

(FOR THE CANDIDATES ADMITTED

SUBJECT CODE **24 UCO 4A1**

DURING THE ACADEMIC YEAR 2024-25 ONLY)

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : NOVEMBER – 2025

B.Com. (AIDED & S.F.)

MAXIMUM MARKS: 75

IV SEMESTER

TIME : 3 HOURS

PART – III

BUSINESS MATHEMATICS AND STATISTICS

SECTION – A

(10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

(K1)

MULTIPLE CHOICE QUESTIONS

1. How to calculate Compound Interest?
a) Principal only b) Interest only c) Principal plus interest d) Discount only
2. Which is the derivative of a constant?
a) 0 b) 1 c) Constant d) Infinity
3. Which is denotes Statistics?
a) Collection of data b) Analysis of data c) Interpretation of data d) All of the above
4. Which is called the set of all possible outcomes of a random experiment.
a) Event b) Sample space c) Trial d) Probability
5. Which is lies between the value of correlation coefficient?
a) 0 and 1 b) -1 and $+1$ c) $-\infty$ and $+\infty$ d) -0.5 and $+0.5$

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES.

K2

6. What is simple interest.
7. Find derivative.
8. Mention any two limitations of statistics.
9. What is an event?
10. What is meant by rank correlation?

SECTION – B (5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) Find the compound interest on ₹10,000 at 10% p.a. for 2 years compounded annually.

(OR)

- b) In a class of 100 students, 60 students study in Mathematics, 40 students study in Economics and 20 students study in both. Find the number of students who study neither subject?

(CONTD 2)

12. a) Differentiate the following:

a) $y=5x^3-4x^2+6x-2$

b) $y= \frac{x^2+1}{x}$

(OR)

b) Find the maxima or minima of the following function:

$$y=x^3-6x^2+9x+5$$

13. a) Calculate the Arithmetic Mean from the following data:

Class Interval	Frequency
0–10	5
10–20	9
20–30	14
30–40	8
40–50	4

(OR)

b) Explain the various types of averages.

14. a) A card is drawn from a standard deck. Find the probability that the card is

a) A king

b) A red card

(OR)

b) A bag contains 4 white and 6 black balls. Two balls are drawn one after another without replacement. Find the probability that a) Both are white b) One is white and one is black.

15. a) Calculate Karl Pearson's coefficient of correlation for the following data:

X	10	12	14	16	18
Y	20	24	28	32	36

(OR)

b) Find Spearman's rank correlation coefficient for the following ranks:

X	1	2	3	4	5
Y	2	1	4	3	5

(CONTD 3)

SECTION – C (5 X 8 = 40 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K4/K5)

16. a) Explain the De Morgan's Laws.

(OR)

b) A company wants to replace machinery costing ₹2,00,000 after 10 years. If the interest rate is 8% p.a., find the annual sinking fund instalment.

17. a) Discuss in detail the functions and applications of maxima and minima in business

(OR)

b) A firm's profit function is given below

$$P = -2x^2 + 40x - 100$$

Find out the following

- a) Level of output for maximum profit
- b) Maximum profit

18. a) Explain the role and importance of statistics in business decision making.

(OR)

b) From the following data, calculate the Arithmetic Mean, Median and Mode:

Class Interval	Frequency
10–20	5
20–30	9
30–40	14
40–50	10
50–60	6

19. a) The probability that a student passes in Mathematics is 0.7 and in Statistics is 0.6. If the probability of passing both is 0.5, find

- a) Probability of passing at least one subject
- b) Probability of passing Mathematics given that he passed Statistics

(OR)

(CONTD 4)

b) In a factory, machines A, B, and C produce 30%, 45%, and 25% of the total output. The percentages of defective items produced by them are 2%, 3%, and 5% respectively. Using Bayes' theorem, find the probability that a defective item was produced by machine B.

20. a) Find the two regression equations from the following data and estimate Y when X = 6:

X	2	4	6	8	10
Y	5	7	9	11	13

(OR)

- b) Compute Spearman's rank correlation coefficient for the following data:

Student	A	B	C	D	E
Marks in Maths	70	85	60	75	80
Marks in Science	65	80	55	70	75