Seat No: _____ Enrollment No: _____

PARUL UNIVERSITY
FACULTY OF COMMERCE
B.Com Internal Examination 2016

Semester : I
Subject Code : 16100106
Subject Name: Business Mathematics

Date: 13/10/2016
Time: 10:30 to 12:30
Total Marks: 40

Instructions:
1. Attempt all questions from each section
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.

Q.1 Fill in the blanks. (08)

1 Let A be a singleton set then no.of subsets of A = ____
A. 0 B. 1 C. 2 D. 4

2 If $n(U) = 4, n(A) = 2, n(B) = 3$ and $n(A \cap B) = 2$then $n(A') =$ ____.
A. 0 B. 1 C. 2 D. 4

3 If A is 6×6 matrix, B is 6×7 and C is 6×5 matrix then which of the following is possible?
A. CA B. BC C.AB D. none of them

4 For any two disjoint sets which of the following is not true.
A. $n(A \cup B) = n(A) + n(B)$ B. $n(A \cap B) = 0$
C. $n(A \cap B) = n(A) + n(B)$ D. $A \cap B = \emptyset$

5 How many terms are there in the geometric progression 2, 4, 8, ..., 128 ?
A. 5 B. 6 C. 7 D. 9

6 If $A = \begin{bmatrix} 1 & 12 & 2 & 3 \\ 5 & 4 & 6 & 0 \\ 1 & 4/5 & 6/5 & 0 \end{bmatrix}$ then $tr(A)$is____.
A. -7 B. 7 C. 0 D. Not possible

7 Two matrices A and B are multiplied to get BA if
A.both are rectangular C.no of rows of A is equal to no of columns of B
B.both have same order D.no of columns of A is equal to columns of B

8 Give an example of a matrix which is symmetric as well as skew-symmetric, upper triangular as well as lower triangular.

Q.2 A. If $U = \{x = 10 + a \mid a = 0,1,2,3,4,5\}, A = \{x \in \mathbb{R} \mid -15 < x < 13\}$, $B = \{x \mid 11 < x \leq 15\}$then rewrite the sets using listing method. And verify $(A \cap B)' = A' \cup B'$ (04)

B. I. Find the sum of the first 19 terms of the AP 4, -2, -8, ...
II. Find the sum of the first 12 terms of the GP with first term 3 and common ratio 1.5. (04)

Q.3 A. Evaluate (i) $2A + 3B - C^T$ (ii) $3C - 2A^T + B^T$

if $A = \begin{pmatrix} 1 & 2 & -3 \\ -1 & 0 & 2 \end{pmatrix}$, $B = \begin{pmatrix} 2 & 4 & 0 \\ 3 & -1 & 1 \end{pmatrix}$, $C = \begin{pmatrix} 2 & 1 \\ 1 & 0 \\ -1 & 1 \end{pmatrix}$ (03)

B.Using Cramner's rule solve

$$x + 2y + 3z = 14$$
$$3x + y + 2z = 11$$
$$2x + 3y + z = 11$$

Q.4 Attempt any 2 out of 3

(i) There are 35 students in art class and 57 students in dance class. Find the number of students who are either in art class or in dance class;
(a) When two classes meet at different hours and 12 students are enrolled in both activities.
(b) When two classes meet at the same hour.

(ii) An AP is given by $k, \frac{2k}{3}, \frac{k}{3}, 0, \ldots$ If the $20th$ term is equal to -16, find k.
Also, using this value of k, (a) find the sixth term. (b) find the sum of first 10 terms.

(iii) If $U = \{x \in \mathbb{Z} \mid -3.5 \leq x < 4\}, A = \{x \in N \mid -3.5 \leq x < 4\}$,
$B = \{x \mid (x-1)(x+1)(x+2) = 0\}$ then
(a) Find $A' \cap B : A \times B$
(b) Find power set of B

Q.5 Attempt any 2 out of 3

(i) Solve using inverse of a matrix :

$$\frac{3}{x} - \frac{4}{y} = 4$$
$$\frac{4}{x} - \frac{5}{y} = 5$$

(ii) Express $A = \begin{bmatrix} 1 & 2 & 3 \\ -2 & 0 & 1 \\ -3 & -2 & 1 \end{bmatrix}$ as a sum of a symmetric and a skew-symmetric matrix

(iii) Find A^{-1} ,if exists, for $A = \begin{bmatrix} -1 & 3 & 2 \\ -2 & 1 & 0 \\ 0 & -1 & -2 \end{bmatrix}$