Seat No: _____ **Enrollment No: _____**

PARUL UNIVERSITY

FACULTY OF MANAGEMENT

BBA Winter 2019 - 20 Examination

Semester: 1 **Date: 27/11/2019**
Subject Code: 06101105 **Time:10:30 am to 1:00pm**
Subject Name: Business Mathematics-I **Total Marks: 60**

Instructions
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 **Do as Directed.**

A). **Multiple choice type questions.** **(05)**

1. A set is said to be disjoint set if
   a) $A \cap B = 0$ c) $A \cup B = n$
   b) $A \cup B = 0$ d) $A \cap B = n$
2. If $f(x) = 2, x \in N$ is a_____.
   a) Cost Function c) Profit Function
   b) Constant Function d) Equal Function
3. ${}^{n}C_{r} =$
   a) $\frac{n!}{(n-r)!}$ c) $\frac{r!}{(n-r)!\,r!}$
   b) $\frac{n!}{(n+r)!\,r!}$ d) $\frac{n!}{(n-r)!\,r!}$
4. What will be 6th term of progression 100, 93, 86, 79, ...
   a) 142 c) 35
   b) 135 d) 65
5. If a matrix A having order 4×3, then order of transpose of matrix A is _____.
   a) 3×4 c) 3×3
   b) 4×4 d) 4×3

B). **Define the following.** **(05)**

1. Null set
2. Range of a function
3. Permutation
4. Geometric Progression
5. Square Matrix

C). **Direct questions.** **(05)**

1. If $A = \{2,3\}, B = \{4,5\}, C = \{5,6\}$, then $A \times (B \cup C) =$_____
2. If $f(x) = 2x^2 + 3x - 1$, then find $f(2)$.
3. Find ${}^{6}C_{4}$.
4. Find Geometric mean 8 and 32.
5. Find det (A) of matrix $A = \begin{bmatrix} 2 & -5 \\ 5 & 12 \end{bmatrix}$.

Q.2 **Answer the following questions.**

A) 1. Verify $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$ with Venn-diagram. **(04)**

2. The fixed cost in production of transistors is Rs, 2,00,000 and variable cost per unit is Rs.1, 000. If the selling price of a transistor is Rs. 1,500. Find (a) Cost function (b) Revenue function. **(03)**

B).

1. If $A=\begin{bmatrix}1 & 2\\ 4 & 5\end{bmatrix}, B=\begin{bmatrix}3 & 2\\ 6 & 7\end{bmatrix}$, then find AB and BA. **(04)**
2. Find sum up to 7 term of progression 5, 25, 125, 625, ... **(04)**

Q.3 Answer the following questions.

A).

1. In a group of 60 people, 27 like tea and 42 like hot coffee and each person likes at least one of two drinks. Find (a) How many like hot coffee and tea both? (b) How many like tea only? (c) How many like hot coffee only? **(04)**
2. If ${}^{6}P_{n}=120$, find the value of n. **(03)**

B).

1. If $A=\begin{bmatrix}1 & 5\\ 2 & 12\end{bmatrix}$, Find Inverse matrix of A. **(04)**
2. If $f:R\to R, g:R\to R$ are defined respectively by $f(x)=3x+1, g(x)=2x-3$. **(04)**
   Find (a) $f(2x+3)$ (b) $g(3x-2)$.

Q.4 Attempt any three questions. (Each of 5 mark) **(15)**

1. If $A=\{x/|x^2-1|<10, x\in Z\}$, $B=\{x/|x-1|<2, x\in Z\}, C=\{x/|x|\le 1, x\in Z\}$
   Prove that (1) $A\cup(B\cap C)=(A\cup B)\cap(A\cup C)$
   (2) $A\cap(B\cup C)=(A\cap B)\cup(A\cap C)$
2. Find k if ${}^{8}P_{5}={}^{7}P_{5}+k{}^{7}P_{4}$.
3. Solve the following equations using Matrix Inversion Method: $2x+3y=11, x+y=7$.
4. The first term of Geometric Progression is 3 and its last term is 768 and if the sum of all terms of the series is 1533, find the common ratio and number of terms.