SRM Institute of Science and Technology
College of Engineering and Technology
Department of Mathematics

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Academic Year: 2023-2024(ODD)

Tutorial sheet - 1

Date:16/10/2023

Course Code &Title:18MAB302T-Discrete Mathematics for Engineers
Year & Sem:III/V

Q. No	Questions	Answer Keys
1	Give an example of a non-abelian group.	
2	Examine whether the function $\phi:(Z,+) \to (Z,+)\ defined\ as\ \phi(x) = x+1$ is a homomorphism or not.	**No**
3	Compute $\alpha\beta, \beta\alpha\ and\ \alpha^{-1}$ if $\alpha = \begin{pmatrix} 1 & 2 & 3 & 4 \\ 2 & 4 & 1 & 3 \end{pmatrix}$ and $\beta = \begin{pmatrix} 1 & 2 & 3 & 4 \\ 3 & 4 & 1 & 2 \end{pmatrix}$	
4.	Let $G = \{f_1, f_2, f_3, f_4\}$ where $f_1(x) = x, f_2(x) = -x$, $f_3(x) = 1/x, f_4(x) = -1/x$ and $\circ$ be the composition of function, prove that $(G, \circ)$is a group.	
5.	Prove that every cyclic group is abelian.	
6.	If $(G,*)$is a group then prove that G is abelian if and only if $(a*b)^2 = a^2 * b^2$.	
7.	Prove that the subgroup of a cyclic group is cyclic.	
8.	Prove that the set $\{1,3,7,9\}$is an abelian group under multiplication modulo 10.	
9.	State and prove the necessary and sufficient condition for a non-empty subset H of a group G to be a subgroup of G.	
10.	Show that the intersection of two subgroups of a group is a subgroup.	