Nagar Yuwak Shikshan Sannstha's

Yeshwantrao Chavan College of Engineering

(An Autonomous Institution Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

Hingna Road, Wanadongri, Nagpur.

ODD TERM-2022-23	**Mid Semester Exam - I**
Semester- III	**Date:- 30/11/2022**
Subject Code: AIDS2201/AIML2201	**Subject : DMGT**
Time :1½ Hours	**Max. Marks: 30**

Note:-

1. Each Question is Compulsory.
2. Non-programmable calculators are only allowed.
3. Assume suitable data wherever it is necessary.

Q.1 (A)	If A,B and C are any non-empty sets then show that i) $A \cup (B - C) = (A \cap B) - (A \cap C)$ ii) $A \cap (B - C) = (A \cup B) - (A \cup C)$	[5]	CO-1	L3
Q.1 (B)	Test the validity of the following argument. If it rains today, we will not have a party today. If we do not have party today, we will have a party tomorrow. ∴ If it rains today, we will have a party tomorrow.	[5]	CO-1	L3
Q.2 (A)	Let $A = R \times R$. A relation R on A is defind as $(a,b)R(c,d)$ iff $a^2 + b^2 = c^2 + d^2$. Show that R is an equivalence relation.	[5]	CO-2	L3
Q.2	Let A= {1, 2, 3}. The relation matrix	[5]	CO-2	L3

(B)	M_R & M_S are given by $M_R = \begin{bmatrix} 1 & 1 & 0 \\ 1 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$, $M_S = \begin{bmatrix} 1 & 1 & 0 \\ 1 & 1 & 1 \\ 0 & 1 & 1 \end{bmatrix}$ Find $(M_R)'$, $(M_S)'$, $M_{R \cup S}$, $M_{R \cap S}$. $M_{R \cdot S}$			
Q.3 (A)	Prove that fourth roots of unity forms a group under multiplication.	[5]	CO-3	L3
Q.3 (B)	Show that the set of matrices. $A_\alpha = \begin{bmatrix} \cos\alpha & -\sin\alpha \\ \sin\alpha & \cos\alpha \end{bmatrix}, \alpha \in R$. forms a monoid.	[5]	CO-3	L3

$(P \to \sim q) \cap (\sim q \to r) \to P \to r$.