PAPER ID-311842

Roll No: ☐☐☐☐☐☐☐☐☐☐☐☐☐

MBA-INT
(SEM I) THEORY EXAMINATION 2024-25
BUSINESS MATHEMATICS

TIME: 3 HRS   **M.MARKS: 100**

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

SECTION A

1.   Attempt *all* questions in brief.   2 x 10 = 20

Q no.	Question	CO	Level
a.	What is finite and infinite set?	1	K_1
b.	Describe union of a set.	1	K_2
c.	Define square matrix.	2	K_1
d.	If A = $\begin{bmatrix} 11 & 22 \\ 33 & 44 \end{bmatrix}$ and B = $\begin{bmatrix} 16 & -21 \\ -32 & 10 \end{bmatrix}$, find A-B.	2	K_5
e.	Which term of the sequence 72, 70, 68, 66,… is 40?	3	K_2
f.	Which term of G.P. 5, 10, 20, 40…is 5120?	3	K_3
g.	Differentiate $\sin^{-1}x$ with respect to x.	4	K_2
h.	If x+y = 121, find $\frac{dy}{dx}$.	4	K_3
i.	Evaluate $\int \log x\, dx$.	5	K_5
j.	Solve the differential equation: $\frac{dy}{dx} = xy$.	5	K_3

SECTION B

2.   Attempt any *three* of the following: 10 x 3 = 30

a.	In a group of 800 people, 550 can speak Hindi and 450 can speak English. How many can speak both Hindi and English.	1	K_2
b.	Using matrix method to solve the following system of linear equation: x-2y-4 = 0, -3x+5y+7 =0.	2	K_3
c.	Find compound interest on rupees 10000 at 12 % per annum for 2 year compounded half yearly.	3	K_5
d.	If $x^2+2xy+y^3 = 42$, find $\frac{dy}{dx}$.	4	K_3
e.	Solve $\frac{dy}{dx} - \frac{y}{x} = 2x^2$.	5	K_2

SECTION C

3.   Attempt any *one* part of the following: 10 x 1 = 10

a.	If $^n C_8 = {}^n C_6$, find $^nC_2$.	1	K_3
b.	If A = {2,3,4,5,6,7}, B = {3,5,7,9,11,13}, find i) A-B ii) B-A	1	K_2

4.   Attempt any *one* part of the following: 10 x 1 = 10

a.	Evaluate $\begin{vmatrix} 1 & a & a^3 \\ 1 & b & b^3 \\ 1 & c & c^3 \end{vmatrix}$	2	K_5
b.	Use Cramer's rule to solve the following equation 5x-7y+z =11, 6x-8y-z = 15, 3x+2y-6z = 7.	2	K_3

5.   Attempt any *one* part of the following: 10 x 1 = 10

a.	If a commission of 5% is given on list price, the gain is 10%.Find the gain percent if the commission is increased to 10%.	3	K_2
b.	If the 4th and 9th terms of a G.P.be 54 and 13122 respectively , find the G.P.	3	K_1

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6.   **Attempt any *one* part of the following:**   **10 x 1 = 10**

a.	Find maximum and minimum values of the function $f(x) = x^2+1 \ \forall \ x \epsilon R$.	4	K_2
b.	If $y =(\cos x)^x$, find $\frac{dy}{dx}$.	4	K_5

7.   **Attempt any *one* part of the following:**   **10 x 1 = 10**

a.	Evaluate $\int \log x \ dx$.	5	K_3
b.	Solve $\int e^x(\tan x + \log \sec x) \ dx$.	5	K_5