b) Find out is there any significant difference in the intelligence of boys and girls.

Girls: Mean 84 S.D. 10 No. of samples 121

Boys: Mean 81 S.D. 12 No. of samples 81

4. (a) Calculate the correlation coefficient for the following heights (in inches) of Fathers (X) and their sons (Y).

X: 65 66 67 67 68 69 70 72

Y: 67 68 65 68 72 72 69 71

Or

- (b) Explain clearly standard error and sampling distribution.
5. (a) Explain and illustrate binomial distribution.

Or

- (b) Explain multiplication theorem.

PART B — (5 × 10 = 50)

Answer ALL questions.

6. (a) Solve the following LPP using graphical method.

$$\text{Max } Z = 3x_1 + 2x_2$$

Subject to the constraints :

$$-2x_1 + x_2 \leq 1$$

$$x_1 \leq 2$$

$$x_1 + x_2 \leq 3$$

$$x_1, x_2, \geq 0$$

Or

(b) $5x + 3y = 65$

$$2y - z = 11$$

$3x + 4z = 57$. Solve the above using Cramer's rule.

7. (a) Find inverse of the following

$$\begin{pmatrix} 1 & 4 & 3 \\ 4 & 2 & 3 \\ 3 & 2 & 2 \end{pmatrix}$$

Or

- (b) Obtain the rank correlation for the following data.

X: 68 64 75 50 64 80 75 40 55 64

Y: 62 58 68 45 81 60 68 48 50 70