

Roll No: _____

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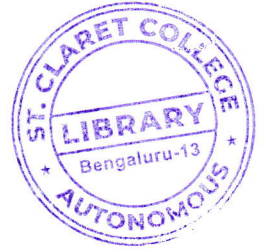
St. Claret College

Autonomous, Bengaluru

14
UG END SEMESTER EXAMINATION-NOV 2025

BBA I SEMESTER

BM 1725: BUSINESS MATHEMATICS AND STATISTICS



TIME: 3 hours.

MAX. MARKS: 80

This paper contains THREE printed pages and FOUR parts

Instructions:

1. Verify and ensure that the question paper is completely printed.
2. Any discrepancies or questions about the exam paper must be reported to the COE within 1 hour after the examination.
3. Students must check the course title and course code before answering the questions.

PART-A

Answer ALL questions. Each answer carries ONE mark.

[1 x 10 = 10]

1. The ratio of 3 to 12 is equivalent to:
a) 1 : 4 b) 1 : 3 c) 1 : 2 d) 4 : 1
2. The ratio of pens to pencils in a box is 5 : 3. If there are 40 items in total, how many pencils are there?
a) 15 b) 20 c) 25 d) 30
3. Solve for x: $5x - 10 = 15$
a) 4 b) 5 c) 6 d) 7
4. Which of the following is a linear equation in two variables?
a) $2x + 3y = 5$ b) $x^2 + y = 7$ c) $xy = 10$ d) $x^2 + y^2 = 25$
5. The marks of 5 students are 12, 15, 18, 20, 25. The mean marks is
a) 16 b) 18 c) 19 d) 20
6. Which type of diagram is most suitable for representing a frequency distribution of continuous data?
a) Pie chart b) Histogram c) Bar chart d) Line graph
7. The standard deviation of a dataset measures:
a) Average of the values b) Spread of values around the mean
c) The middle value d) Most frequent value
8. If the standard deviation of a dataset is 5 and the mean is 50, the coefficient of variation (CV) is:
a) 5% b) 10% c) 15% d) 20%
9. Which component of a time series shows long-term upward or downward movement?
a) Seasonal component b) Cyclical component
c) Trend component d) Irregular component

10. Exponential smoothing in forecasting is used to:
- Smooth past data with equal weights
 - Give more weight to recent observations
 - Measure the standard deviation of time series
 - Identify seasonal indices

PART-B

Answer any 3 questions. Each answer carries 8 marks.

[8 x 3= 24]

11. a) A firm invests in three projects in the ratio 7 : 5 : 3. If the total investment is ₹3,00,000, find the amount invested in each project.
 b) If 15 workers can finish a piece of work in 24 days, how many workers are required to finish it in 10 days? (5+3)
12. a) Solve the following system of equations using substitution method
 $x+y=10$, $2x-y=3$
 b) Solve the following quadratic equation by factorization method
 $x^2-7x+12=0$ (4+4)
13. The following table shows the monthly income (in ₹1000) of 50 employees.
- | Income (₹1000) | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 |
|----------------|-------|-------|-------|-------|-------|
| Frequency | 5 | 10 | 20 | 10 | 5 |
- Find the median income and interpret.
14. The marks obtained by 10 students in an exam are:
 12, 15, 18, 20, 22, 25, 28, 30, 32, 35
 Find quartile deviation and its co-efficient.
15. What is time series? Explain the components of time series with an example.

PART-C

Answer any 3 questions. Each answer carries 12 marks.

[12 x 3= 36]

16. a) The income of A and B is in the ratio 7 : 9, and their expenses are in the ratio 3: 5. If each saves ₹5,000, find their incomes.
 b) Find duplicate, triplicate, and sub-duplicate ratios of 3 : 5.
 c) A train travels 120 km in 2 hours. What is its speed? (5+4+3)
17. a) The salary of A, B and C are in continued proportion. If the salary of B and C are respectively ₹250 and ₹1250. Find the salary of A.
 b) Solve the following system of equations using elimination method.
 $3x+2y=16$, $5x-2y=14$
 c) Solve the following quadratic equation using the quadratic formula method.
 $2x^2-5x-3=0$ (4+4+4)
18. a) The following frequency distribution shows the number of products sold by a company in a week.
- | Products Sold | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 |
|---------------|------|-------|-------|-------|-------|
| Frequency | 5 | 10 | 25 | 15 | 5 |
- Find the mean number of products sold.
 b) What is mode? Write its merits and de-merits. (6+6)

19. The daily revenue of two branches of a store for a week (in ₹1000) is:
Branch X: 50, 55, 52, 48, 50, 53, 51
Branch Y: 80, 90, 85, 95, 100, 92, 88
- a) Calculate the Co-efficient of Variation (CV) for both branches.
b) Determine which branch has more consistent revenue.
20. a) The monthly sales (in units) of a company for 12 months are:
120, 130, 125, 140, 150, 145, 160, 155, 170, 165, 180, 175
Calculate the 3-month moving average to identify the trend and interpret.
b) Explain exponential smoothing forecasting method. (6+6)

PART-D

Answer the following question

[10 x 1= 10]

21. The monthly wages (₹) of 8 factory workers are:
15000, 16000, 17000, 18000, 19000, 20000, 21000, 22000
- a) Find average(mean) wage and interpret.
b) Calculate the range and coefficient of range.
c) Find the standard deviation.
d) Compute the coefficient of variation (CV) and interpret.