**SESSION JUL/AUG 2021**

**PROGRAM MASTER OF COMPUTER APPLICATIONS (MCA)**

**SEMESTER I**

**COURSE CODE & NAME DCA6103 - FOUNDATION OF MATHEMATICS**

**Ques 1 a) Suppose that p and q are prime numbers and that n = pq. Use the principle of inclusion-exclusion to find the number of positive integers not exceeding n that are relatively prime to n**

Answer:

Since n is the product of two prime numbers p and q, any number which is relatively prime to n must be relatively prime to both p and q. Consider the following two sets of . Its Half solved only

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**Ques1 b) Show that ~[p V(~p ^q)] and ~p ^~q are logically equivalent.**

**Answer:**

**Ques 2 a) Find lim x~0 (27x-9x-3x+1)/(1-cos x)**

**Answer:**

**Ques2 b)Find the derivative of f(x)=log e x ,x>0, using first principle.**

**Sol:**

**F(x)=**

**Ques 3 a)If y = e ^ (a \* sin-1(x)) , prove that (1-x2)yn+2 -(2n+1)xyn+1-(n² + a²)yn = 0.**

**Answer:**

**Hence find the value of yn when x=0.**

**Sol:**

**Differentiate**

**Ques 3 b)Find all the asymptotes of the curve y ^ 3 - 6x \* y ^ 2 + 11x ^ 2 \* y - 6x ^ 3 + x + y = 0.**

**Sol:**

**Given :**

**Ques 4 a)Show that**

**Sol:**

**Ques 4 b) Ifu = (3xy-y3)-(y²-2x)³/2 show that**

**Sol:**

**Ques 5 Verify Green's theorem for , where c is the region bounded by the parabola y = x and the line y=x.**

**Sol:**

**Boundary condition**

**x=0,1**

**Ques 6 a)Solve the system of equations x + y + z = 9; 2x + 5y + 7z = 52; 2x+y=z=0.**

**Sol:**

**x+y+z=9**

**Ques 6 b)Find the value of √-5+12i.**

**Sol:**

**Let z=x+iy**