BHARATI VIDYAPEETH'S
INSTITUTE OF COMPUTER APPLICATIONS & MANAGEMENT (BVICAM)
(Affiliated to Guru Gobind Singh Indraprastha University, Approved by AICTE, New Delhi)

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Course Code: MCA-101   Course Name: Discrete Structures

Assignment - 2
(Based on Unit - III)

Sr. No.	Question	BTL	CO	Marks
1	Assume G is an abelian group with identity e, prove that all elements x of G satisfying the equation $x^2 = e$ form a subgroup H of G.	BTL4	CO2	5
2	Assume G is the set of all ordered pairs (a,b) where a(!=0) and b are real the binary operation * on g is defined by (a,b) * (c,d) = (ac, bc+d) Show that (G,*) is a non-abelian group. Show also that the subset H of all those elements of G which are of the form (1,b) is a subgroup of G.	BTL4	CO2	5
3	Prove that the set of inverses of the elements of a right coset is a left coset, show that $(Ha)^{-1} = a^{-1}H^{-1}$.	BTL4	CO2	5
4	If for each a and b is group G $(ab)^2 = a^2b^2.$ Prove G is abelian.	BTL4	CO2	
5	If H is a normal subgroup of G and K is a subgroup of G such that H $\subseteq$ K $\subseteq$ G. Prove That that H is a normal subgroup of K also.	BTL4	CO2	5
6	Given the Generator Matrix G: 10100100 10111000 00101101 Corresponding to encoding function $e:B^3 \rightarrow B^8$, find parity check matrix and decode following received words 10110101, 10011001, 00010100 and 00110011.	BTL1	CO2	5
7	Find integer m and n such that 28844 m +15712 n = 4	BTL1	CO4	3
8	Make use of fermat's little theorem to compute 3^{302}(mod 5)	BTL4	CO4	3