PARUL UNIVERSITY
FACULTY OF MANAGEMENT
BBA Winter 2022 - 23 Examination

Semester: 1   **Date: 23-01-2023**
Subject Code: 06101105   **Time: 10:30am to 1:00pm**
Subject Name: Business Mathematics-1   **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/Fill in the blanks. (Each of 1 mark)   **(05)**

1. The given progression 1,2,3,4, 5... is an example of   _____

     a)Arithmetic Progression   c)Geometric Progression
     b) Harmonic Progression   d) None of these

$$2 \; {}^{n}P_{r} = \underline{\quad\quad\quad}$$

     a) $n!$ c) $\dfrac{n!}{(n-r)!}$

     b) $\dfrac{n!}{(n-r)!r!}$ d) $\dfrac{n!r!}{(n-r)!}$

3 If $B \subseteq A$ then $A \cap B =$

     a)B c)$\emptyset$
     b)A d) None of these

4. If A=$\begin{bmatrix} 1 & 3 \\ 0 & 2 \end{bmatrix}$ then det(A)= _____

     a) 1   c) 0
     b) 2   d) 3

5 Let A, B be matrices of size m× n, then $(A + B)' =$_____

     a)A' c) $(A' + B')$
     b)B' d) None of these

B).Define the following. (Each of 1 mark)   **(05)**
1. Union of two sets
2. Difference of two sets
3. Complement of a set
4. Square Matrix
5. Diagonal matrix

C).Direct questions.(Each of 1 mark)   **(05)**
1. Find the 20th term in the sequence 9, 15, 21, 27, 33, ….

2. Given $g(x) = 3x^2 - 4$, find the value of $g(3)$

3. Find the sum of the given series 5+6+7+8+………+19.

4. How many words can be made(without meaning) from English?

5. Evaluate ${}^{5}C_{3}$

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

A) (04)

1. Find Product AB & BA for A= $\begin{bmatrix} 5 & 1 & 5 \\ 0 & 3 & 4 \\ 6 & 7 & 8 \end{bmatrix}$ and B= $\begin{bmatrix} 2 & 3 & 1 \\ 5 & 6 & 4 \\ 2 & 5 & 10 \end{bmatrix}$

(03)

2. If $A = \{1,2,3\}$ and $B = \{4,6,5\}$ then find (i) $A \times B$,(ii) $B \times A$

B) (04)

1. For the functions f and g, find their domain and then compute *fog* for number c,

$f(x) = 3x^2 - 4x;\ g(x) = 2x - 5;\ c = 4$.

(04)

2. If A= $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ then find $A^2 - A + I$.

Q.3 **Answer the following questions.**

A). 1. Find the sum of the given series 2+4+8+16+………… up to 10 terms. (03)

2. If $f(x) = \dfrac{1}{1+x}$, then prove that $f(x) + f\left(\dfrac{1}{x}\right) = 1$. (04)

B) 1 If $^nC_2 = 10$, find the value of n. (04)

2. Solve : $\begin{vmatrix} 1 & 4 & 7 \\ 2 & 5 & 8 \\ 3 & 6 & 9 \end{vmatrix}$

(04)

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

1 If $A = \{1,2\}$, $B = \{3,4\}$ and $C = \{4,5\}$ then prove that

$$A \times (B \cup C) = (A \times B) \cup (A \times C)$$

2. If A= $\begin{bmatrix} 1 & 2 & 3 \\ 0 & -3 & 1 \\ 4 & 3 & 6 \end{bmatrix}$ find the adjoint of matrix A.

3. If A= $\begin{bmatrix} 4 & 4 \\ 5 & 6 \end{bmatrix}$, find inverse of A.

4. In a group of 70 people, 45 speak English, 33 speak French and 10 speak neither English nor French. (a). How many people speak both English as well as French?

(b). How many can speak only English language?

(c). How many can speak only French language?