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G.R. No.	
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PAPER CODE	U222-212(ESE)
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**May 2022 (ENDSEM) EXAM**  
**S.Y. B. TECH. (SEMESTER - II)**  
**COURSE NAME: Advance Data Structure**  
**COURSE CODE: ADUA22202**  
**(PATTERN 2020)**

Time: [1Hr]

[Max. Marks: 30]

(\*) Instructions to candidates:

- 1) Figures to the right indicate full marks.
- 2) 'a' part of every question is compulsory
- 3) Use of scientific calculator is allowed
- 4) Use suitable data where ever required

Q1

a) a) Design functions for LL and LR rotations with respect to AVL tree [4]

b) Develop a B tree of order 3 for the following data: [6]  
50,30,21,90,10,13,20,70,25,92,80

**OR**

b) Discuss the following rotation operation in splay tree: [6]

- i) Zig rotation
- ii) Zag rotation
- iii) Zig zig rotation
- iv) Zag zag rotation
- v) Zig Zag Rotation
- vi) Zag zig rotation

Q2

a) Design Brute force algorithm to find the pattern string TEST in the main string: THIS IS A TEST. [4]

b) Develop KMP algorithm to find a patten in the main string: [6]  
Main string S : a a a a a a a a a b =  $a^{10}b$   
Pattern P : a a a b.  
Also Explain how KMP algorithm overcome the difficulties faced by Brute force algorithm.

**OR**

b) Design a Patricia by inserting elements in the order  
1000,0010,1001,1100,0000,0001.

[6]

a) Design the structure of sequential file organization with a neat  
diagram. Also write in detail the two ways of inserting records in  
sequential file organization.

[4]

b) Develop structure of Direct file organization. Compare with  
sequential file organization and write the advantages and  
disadvantages of direct file organization along with the  
applications.

[6]

**OR**

b) Develop a C++ program to read the marks obtained by students of  
second year in an online examination of particular subject. Find out  
maximum and minimum marks obtained in that subject. Use heap data  
structure. Analyse the algorithm.

[6]