**SESSION**

**JUL/AUG 2021**

**PROGRAM**

**BACHELOR OF COMPUTER APPLICATIONS (BCA)**

**SEMESTER**

**I**

**COURSE CODE & NAME**

**DCA1103 – BASIC MATHEMATICS**

**1a) It is known that in a sports club, there are 1000 registered members. 60% of members play Tennis, 50% of members play Cricket, 70% of members play Football, 20% of members play Tennis and Cricket, 40% of members play Cricket and Football and 30% of members play Football and Tennis. If someone claimed that 20% of members play all three sports, what is your opinion and why? Use inclusion and exclusion principle to provide your opinion)**

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**Ans**

Members playing tennis, P(T)= 60%

Members playing cricket, P(C)= 50%

Members playing football, P(F)= 70%

Members playing tennis and cricket, P(T^C)= 20%

**2 b) If for a right-angle triangle for the acne angle 0, sin θ = 12/13, find the value cos θ and tan θ and show that**

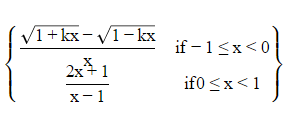
**sin^2 + cos^2 = 1**

**tan^2 + 1 = sec^2**

**Ans**

Given:

**2 c) Find the value of the constant a, for which, the following function f(x) is continuous**



**Ans**

**3a) Differentiate the following function with respect to the variable .**

**3.b) Evaluate the following definite integral ∫x/√(3 - x) + √x dx**

**Ans**

**4 a) The differential equation (2x ^ 2 + b \* y ^ 2) \* d \* x + cxydy can made exact by multiplying with integrating factor 1/(x ^ 2) Then find the relation between band c.**

**Ans**

Multiplying the differential equation by 1/x2, we get    
It is exact  
So,

**4 b) Find one-fourth roots of unity**

X^4=1

X^2= +-1

X^2=1

**5 A) Solve the following system of equations by using the concept of matrices and determinants.**

**5x + 7y + 2 =0**

**4x + 6y + 3 =0**

**Ans**

5x+7y+2=0⇒5x+7y=−2

4x+

**5b) Find whether the following series are convergent or divergent**

This is convergent series because denominator is always bigger than numerator so, it will be convergent series.

Sum of Sqrt(n/

**6a)Bag I contain 3 red and 4 black balls and Bag Il contain 4 red and 5 black balls. One ball is transferred from Bag I to Bag II and then a ball is drawn from Bag II. The ball so drawn is found to be red Find the probability that the transferred ball is black.**

Let

**(b) The daily earning of a vendor for a period of 40 days are given. Calculate Standard Deviation and coefficient of variation,**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Daily earning | Days(f) | xi | (xi-mean)/9 | F1ui | Fiui2 |
| 118-126 | 3 | 122 | -3 | -9 | 27 |
| 127-135 | 8 | 131 | -2 | -16 | 32 |
| 136-144 | 9 | 140 | -1 | -9 | 9 |