PINNACLE INSTITUTE OF MANAGEMENT AND SCINCE

Nagarabhavi Bangalore-72

III Semester B.Com. Pre-Finals Examination, JAN 2023

COMMERCE

Business Mathematics & Statistics

Time:2.30 Hours **Max.Marks:60**

SECTION A

I Answer any 6 of the following each carries2 marks. **(2X6=12)**

1.

- **a)** If $\bar{X}$=12, Z=13, find Median.
- **b)** What is meant by perfect correlation?
- **c)** In a distribution P.E is 0.05 and r is 0.6, comment.
- **d)** What is diagonal matrix?
- **e)** State two differences between ratio and Rates.
- **f)** Define annuity.
- **g)** Solve for X: X+3+X=5
- **h)** Write the duplicate ratio of 3:4.

SECTION- B

II Answer any 3 of the following each carries4 marks. **(3X4=12)**

2. Which company has greater variability of salary?

	Company X	**Company Y**
No.of employees	250	200
Standard Deviation	500	600
Average monthly salary(₹)	20000	25000

3. If $A=\begin{bmatrix}5 & 6 & 7\\ 8 & 9 & 0\\ 1 & 2 & 3\end{bmatrix}$ and $B=\begin{bmatrix}3 & 2 & 1\\ 9 & 0 & 8\\ 7 & 6 & 5\end{bmatrix}$ find 5A+3B

4. Following is the distribution of marks in statistics obtained by students. Calculate the median marks.

Marks (more than)	0	10	20	30	40	50
No.of Students	50	46	40	20	10	3

5. Calculate coefficient of correlation under rank difference method for the following.

X	70	80	65	78	68	65	82	65
Y	13	15	12	14	13	11	16	10

6. Find the sum of an immediate annuity consisting of 6 annual payments of ₹400, if the rate of interest is 5% compounded.

SECTION- C

III Answer any 3 of the following each carries 12 marks. (3X12=36)

7. Find the difference between simple interest and compound interest on ₹10000 for 5 years, charging half yearly @ 4%p.a.

8. a) Solve by Substitution method:

$\frac{x}{2} + \frac{y}{3} = 9$ and $\frac{x}{5} + \frac{y}{4} = 5$

b) Solve by Elimination method

$5x+6y=3$

$2x-5y=16$

9. From the following data of the wages of 122 workers, determine the model wages with the help of grouping table and analysis table.

Wages (₹)	100-110	110-120	120-130	130-140	140-150	150-160	160-170	170-180
No.of workers	4	6	20	32	33	17	8	2

10. A study of wheat prices at Mysore and Bangalore yields the following data:

	Mysore	**Bangalore**
Average price	2.463	2.797
Standard Deviation	0.326	0.207
Correlation Coefficient	0.774	

Estimate from the above data the most likely,

a) Price of wheat at Mysore corresponding to the price of ₹2.354 per kg at Bangalore, and

b) Price of wheat at Bangalore corresponding to the price of ₹3.05 per kg at Mysore.

11. a) Find the value of 'a' if $\begin{bmatrix} 6 & -2 & -4 \\ a & 2 & -1 \\ -5 & 3 & a \end{bmatrix} = 0$

b) A number is divided into 3 parts in the ratio of 2:3:4. If the second part is 81. Find the other numbers.

**********ALL THE BEST**********