

St. Claret College

Autonomous, Bengaluru

Roll No:

Date:

UG END SEMESTER EXAMINATION-DECEMBER 2024

B.COM - I SEMESTER

BC 1424: BUSINESS QUANTITATIVE ANALYSIS

11

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 the following MCQ. Each answer carries ONE mark.

[10 x 1 = 10]

1. _____ is a sub-duplicate ratio of 4:9
a) $4^2 : 9^2$ b) 2 : 3 c) 9 : 4 d) $\sqrt{9} : \sqrt{4}$
2. The 3rd proportional to 5, 25 and 500
a) 25 (b) 125 c) 250 d) 100
3. The value of 'X' in $3(x-5) = 7(2x+3) - 4(x-2) - 5(x-2) + 2$
a) 28 b) -24 c) -28 d) -4
4. _____ is a type of equation in which the highest power of any given variable is 1.
a) Linear b) Quadratic c) Polynomial d) Binomial
5. $U = \{1,2,3,4,5,6,7\}$, set $O = \{1,3,4\}$ then the Complement of set A is:
a) $\{2,5,6,7\}$ b) $\{1,2,5,6,7\}$ c) $\{0\}$ d) $\{1,3,4\}$
6. $(A \cup B)'$ is equal to
a) $A \cap B'$ b) $U - U'$ c) $A' \cap B'$ d) $A' \cup B'$
7. In what ways 5 books can be arranged in a book shelf?
a) 120 b) 12 c) 240 d) 24
8. ${}^nC_1 = ?$
a) $(n-1)/r!$ b) 1 c) n d) $n!/r$



9. EMI stands for
 a) Expected Minimum Instalment b) Expected Monthly Instalment
 c) Equated Monthly Instalment d) Equated Minimum Instalment
10. At what time will Rs.800 amounts to Rs.896 at 6% p.a simple interest?
 a) 2 years b) $2\frac{1}{2}$ c) 1 year d) $1\frac{1}{2}$ years

PART-B

Answer any THREE questions. Each answer carries EIGHT marks.

[3 x 8 = 24]

11. a) Two numbers are in the ratio of 3:5. If 9 is subtracted from the numbers, the new ratio becomes 12:23. Find the bigger number. (4 marks)
 b) The shop keeper sells a chair at a discount of 20% on its cost price. If a customer pays Rs.3200, find the cost price of the chair? (4marks)
12. Solve $6-35p-6p^2=0$ using quadratic formula method.
13. Verify De-Morgan's second Law 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}
14. Find the number of permutations of the letters of the word 'INSTITUTION'? How many of these words have vowels come together?
15. Ms. Lakshaya borrowed Rs.30,000 for 6 years. Calculate the interest amount compounded quarterly at 12%p.a

PART-C

Answer any THREE questions. Each answer carries TWELVE marks.

[3 x 12 = 36]

16. a) Salary of Chetan and Mahesh are in the ratio 2 : 3. If the salary of each is increased by Rs. 4000, the new ratio becomes 40 : 54 . What is Mahesh's new salary?
 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 pays Rs.900 for the product, what percentage of profit made by the retailer?
17. Rahul purchases 5 kg of commodity A and 3 kg. of commodity B together cost Rs. 254 and Gokul purchases 2 kg of commodity A and 4 kg of commodity B together cost Rs. 280. Find the price of per kg of commodity A and B using both elimination and substitution method.
18. If $U = \{1,2,3,4,5,6,7,8,9\}$, $A = \{2,4,5,6,8\}$, $B = \{1,3,4,6,7\}$ find:
 i) A' ii) B' iii) $A \cup B$ iv) $A \cap B$ v) $B - A$ vi) $A - B$

19. Determine the number of combinations for selecting 5 cards out of a deck of 52 cards, if there is
- exactly one ace card in each combination.
 - atleast one Queen card in each combination.
20. a) Mr. Johan is depositing Rs. 5,000 in a recurring deposit which pays 9% p.a. compounded interest. How much amount Mr. Johan will get the end of 5th year. (6 marks)
- b) Find the amount of annuity of Rs. 4,000 per annum for 10 years yielding compound interest at 10% per annum. (6 marks)

PART -D

Answer the following question. (Case Study)

[1 x 10 = 10]

21. Two brothers Mr. Harish and Mr. Yashwanth consider to go for a home loan to purchase their new house. They are evaluating different loan options to determine the most suitable financing plan based on their budget of Rs.27000 per month. They have received a loan offer from a bank.
- o Loan Amount: Rs.30,00,000
 - o Interest Rate: 8% per annum (fixed)
 - o Loan Tenure: 20 years

Questions to be answered:

- Calculate the EMI for the loan offer.
- Determine the total amount payable over the life of the loan.
- Create an amortization schedule for the first five years of the loan. Provide the breakdown of the principal and interest components for each monthly instalment.
