

**SARDAR PATEL UNIVERSITY**  
**B B A (I Semester) Examination**  
**28 April 2015 (Tuesday)**  
**2.30 - 4.30 pm**  
**UM01CBBB06 – Business Mathematics**

Total Marks : 60

- Q1 [1] Define the terms with illustration: [4]
- (1) Disjoint Set
  - (2) Compliment of a set
  - (3) Union of two sets
  - (4) Intersection of two sets
- [2] If  $A = \{1, 3\}$ ,  $B = \{5, 6\}$  &  $C = \{6, 9\}$ , then prove  $A \times (B \cap C) = (A \times B) \cap (A \times C)$ . [5]
- [3] A town has a population of 50,000 persons and out of them 28,000 read Gujarat Samachar and 23,000 read Sandesh, while 4,000 read both the papers. Find (1) How many read neither Gujarat Samachar nor Sandesh. [6]
- (2) How many read only one paper.
- OR
- Q1 [1] If  $A = \{1, 2\}$  and  $B = \{2, 3\}$  then find  $A \times B$ ,  $A - B$ ,  $A \cup B$ ,  $A \cap B$ . [4]
- [2] If  $U = \{1, 2, 3, 4\}$ ,  $A = \{1, 2\}$  &  $B = \{2, 3\}$  than prove De-Morgan's laws. [5]
- [3] In a class, 85 students pass in at least one of the 3 subjects English, Gujarati and Hindi. The number of students passing in each of these 3 subjects is same. Also the number of students passing in both English and Gujarati is 20, passing in both Gujarati and Hindi is 25 and passing in Hindi and English is 35. If the numbers of students passing in all the three subject is 15, then find the number of students passing in each of the three subjects. [6]
- Q2 [1] Find the equation of a line passing through  $A(x_1, y_1)$  and having slope  $m$ . [4]
- [2] Find  $x$  if the distance between  $A(-3, -2)$  and  $B(x, 1)$  is  $3\sqrt{10}$ . [5]
- [3] Find the equation of the line which passes through the point of intersection of the lines  $x + 2y - 1 = 0$  and  $2x + 3y - 4 = 0$  and makes equal intercept on both axis. [6]

OR

- Q2 [1] Find the equation of a line joining two points  $A(x_1, y_1)$  and  $B(x_2, y_2)$ . [4]  
[2] If  $A(-3, 2)$ ,  $B(1, -2)$  &  $C(5, 6)$  are vertices of  $\triangle ABC$ , find the area of  $\triangle ABC$ . [5]  
[3] Find the equation of line passing through the point of intersection of the lines  $5x + y + 4 = 0$  &  $2x + 3y - 1 = 0$  & is perpendicular to  $2x - y - 8 = 0$ . [6]

- Q3 [1] What is an aggregate amount for Rs. 4000 at 12% rate of compound interest for 3 years if the interest is compounded every six months? [7]  
[2] The population of a city at present is 76,162, which was 65,673 before 5 years. Find out the rate of growth. [8]

OR

- Q3 [1] Find the compound interest on Rs. 12500 in 2.5 years at 6% p.a compounded annually. [7]  
[2] Find the compound interest on Rs. 11920 at 12% per annum for 2 years, if the interest is calculated (1) annually (2) half-yearly. [8]

- Q4 [1] A milkman has two kinds of mixture of milk and water. The first mixture contains 15% of water and the second contains 10% water. One dealer mixes 60 litres of the first mixture with 140 litres of second. Find the percentage of water in the mixture. [7]  
[2] Convert the following into decimal fraction [8]  
(1) 12.75%      (2) 6.25%      (3) 0.975%      (4) 0.003%

OR

- Q4 [1] A battalion had food for 65 days for 800 soldiers. After 10 days 300 more soldier join. Find how long this food last. [7]  
[2] 6 carpenters working 8 hours a day can make 24 tables in 20 days. In how many days 12 carpenters working 6 hours a day will make 36 tables. [8]

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