PAPER ID-311463

Roll No: | | | | | | | | | | | | |

BBA
(SEM I) THEORY EXAMINATION 2024-25
BUSINESS MATHEMATICS

TIME: 3 HRS **M.MARKS: 70**

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 07 = 14**

Q no.	Question	CO	Level
a.	Using Laws of indices Simplify the following $\frac{3^{n+1}+3^n}{3^{n+3}+3^{n+1}}$	1	K2
b.	With the help of example explain Equivalent Set.	2	K1
c.	What is Finite Set.	2	K1
d.	Define Triangular matrix with the help of suitable example.	3	K2
e.	If A=$\begin{bmatrix}1 & 3\\4 & 5\end{bmatrix}$ and B= $\begin{bmatrix}5 & 3\\4 & 7\end{bmatrix}$ very whether AB = BA	3	K3
f.	Write the formula for calculating Compound interest when interest is compounding monthly.	4	K1
g.	Simplify $\frac{x^3y^{-4}}{a^2b^{-3}}$	1	K2

SECTION B

2. Attempt any *three* of the following: **07 x 3 = 21**

Q no.	Question	CO	Level
a.	Prove that $\left[\frac{x^m}{x^n}\right]^{m+n} \times \left[\frac{x^n}{x^l}\right]^{n+l} \times \left[\frac{x^l}{x^m}\right]^{l+m} = 1$	1	K3
b.	Using appropriate examples and Venn diagrams, explain the following conceptsA∪B, A∩B, Disjoint set, Complementary set and Difference set	2	K2
c.	Solve the following system of equations by Cramer's rule: $x + y + z = 3, \quad 2x + 3y + 4z = 9, \quad x + 2y - 4z = -1$	3	K4
d.	Define the following terms with examples: i) Simple interest rate ii) Compound interest rate iii) Continuous compounding	4	K1
e.	Define the following terms with examples: i) Classical probability ii) Empirical probability iii) Conditional probability	5	K2

SECTION C

3. Attempt any *one* part of the following: **07 x 1 = 07**

Q no.	Question	CO	Level
a.	The sum of 3 numbers in AP is 33 and their product is 1287 find numbers	1	K3
b.	Solve the following equation which can be reduced to quadratic equation $x^4 - 13x^2 + 36 = 0$	1	K3

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4. Attempt any *one* part of the following: 07 x 1 = 07

Q no.	Question	CO	Level
a.	If Universal set U={1,2,3,4,5,6,7,8,9} A={1,3,5,7,9} and B={1,2,3,4,5,6,7} state and prove De-morgan's Laws using given sets	2	K3
b.	Out of 100 boarders of a hostel 80 drink tea, 40 drink coffee and 25 drink both. How many of them drink neither tea nor coffee.	2	K5

5. Attempt any *one* part of the following: 07 x 1 = 07

Q no.	Question	CO	Level
a.	Find the rank of the following matrix A=$\begin{bmatrix}1 & 3 & 3\\1 & 3 & 3\\1 & 2 & 4\end{bmatrix}$	3	K3
b.	Solve the following system of equation with the help of matrices $3x + y + 2z = 3, \quad 2x - 3y - z = -3, \quad x + 2y + z = 4$	3	K5

6. Attempt any *one* part of the following: 07 x 1 = 07

Q no.	Question	CO	Level
a.	A company plans to set up a sinking fund to repay a loan of ₹1,00,000 in 5 years. If the fund earns 6% interest compounded annually, how much should the company deposit at the end of each year?	4	K5
b.	A person invests ₹50,000 in an annuity that pays 8% interest compounded annually. If the annuity pays ₹10,000 at the end of each year, how many years will it take to exhaust the fund?	4	K5

7. Attempt any *one* part of the following: 07 x 1 = 07

Q no.	Question	CO	Level
a.	A bag contains 5 red balls, 3 blue balls, and 2 green balls. One ball is randomly drawn. Find the probability that the ball is: i) Red ii) Not blue iii) Either red or green	5	K3
b.	A box contains 4 white balls and 6 black balls. Two balls are drawn randomly one after the other without replacement. Find the probability that the first ball is white and the second ball is black.	5	K3