BHAGWAN PARSHURAM INSTITUTE OF TECHNOLOGY

PSP Area-4, Sector-17 (Opp. Sec.-11) Rohini Delhi – 110089

ASSIGNMENT (IN LIEU OF 2ND MID TERM EXAMINATION)

University Enrollment No _____ Name _____

Year of Admission _____ Class Roll No _____

Course/Branch _____ Semester _____

Subject Name _____ Subject Code _____

(Signature of the Student)

---------- (for office use only) ----------

Part of Qn.	Question wise marks obtained				
	Question No.				
	1	2	3	4	5
a)					
b)					
c)					
d)					
e)					
Qn. wise Total					
Total Marks obtained ---------- = Maximum Marks					

(Signature of the Subject Teacher)

BHAGWAN PARSHURAM INSTITUTE OF TECHNOLOGY

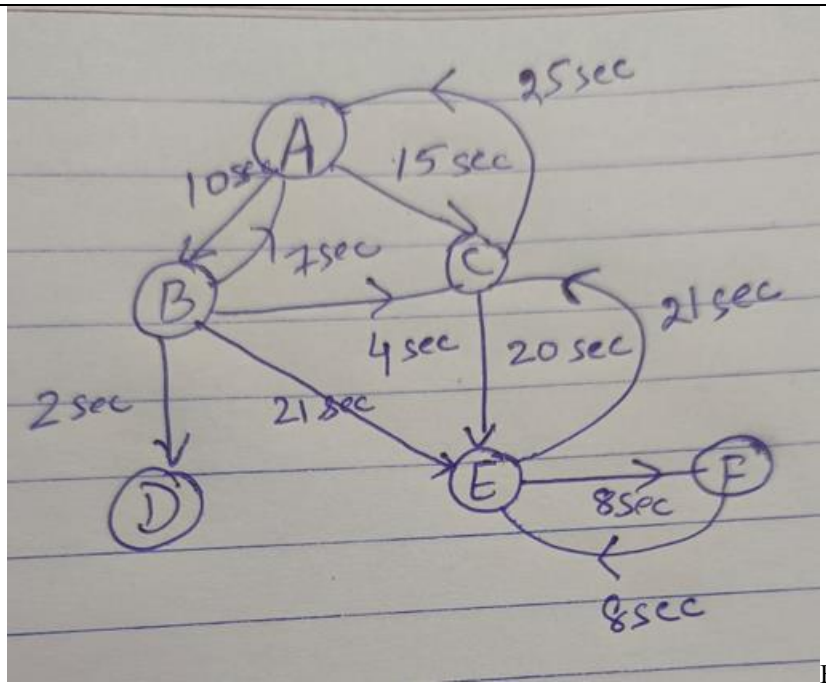
ASSIGNMENT (IN LIEU OF 2ND MID TERM EXAMINATION)

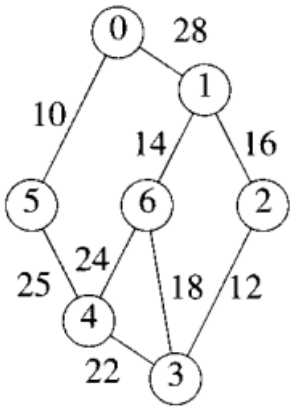
B.TECH PROGRAMMES (UNDER THE AEGIS OF USICT)

III Semester, November, 2024

Paper Code: CIC-209 **Subject: Data Structures**
Time: 1½ Hrs. **Max. Marks: 30**

Note: Attempt Q. No. 1 which is compulsory and any two more questions from remaining.

Q.No.	Question	Max. Marks	CO(s)
1	Attempt the following:		
(a)	Define digraph with the help of an example. Write all the possible paths and the cycles in it.	2	CO4
(b)	Differntiate between internal sorting and external sorting and name the algorithms under each category with right reason	2	CO3
(c)	What is hashing? Using any 2 hash functions, generate the indices and count the respective collisions	2	CO3
(d)	Write algorithm/program for binary search. Explain why binary search is better than linear search	2	CO3
(e)	Define M-way search	2	CO4
2			
(a)	 For the given Digraph, draw its adjacency list, adjacency matrix and edge list. Traverse the graph using BFS and DFS with algorithms and time complexities	5	CO 4
(b)	Which search can be implemented on linked list and why? Write an algorithm/program for the same	5	CO3
3			
(a)	Why is quicksort considered to be better than mergesort? Explain Pseudocode / Procedure of quicksort and mergesort procedures and compare their performances.	5	CO3
(b)	Define separate chaining, linear probing and quadratic probing. Given the values (2341, 4234, 2839, 430, 22, 397, 3920), a hash table of size 7, and hash function h(x) = x mod 7, show the resulting tables after inserting the values in the given order with each of these collision strategies.	5	CO3

4			
(a)	 Define Spanning tree and minimum spanning tree in Graphs? Use Prim's and Kruskal's algorithm to find the minimum spanning tree of the given Graph. Also write their algorithms with time complexities	5	CO4
(b)	Write Dijkstra's algorithm for a graph and show its working with an example.	5	CO4