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SEAT No. \_\_\_\_\_

No. of Printed Pages : 02

[59/A-23]

**SARDAR PATEL UNIVERSITY****BBA(IB) SEM-I EXAMINATION****DATE: 15-11- 2017****BUSINESS MATHEMATICS****TIME: 2:00pm to 4:00pm****Wednesday****Subject code: UM01CBBF07/B06****Total Marks: 60**

Note: (1) Use of simple calculator is allowed

(2) Figures on right indicate marks

Q-1 (A) Explain the following terms: (5)

(1) Union of sets (2) Power of a set

(B) If  $A=\{2,3,4\}$ ,  $B=\{3,4,5,6\}$ ,  $C=\{2,4,6,8\}$  verify that (5)(1)  $A \cup B = (A-B) \cup B$  (2)  $A \cap (B-C) = (A \cap B) - (A \cap C)$ (C) If  $A=\{2,3,4\}$ ,  $B=\{1,3,4\}$ ,  $S=\{1,2,3\}$  and  $T=\{1,3,5\}$  verify that (5) $(A \times B) \cap (S \times T) = (A \cap S) \times (B \cap T)$ 

OR

Q-1 (A) Explain the following terms: (5)

(1) Intersection of two sets (2) Difference of two sets

(B)  $A=\{2,4,6,8,10\}$   $B = \{1,3,5,7,9\}$ , and  $C=\{3,4,7,8,11,12\}$  then show that (5)(1)  $(A \cup B) \cup C = A \cup (B \cup C)$  (2)  $(A \cap B) \cap C = A \cap (B \cap C)$ (C) Using Venn diagram prove that (i)  $(A \cap B)' = A' \cup B'$  (ii)  $(A \cup B)' = A' \cap B'$  (5)Q-2 (A) Derive equation of line with slope 'm' and passing through a point A ( $x_1, y_1$ ). (5)

(B) Find the area of triangle whose vertices are A(-2, 3), B(3, 2) and C(1, -3). (5)

(C) Prove that the lines  $4x + 3y + 2 = 0$  and  $6x - 8y + 11 = 0$  are perpendicular to each other. (5)

OR

Q-2 (A) Obtain the straight line equation passing through two given points. (5)

(B) Find the equation of a line passing through the intersection of  $x - 2y + 15 = 0$ and  $3x + y - 4 = 0$  and parallel to  $2x - 3y + 7 = 0$ . (5)

- (C) The X intercept of a line is 3 times its Y intercept and its passes through the Point (3,5).Find its equation. (5)

- Q-3 (A) Explain: (1) Simple Interest (2) Compound Interest (5)  
 (B) The production of a company at present is 30000 tons. It aims at 7.5% growth rate of production. Find out its production at the end of 7<sup>th</sup> year. (5)  
 (C) Population of a city is 49,949 at present, before 7 years the population of a city was 35,498 find the rate of growth of population of a city. (5)

OR

- Q-3 (A) Ketan borrows ₹ 1600 at the simple rate of interest at 15% and deposit for 5 years at 12% compound rate of interest. Find out his profit or loss at the end of five years. (5)  
 (B) What amount should Mr Rohit invest at 10% compound rate of interest in order to receive Rs 100000 after 10 years for his daughter's marriage? (5)  
 (C) Find the compound interest of Rs 20000 at 10% for 3 years if interest is calculated every six months (5)

- Q-4 (A) The monthly income of two persons are in the ratio 4:5 and their monthly expenditure are in the ratio 7:9. If each saves Rs 50 per month, find their monthly incomes. (5)  
 (B) The ratio of the prices of two houses was 16:23. Two years later when the price of the first has increased by 10% and that of second by Rs 447, the ratio of the prices becomes 11: 20. Find the original prices of the two houses. (5)  
 (C) The ratio of the speed between two trains is 7:8. If the second train runs 400 Km in 5 hours, find the speed of the first train. (5)

OR

- Q-4 (A) Two numbers are in the ratio 3:4, if 6 be added to each terms of the ratio, then the new ratio will be 4:5, then find the numbers. (5)  
 (B) Present age of father is 42 years and that of son is 14 years .Find the ratio of (i) Present Age of father to the present age of son (ii) Age of father to the age of son when son was 12 years old. (5)  
 (C) A car travels 90 km in  $2\frac{1}{2}$  hours (i) How much time required to cover 30 km with the Same speed (ii) Find the distance covered in 2 hours with the same speed. (5)

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