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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)**B.Tech II Year I Semester Supplementary Examinations August-2021****DATA STRUCTURES & ALGORITHMS****(Common to CSE & CSIT)**

Time: 3 hours

Max. Marks: 60

PART-A(Answer all the Questions **5 x 2 = 10 Marks**)

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|----------|----------|---|-----------|
| 1 | a | What is the difference between stacks and queues? | 2M |
| | b | List out the applications of stack. | 2M |
| | c | What is Height Balanced Tree? | 2M |
| | d | Define out degree and in degree of graph. | 2M |
| | e | What is heap sort? | 2M |

PART-B(Answer all Five Units **5 x 10 = 50 Marks**)**UNIT-I**

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|----------|----------|--|-----------|
| 2 | a | What are the advantages and disadvantages of circular linked list? | 5M |
| | b | Write an algorithm to Insert a node on to a single linked list. | 5M |

OR

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| 3 | A | What is an array? Explain various types of arrays. | 4M |
| | b | Explain various operations on arrays. | 6M |

UNIT-II

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| 4 | A | What is circular queue? | 3M |
| | b | Explain operations on queues with an example. | 7M |

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| 5 | A | Write the postfix and prefix notations for the following expression:
A/B*C-D*E+F/G | 4M |
| | b | Explain infix to postfix conversion algorithms with an example. | 6M |

UNIT-III

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|----------|----------|--|-----------|
| 6 | A | What is binary search tree? | 2M |
| | b | Explain various representations of trees with suitable example | 8M |

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| 7 | A | List out the properties of Red-Black trees. | 3M |
| | b | Explain various rotations of AVL trees maintaining balance factor while insertion and deletion takes place. | 7M |

UNIT-IV

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| 8 | Explain the various representation of graph with example in detail. | 10M |
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| 9 | a | Compare binary search and linear search techniques. | 6M |
| | b | What is collision? List various collision resolution techniques | 4M |

UNIT-V

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| 10 | a | What is shell sort? | 2M |
| | b | Define Quick sort and explain it with Example. | 8M |

OR

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| 11 | Explain about Heap sort. | 10M |
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END