

Roll No. ....

57002

**B.B.A. (Re-appear) 1st Semester  
(Old) 2011-14  
Examination - November, 2016**

**Business Mathematics**

**Paper-BBA-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 compulsory question No. 1 from

Section-A and four questions from Section-B (one question from each). All questions carry equal marks.

**Section-A**

1. (a) Write the sub-sets of the set  $A = \{2, 5\}$   
(b) What is the sum of first 6 natural numbers ?

57002-1700-(P-4)(Q-9)(16) (1)

[ Turn Over

(b) Find the number of combinations that can be made by taking 4 letters of the word COMBINATION.

7. If the 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> terms in the expansion of  $(x + a)^n$  are 240, 720 and 1080 respectively, find the values of x, a and n.

**Unit-IV**

8. If  $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ ,  $B = \begin{bmatrix} -2 & 3 & -4 \\ 6 & -5 & 8 \\ 7 & 10 & 11 \end{bmatrix}$ , and

$$C = \begin{bmatrix} 3 & -5 & 10 \\ 9 & 8 & -4 \\ -10 & 4 & 11 \end{bmatrix}, \text{ Find } 3A + 4B - 5C$$

9. A certain machine sells for ₹ p hundred and the demand of x hundred machines is given by  $x = \frac{90}{p+5} - 3$ .  
At which price and output, the total revenue is maximum ?

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## Section-B

### Unit-I

2. If  $A = \{1,2,3\}$ ,  $B = \{2,3,4,5\}$  and  $C = \{2,4,6,8\}$  verify that :

- (i)  $A \cup B = (A - B) \cup B$
- (ii)  $A - (A - B) = A \cap B$
- (iii)  $A \cap (B - C) = (A \cap B) - (B \cap C)$

57002-1700-(P-4)(Q-9)(16) (2)

- (c) Differentiate between equal and equivalent sets.
- (d) If  $a^2 = 8$ , find the value of  $a^4$ .
- (e) Find the number of permutations of the word OCEAN.
- (f) What is the 4<sup>th</sup> term of the expansion  $(a + b)^n$ .
- (g) What is an identity matrix ? Explain and illustrate.
- (h) Integrate  $(x^2 + 3)$  w.r.t.  $x$

### Unit-II

3. (a) If A, B and C be any three sets, prove that  $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$ .
- (b) Let A, B and C be three sub-sets of universal set U prove that  $[A \cup (B \cap C)] \cap B \cap C$ .
4. (a) Show that  $\frac{3 \cdot 2^{n+1} + 2^n}{2^{n+2} - 2^{n-1}} = 2$
- (b) Solve the equation  $\log_x 4 + \log_x 16 + \log_x 64 = 12$
5. Find the sum of all odd numbers between 2 and 1000 which are (i) divisible by 3 (ii) not divisible by 3.

### Unit-III

6. (a) How many numbers between 1000 and 10000 can be formed with the digits 1, 2, 3, 4, 5, 6, 7, 8, 9, no digit being repeated.

57002-1700-(P-4)(Q-9)(16) (3) [ Turn Over