P P SAVANI UNIVERSITY

Second Semester of B.Sc. IT Examination

January 2022

SESH1061 Discrete Mathematics for Computer Applications

24.01.2022, Monday **Time: 09:00 A.M. To 11:30 A.M.** **Maximum Marks: 60**

Instructions:

1. The question paper comprises of two sections.
2. Section I and II must be attempted in same answer sheet.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

SECTION – I

Q - 1	Answer **all** the questions.	**[06]**
(i)	Write Diagonal Matrix and non-singular Matrix with one example.	
(ii)	Define Minor of the Matrix give one example.	
(iii)	Write the Anti-Symmetric relation with one example.	
	Answer any **Three** of the followings.	
Q - 2	Prove that group $G = \{1, -1, i, -i\}$ is a cyclic group under multiplication.	**[08]**
Q - 3	Prove that $G = \{1,2,3,4,5,6\}$ is a finite abelian group of order 6 under multiplication modulu 6.	**[08]**
Q - 4	Define directed and undirected graph with example.	**[08]**
Q - 5	Define spanning tree with one example.	**[08]**

SECTION – II

Q - 1	Answer **all** the questions.	**[06]**
(i)	Define partial order relation.	
(ii)	Define Lattice.	
(iii)	Define Group.	
	Answer any **Three** of the followings.	
Q - 2	If A is a square matrix then prove that $A + A'$ is a symmetric matrix.	**[08]**
Q - 3	Write the theorem of "Handshaking Theorem" with one example.	**[08]**
Q - 4	Prove that $G = \{1, -1, i, -i\}$ is a group under multiplication.	**[08]**
Q - 5	Write Prom's algorithm for finding minimum spanning tree.	**[08]**