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**Section A (There are 3 questions, answer any 2 out of them) [4\*2=8]**

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| 1. | Consider the following grammar:    Give valid reason explaining why this grammar is not LL (1). | [4] |
| 2. | a) Define Handle-pruning, with proper example.  b) Eliminate left recursion from the following grammar:  S → SX | SSb | XS | a  X → Xb | Sa | b  When the above simple algorithm will fail? | [2+2] |
| 3. | What do you understand by shift-reduce and reduce-reduce conflicts? Define with proper example. | [2+2] |

**Section B (There are 2 questions, answer any 1 out of them) [10\*1=10]**

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| 4. | Consider the following grammar and construct the LALR automation. Terminals: {=, +, int, (, ), id}.  S –> V = E  E –> F | E + F  F –> V | int | (E)  V –> id | [10] |
| 5. | Considering the alphabet Σ = {0,1} construct a Deterministic-Finite Automaton (DFA) using the first-, last- and follow-pos sets that is able to recognize the sentences generated by the regular expression (1\*010)\*(1|(0\*1)). | [10] |

**Section C (You have to answer one question) [12 marks]**

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| 6. | Consider the Context-Free Grammar (CFG) depicted below where “begin”, “end” and “x” are all terminal symbols of the grammar and “Stat” is considered the starting symbol for this grammar.  Stat → Block  Block → begin Block end  Block → Body  Body → x  For this grammar answer the following questions:  i) Compute the set of LR(0) items and draw the corresponding DFA.  ii) Construct the corresponding LR parsing table.  iii) Show the stack contents, the input and the rules used during parsing for the input string “begin begin x end end $”. | [5+4+3] |