

Roll No.

57502

BBA Ist Semester (N.S.) 2014-17

Examination–November, 2014

Business Mathematics

Paper-BB-N-102

Time : 3 hours

Max. Marks : 80

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard will be entertained after the examination.

Note : Attempt **five** questions in all. Question No. 1 (Section A) is **compulsory**. From Section B, attempt **four** questions (**one** question from each unit). All questions carry equal marks.

SECTION A

1. Using suitable examples, explain the following:

(a) Tabular method of presenting a set

57502-4650-(P-4)(Q-9)(14)

(1)

[Turn Over

~~(b) Proper subset~~

~~(c) Index~~

~~(d) Arithmetic progression~~

~~(e) Factorial~~

(f) Binomial expression

~~(g) Identity matrix~~

~~(h) Transpose of a matrix~~

SECTION B

Unit I

2. In a survey of 100 families, number of families who read three magazines, A, B and C were found to be as follows:

C only - 18, C but not B - 23, C and A - 8, C - 26, A - 48 and A and B - 8; none of the three - 24. Using set theory, find the number of families who read magazine

(i) B, (ii) A and B or B and C, (iii) A if they did not read magazine B and (iv) B and C but not A.

57502-4650-(P-4)(Q-9)(14)

(2)

3. (a) For any three sets A, B and C prove that

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

(b) If $A = \{1, 2, 3\}$, $B = \{2, 3, 4, 5\}$ and $C = \{2, 4, 6, 8\}$:

Show that

(i) $A \cup B = (A - B) \cup B$

(ii) $A \cap (B - C) = (A \cap B) - (B \cap C)$

Unit II

4. Prove that

$$\frac{(81)^n \cdot 3^5 - 3^{4n-1} \cdot (243)}{9^{2n} \cdot 3^3} - \frac{4 \cdot 3^n}{3^{n+1} - 3^n} = 4$$

5. Find the sum of all odd numbers between 2 and 1000 which are

(i) divisible by 3 and

(ii) not divisible by 3, i.e. find the sum of 5, 7, 11, 13, 17, 19,

Unit III

6. (a) How many numbers of less than 1000 and divisible by 5 can be formed using the digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 if no digit occurs more than once in each number?

(b) Find the term independent of x in the

expansion of $\left(2x + \frac{1}{3x^2}\right)^9$

7. Solve $\frac{x-p}{q} + \frac{x-q}{p} = \frac{q}{x-p} + \frac{p}{x-q}$

Unit IV

8. (a) Differentiate $x^2(x+1)(x^3+3x+1)$

w.r.t. x

(b) Integrate $\frac{1}{\sqrt{x-1} - \sqrt{x+1}}$ w.r.t. x

9. Solve the following set of linear equations using determinants:

$$x + y + 2z = -1$$

$$x - 2y + z = -5$$

$$3x + y + z = 3$$