Paper Id: 199109 Roll No: | | | | | | | | | | | | | |

MBA-INT
(SEM-I) THEORY EXAMINATION 2019-20
BUSINESS MATHEMATICS

Time: 3 Hours ***Total Marks: 70***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

a.	What is Singleton Set?
b.	What is Null Set?
c.	What is Diagonal Matrix?
d.	Is 127, any term of series 3, 7, 11, 15, 19, ….?
e.	Find the sum of the following series up to ∞:- $4.0 + 0.8 + 0.16 + 0.032 + \cdots$
f.	Differentiate $\log(\log v)$ with respect to v.
g.	Integrate xe^x with respect to x.

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

a.	A mathematics paper is divided in to 3 sections A, B, and C consisting of 6, 7 and 8 questions respectively. 4 questions are to be answered from each section. Find the number of total ways of selecting the questions from the paper by a student.
b.	Using Matrix Method, solve the following system of linear equations:- $3x + 4y + 5z = 18$ $2x - y + 8z = 13$ $5x - 2y + 7z = 20$
c.	A bank clerk, by mistake, calculated the interest on a certain principal for 6 months at 10% p.a. instead of for 5 months at 13% p.a. He thus made an error of 80 paise only. What was the principal?
d.	If $y = \sqrt{x + \sqrt{x + \sqrt{x + \cdots \infty}}}$ then Find $\frac{dy}{dx}$
e.	Evaluate: $\int \frac{1}{1 - x^2}\, dx$

SECTION C

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

a.	If $A = \{a, b, c, d\}, B = \{a, c, e, g\}\ e = \{b, e, f, g\}$' prove that (i). $(A \cup B) \cap C = (A \cap C) \cup (B \cap C)$ (ii). $(A \cap B) \cup C = (A \cup C) \cap (B \cup C)$
b.	If ${}^nP_r = 240$, ${}^nC_r = 120$, Find n and r.

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4. Attempt any *one* part of tbe following: 7 x 1=7

a.	Evaluate the following determinant: $\begin{vmatrix} a & a+b & a+b+c \\ 2a & 3a+2b & 4a+3b+2c \\ 3a & 6a+3b & 10a+6b+3c \end{vmatrix}$
b.	Use Cramer's rule to solve the following equations: $x+y+z=9$ $2x+5y+7z=52$ $2x+y-z=0$

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

a.	The arithmetic mean between two numbers is 34 and their geometric mean is 16. Find the numbers.
b.	Find the sum of the infinite G.P. $\frac{1}{3}, \frac{2}{9}, \frac{4}{27}, \frac{8}{81}, \ldots\ldots\ldots\ldots$

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

a.	If $y = x^3 \log \frac{1}{x}$, then show that $\frac{d^2y}{dx^2} - \frac{2}{x}\frac{dy}{dx} + 3x = 0$
b.	Find the maximum or minimum values of the function. $f(x) = x^2 - 4x + 11$

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

a.	Evaluate:- $\int (2^x + 3^x) dx$
b.	Solve the differential equation: $\frac{dy}{dx} = e^{x-y} + x^2 e^{-y}$

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