

G.R. No.

PAPER CODE

U223-252 (ESE)

May 2023 (ENDSEM) EXAM**S.Y (INFORMATION TECHNOLOGY) (AY 2022-23 SEMESTER - II)****COURSE NAME: DATA STRUCTURE AND FILES****COURSE CODE: ITUA22202****(PATTERN 2020)**

Time: [1Hr]

[Max. Marks: 30]

(*) Instructions to candidates:

- 1) Use of scientific calculator is allowed
- 2) Use suitable data where ever required
- 3) All questions are compulsory

Question No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1 (a)	Enlist and discuss the properties of Red-Black tree with suitable example.	[4]	[4]	[3]
(b)	Construct a min heap and Perform sorting on the following elements in ascending order using heap sort algorithm 53, 33, 11, 77, 41, 22, 66, 88, 57, 28	[6]	[4]	[6]
	OR			
(c)	Construct an AVL tree by inserting the following elements: 14, 17, 11, 7, 53, 4, 13, 12, 8. Show balance factor and type of rotation in each stage.	[6]	[4]	[6]
Q.2 (a)	Construct a Splay tree by inserting the following elements : 15,10,17,7,13,16	[4]	[5]	[6]
(b)	Construct a Red Black tree by inserting following sequence of numbers.: 8,18,5,15,17,25,40,80.	[6]	[5]	[6]
	OR			
(c)	Construct a B tree of order 3 by inserting the following data arriving in sequence: 92,24,6,7,11,8,22,4,5,16,19,20,78.	[6]	[5]	[6]
Q.3 (a)	Enlist Primitive operations on Index Sequential Files. Write pseudo code for any ONE operation.	[4]	[6]	[3]
(b)	Write a C++ program to perform create, insert and display operations for sequential file organization.	[6]	[6]	[3]
	OR			
(c)	Write functions for different file opening modes in C++. Discuss the concept of inverted files.	[6]	[6]	[3]