

Autonomous, Bengaluru

UG END SEMESTER EXAMINATION-DECEMBER 2024

BBA - I SEMESTER

BM 1424: QUANTITATIVE ANALYSIS FOR BUSINESS

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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.

[10 x 1 = 10]

1. The duplicate ratio of 9: 16 is:

- a) $\sqrt{9} : \sqrt{16}$ b) $1/9 : 1/16$ c) 3 : 4 d) 81 : 256

2. The proportion involving two or more quantities is _____ proportion.

- a) Continued b) Compound c) Inverse d) Direct

3. $A = \{1,3,4,6,7\}$, $B = \{1,2,4\}$, find $A \cap B$.

- a) $\{1,4\}$ b) $\{2,3,6,7\}$ c) $\{1,2,4\}$ d) $\{3,6,7\}$

4. The roots of the quadratic equation $x^2-3x-10=0$ are:

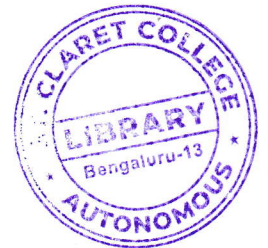
- a) -3,10 b) 3,-10 c) 5,-2 d) -5,2

5. Value of nP_n is:

- a) n b) 1 c) n! d) 0

6. When ${}^nC_2 = {}^nC_6$, then the value of nC_5 is?

- a) $5!2!6!$ b) 56 c) 98 d) 112



7. $\begin{bmatrix} 7 & 6 \\ 0 & 5 \end{bmatrix} - \begin{bmatrix} 5 & -3 \\ -1 & 4 \end{bmatrix} = ?$

a) $\begin{bmatrix} 2 & 9 \\ -1 & 1 \end{bmatrix}$

b) $\begin{bmatrix} 2 & 3 \\ -1 & 1 \end{bmatrix}$

c) $\begin{bmatrix} 2 & 9 \\ 1 & 1 \end{bmatrix}$

d) $\begin{bmatrix} 2 & -3 \\ 1 & 4 \end{bmatrix}$

8. Matrix $A = \begin{bmatrix} 3 & 0 \\ 0 & 3 \end{bmatrix}$ is a type of:

a) Scalar matrix

b) Unit matrix

c) Diagonal matrix

d) Null matrix

9. The regular periodic payment of a fixed sum of money is

a) Sinking Fund

b) Interest

c) Annuity

d) Deferred Payment

10. At what rate of simple interest will Rs.2000 amounts to Rs. 2240 for 3 years?

a) 5%

b) 6%

c) 3%

d) 4%

PART-B

Answer any THREE questions. Each answer carries EIGHT marks

[3 x 8 = 24]

11. a) If 15 carpenters can earn Rs. 1250 in 10 days, in how many days can 12 carpenters earn Rs. 750? (4 marks)

b) A mother is 32 years older than her son. In 4 years, the mother's age will be 8 years more than twice that of her son. Find their present age. (4 marks)

12. Solve $21x^2 - 41x + 10 = 0$ using quadratic formula method.

13. Matrix $A = \begin{bmatrix} 5 & 1 \\ 4 & -2 \end{bmatrix}$ and Matrix $B = \begin{bmatrix} 4 & -8 \\ 4 & 1 \end{bmatrix}$

Find i) $2(A+B)$ ii) BA

14. Find the number of permutations of the letters of the word 'MANAGEMENT'? How many of these words start with the letter 'E'?

15. Find the difference between simple interest and compound interest on Rs.5000 for 5 years charging half yearly at 6% p.a.

PART - C

Answer any **THREE** questions. Each answer carries **TWELVE** marks.

[3 x 12 = 36]

16. a) A number is divided into three parts in the ratio of 2:3:4. If the second part is 81, find the other two parts. (6 Marks)
- b) A product is sold by the producer to a retailer by allowing 20% discount on the invoice price. The retailer sells it at 10% below the marked price. If a customer paid Rs.8,100 for the product, what is the percentage of profit made by the retailer? (6 Marks)
17. Verify De-Morgan's Law (both) for the given sets.
- Set A = {a, b, d, e, g}, Set B = {b, c, e, f} and U = {a, b, c, d, e, f, g, h}
18. Four cards are to be selected from a deck of 52 cards. In how many ways can it be done so that it would consists of: (i) exactly one king card
(ii) exactly two spade cards
19. Find the inverse of the matrix $A = \begin{bmatrix} 2 & 4 & 0 \\ 1 & 3 & 5 \\ 0 & 1 & -2 \end{bmatrix}$
20. a) A businessman borrowed Rs.62,500 and paid Rs.67,600 in full settlement after two years. Find the rate of compound interest? (6 marks)
- b) Assume Mr. Ashwin takes an instant loan of Rs.10,000 at an annual Interest rate of 6% for a period of 3 months. Calculate the EMI. (6 marks)

PART - D

Answer the following question. It carries **TEN** marks

[1 x 10 = 10]

21. Sun Technology Ltd. is specializing in the manufacturing of various electronic products. They are currently assessing their production effectiveness to expand output and reduce costs. The company produces two types of products: product Alpha and product Beta. The production manager has furnished the following information with relevant to those two products.
- Production Rate for every 12 units of product Alpha produced, the company produces 16 units of product Beta.
 - The cost of production for product Alpha is Rs.400 per unit, and for product Beta, it is Rs.250 per unit.
 - *Selling Price fixed for product Alpha is Rs.500 per unit, and the selling price of product Beta is Rs.400 per unit.*
 - Activity Level has been observed that the production unit can produce a total of 700 products per day (Production capacity of both product Alpha and product Beta).

Questions to be answered:

- a) If the company wants to produce 300 units of product Alpha, how many units of product Beta can they produce within their daily production capacity?
- b) How much would be total revenue and total cost if they produce 330 units of product Alpha and the maximum number of product Beta units, they can fit into the remaining production capacity and
- c) Suggest the production manager which product yields more percentage of profit on sales.
