

(3) Seat No.: \_\_\_\_\_

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**SARDAR PATEL UNIVERSITY****BBA (IB) EXAMINATION****SEMESTER – I (NC)**Saturday, 18<sup>th</sup> March 2017**UM01CBBB06: BUSINESS MATHEMATICS**

Time: - 2.00 p.m. to 4.00 p.m.

Total Marks: - 60

**Q.1**

- (a) Verify using Venn Diagram:  $(A \cap B)' = A' \cup B'$  04
- (b) If  $A$  = set of the letters of the word 'WHAT',  $B$  = set of the letters of the word 'HEAT' and  $C$  = set of the letters of the word 'EATA'. Then find  $B \times (A - B)$  and  $C \times C$ . 05
- (c) If  $A = \{1, 2, 5, 6, 8\}$ ,  $B = \{x: x \text{ is even}, x \leq 10, x \in N\}$  and  $C = \{1, 2, 3, 5, 6, 11, 12\}$ . Then verify 06
1.  $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$
  2.  $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$

**Q.1****OR**

- (a) Define the terms with illustration: (1) Union of two sets (2) Compliment of a set 04
- (b) If  $U = \{x: 1 \leq x \leq 10, x \in N\}$ ,  $A = \{1, 2, 3, 4, 5\}$ ,  $B = \{2, 3, 4, 6, 7\}$  and  $C = \{3, 4, 5, 7\}$ , then find  $A \cup B$ ,  $B \cap C$ ,  $A - B$ ,  $A \Delta C$  and  $A'$ . 05
- (c) If  $U = \{x: 1 \leq x \leq 10, x \in N\}$ ,  $A = \{1, 2, 5, 6, 9\}$  and  $B = \{2, 4, 6, 8\}$  then 06
- Verify: (1)  $(A \cup B)' = A' \cap B'$  (2)  $(A \cap B)' = A' \cup B'$

**Q.2**

- (a) Show that the equation of a line having slope  $m$  and  $Y$ - intercept  $c$  is  $y = mx + c$ . 04
- (b) Show that the points  $P(2, 3)$ ,  $Q(6, 5)$  and  $R(12, 8)$  are collinear. 05
- (c) Find the equation of a line whose slope is 2 and which passes through the intersection of the lines  $x - 4y + 18 = 0$  and  $x + y - 12 = 0$ . 06

**OR****Q.2**

- (a) Show that the equation of a line having slope  $m$  and passing through  $A(x_1, y_1)$  is  $y - y_1 = m(x - x_1)$ . 04
- (b) Find  $a$  if the distance between  $A(a, -4)$  and  $B(-8, 2)$  is 10. 05
- (c) Find the equation of a line passing through the point  $(7, 4)$  and making equal intercepts on the co-ordinate axes. 06

Q.3

- (a) The production of a company at present is 40,000 tons. It aims at 9% growth rate of Production. Find out its production at the end of 8<sup>th</sup> year? 07
- (b) The population of a city at present is 76,162, which was 65,673 before 5 years. Find out the rate of growth of the population of the city. 08

OR

Q.3

- (a) Mr. A borrows Rs. 32,000 at the rate 16% of simple interest and invests it on the same day at 14% of compound interest. At the end of 5 years how much profit or loss will he have? 07
- (b) Find the compound interest on Rs. 13500 at 11% per annum for 4 years, if the interest is calculated (1) annually (2) Semi-annually. 08

Q.4

- (a) In a mixture of 60 litres, the ratio of milk and water 2: 1. If this ratio is to be 1: 2, then find the quantity of water to be further added. 07
- (b) Convert the following decimals into fraction: 08
- (1) 11.45% (2) 4.23% (3) 0.0975% (4) 0.002%

OR

Q.4

- (a) Define: Proportion, Percentage and Ratio with example. 07
- (b) Salaries of Mr. A and Mr. B are in the ratio 2: 3. If the salary of each is increased by Rs. 4000, the new ratio becomes 40: 57. What is Mr. B's salary? 08

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