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## II B.TECH-II SEMESTER (CSE)
## Mid –I (Objective) ONLINE Examinations – JUNE 2021

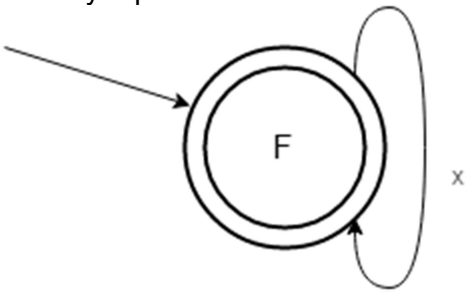**Subject Name:** AUTOMATA & COMPILER DESIGN (18CS405)     **Date of Exam:** 05-06-2021
**Name of the Faculty:** Mr.N.PURNA,Mr B.V.RAMANA     **Time:** 9.30 AM -9.50 AM

## UNIT-I

| Q No | Level | Question | A | B | C | D | E | Answer |
|---|---|---|---|---|---|---|---|---|
| 1 | | There are _____ tuples in finite state machine | 4 | 5 | 6 | unlimited | | B |
| 2 | | Transition function maps. | Σ * Q -> Σ | Q * Q -> Σ | Σ * Σ -> Q | Q * Σ -> Q | | D |
| 3 | | Number of states requires accepting string ends with 10. | 3 | 2 | 1 | can't be represented | | A |
| 4 | | Languages of a automata is | If it is accepted by automata | If it halts | If automata touch final state in its life time | All language are language of automata | | : A |
| 5 | | Number of final state require to accept Φ in minimal finite automata. | 1 | 2 | 3 | None of the mentioned | | D |
| 6 | | The non- Kleene Star operation accepts the following string of finite length over set A = {0,1} | where string s contains even number of 0 and 1 | 01,0011,010101 | 0011,110011 00 | ε,0011,1100 1100 | ε,0011,1100 1100 | | B |
| 7 | | Which of the following is a not a part of 5-tuple finite automata? | Input alphabet | Transition function | Initial State | Output Alphabet | | D |
| 8 | | The number of elements in the set for the Language L={x∈(∑r) *\|length if x is at most 2} and ∑={0,1} is_____ | 7 | 6 | 8 | 5 | | A |
| 9 | | When are 2 finite states equivalent? | Same number of | Same number of | Same number of | Both are final states | | C |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | transitions | states | states as well as transitions | | | |
| 10 | | What does the following figure most correctly represents?  | Final state with loop x | Transitional state with loop x | Initial state as well as final state with loop x | Insufficient Data | | C |
| 11 | | The password to the admin's account="administrator". The total number of states required to make a password-pass system using DFA would be _____ | 14 states | 13 states | 12 states | A password pass system cannot be created using DFA | | A |
| 12 | | For a machine to surpass all the letters of alphabet excluding vowels, how many number of states in DFA would be required? | 3 | 2 | 22 | 27 | | A |
| 14 | | Let $\Sigma$= {a, b, …. z} and A = {Hello, World}, B= {Input, Output}, then (A*∩B) U (B*∩A) can be represented as: | {Hello, World, Input, Output, ε} | {Hello, World, ε} | {Input, Output, ε} | {} | | D |
| 15 | | The complement of a language will only be defined when and only when the _____ over the language is defined. | String | Word | Alphabet | Grammar | | C |
| 16 | | According to the 5-tuple representation i.e. FA= {Q, $\Sigma$, δ, q, F} Statement 1: q $\epsilon$ Q' Statement 2: F$\epsilon$Q | Statement 1 is true, Statement 2 is false | Statement 1 is false, Statement 2 is true | Statement 1 is false, Statement 2 may be true | Statement 1 may be true, Statement 2 is false | | B |
| 17 | | Which of the following options is correct? Statement 1: Initial State of NFA is Initial State of DFA. Statement 2: The final state of DFA | Statement 1 is true and Statement 2 is true | Statement 1 is true and Statement 2 is false | Statement 1 can be true and Statement 2 is true | Statement 1 is false and Statement 2 is also false | | A |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | will be every combination of final state of NFA. | | | | | | |
| 18 | | NFA, in its name has 'non-deterministic' because of : | The result is undetermined | The choice of path is non-deterministic | The Finite Automata has infinite number of states. | All of the mentioned | | B |
| 19 | | What is wrong in the given definition?<br>Def: ({q0, q1, q2}, {0,1}, δ, q3, {q3}) | The definition does not satisfy 5 Tuple definition of NFA | There are no transition definition | Initial and Final states do not belong to the Graph | Initial and final states can't be same | | C |
| 20 | | In NFA, this very state is like dead-end non final state: | ACCEPT | REJECT | DISTINCT | START | | B |
| 21 | | The production of form non-terminal -> ε is called: | Sigma Production | Null Production | Epsilon Production | All of the mentioned | | B |
| 22 | | Which of the following is an application of Finite Automaton? | Compiler Design | Grammar Parsers | Text Search | All of the mentioned | | D |
| 23 | | Which of the following do we use to form an NFA from a regular expression? | Subset Construction Method | Power Set Construction Method | Thompson Construction Method | Scott Construction Method | | C |
| 24 | | Which among the following is not an application of FSM? | Lexical Analyser | BOT | State charts | None of the mentioned | | D |
| 25 | | An NFA can be modified to allow transition without input alphabets, along with one or more transitions on input symbols. | True | False | Can't say | None | | A |
| 26 | | Regular sets are closed under union, concatenation and kleene closure. | True | False | Depends on regular set | Can't say | | A |
| 27 | | Which of the following does not represents the given language?<br>Language: {0,01} | 0+01 | {0} U {01} | {0} U {0}{1} | {0} ∩ {01} | | D |
| 28 | | Concatenation Operation refers to which of the following set operations: | Union | Dot | Kleene | None | | B |
| 29 | | Concatenation of R with ε outputs: | R | Φ | ε | None | | B |

| 30 | | RR* can be expressed in which of the forms: | R+ | R- | R+ U R- | R | | A |
|----|--|--|--|--|--|--|--|--|
| 31 | | Simplify the following regular expression: ε+1*(011) *(1*(011) *) * | (1+011) * | (1*(011) *) | (1+(011) *) * | (1011) * | | A |
| 32 | | (0+ε) (1+ε) represents | {0, 1, 01, ε} | {0, 1, ε} | {0, 1, 01 ,11, 00, 10, ε} | {0, 1} | | A |
| 33 | | (1+ε) (0+ε) represents | {0, 1, 01, ε} | {0, 1, 10, ε} | {0, 1, 01 ,11, 00, 10, ε} | {0, 1} | | B |
| 34 | | a? is equivalent to | a | a+Φ | a+ϵ | wrong expression | | C |
| 35 | | Which of the following pair of regular expression are not equivalent? | 1(01)* and (10)*1 | x(xx)* and (xx)*x | (ab)* and a*b* | x* and x*x* | | C |
| 36 | | Are the given two patterns equivalent? | gray\|grey | gr(a\|e)y | yes | no | | A |
| 37 | | Which of the following is true? | (01)*0 = 0(10)* | (0+1)*0(0+1 )*1(0+1) = (0+1)*01(0+ 1)* | (0+1)*01(0+ 1)*+1*0* = (0+1)* | All of the mentioned | | D |
| 38 | | The set of all strings over Σ = {0,1} in which all strings that beings and ends with 0 is | 0(0+1)0 | 00(0+1) | (0+1)0 | All of these | | A |
| 39 | | The set of all strings over Σ = {a,b} in which all strings having bbbb as substring is | (a+b)* bbbb (a+b)* | (a+b)* bb (a+b)*bb | bbbb (a+b)* | bb (a+b)* | | A |
| 40 | | The set of all strings over Σ ={a,b} in which a single a is followed by any number of b's a single b followed by any number of a's is | ab* + ba* | ab*ba* | a*b + b*a | None of these | | A |

# UNIT-2

| Q.No | Level | Question | A | B | C | D | E | Answer |
|------|-------|----------|---|---|---|---|---|--------|
| 1 | | A _____ analyzer reads the source code line by line. | Lexical | Interpreter | Compiler | Semantic | | C |
| 2 | | Which among the following is not a tool to construct lexical analyzer from a regular expression? | Lex | Flex | Jflex | None | | D |
| 3 | | Which of the following characters are ignored while lexical analysis? | * | = | # | White Space | | D |
| 4 | | The number of tokens in the following C statement is<br><br>printf("i = %d, &i = %x", i, &i); | 3 | 26 | 10 | 21 | | C |
| 5 | | In a compiler, keywords of a language are recognized during | Parsing of the program | The code generation | The lexical analysis of the program | Dataflow analysis | | C |
| 6 | | Which phase of compiler is Syntax Analysis | First | Second | Third | None | | B |
| 7 | | Syntax Analyzer also known as | Hierarchical Analysis | Hierarchical Analysis & Parsing | Hierarchical Parsing | None of the mentioned | | B |
| 8 | | _____ takes Group Tokens of source Program into Grammatical Production | Syntax Analyser | Semantic Analyser | Lexical | parser | | A |
| 9 | | Syntax Analyzer takes input from? | Lexical Analyser | Syntactic Analyser | Semantic Analyser | None of the mentioned | | A |

| No. | | Question | A | B | C | D | | Ans |
|---|---|---|---|---|---|---|---|---|
| 10 | | _____are expected to parse the whole code | Derivation | Lexem | Parsers | None | | C |
| 11 | | Which of these is not true about Symbol Table? | All the labels of the instructions are symbols | Table has entry for symbol name address value | Perform the processing of the assembler directives | All of the given | | C |
| 12 | | Select a Machine Independent phase of the compiler | Syntax Analysis | Intermediate Code generation | Lexical Analysis | All of the mentioned | | D |
| 13 | | A system program, combines the separately compiled modules of a program into a form suitable for execution? | Assembler | Compiler | Linking Loader | Interpreter | | C |
| 14 | | Output file of Lex is _____ (here, the input file name is Myfile) | Myfile.e | Myfile.yy.c | Myfile.lex | Myfile.obj | | B |
| 15 | | Suppose One of the Operand is String and other is Integer then _____does not throw error as it only checks whether there are two operands associated with '+' or not . | Lexical Analyzer | Syntax Analyzer | Semantic analyzer | None | | B |
| 16 | | By whom is the symbol table created? | Interpreter | Compiler | Assembler | None | | B |
| 17 | | What does a Syntactic Analyser do? | Maintain symbol table | Collect type of information | Create parse tree | None | | C |
| 18 | | Grammar that produce more than one Parse tree for same sentence and same Grammar is: | Ambiguous | Unambiguous | Complementation | Concatenation | | A |

| # | | Question | A | B | C | D | | Ans |
|---|---|---|---|---|---|---|---|---|
| 19 | | Which of the following derivations does a top-down parser use while parsing an input string? | Leftmost derivation | Leftmost derivation in reverse | Rightmost derivation | Rightmost derivation in reverse | | A |
| 20 | | Which one of the following is a top-down parser? | Operator precedence parser | Recursive descent parser | An LR(k) parser | An LALR(k) parser | | B |
| 21 | | Consider the grammar with non-terminals N = {S,C,S1 },terminals T={a,b,i,t,e}, with S as the start symbol, and the following set of rules:<br>S ⊛iCtSS1\|a<br>S1 ⊛eS\|ϵ<br>C ⊛b<br>The grammar is NOT LL(1) because: | It is left recursive | It is right recursive | It is ambiguous | It is not a Context Free Grammar | | C |
| 22 | | Consider the following grammar:<br>$S \rightarrow FR$<br>$R \rightarrow S \mid \varepsilon$<br>$F \rightarrow id$<br>In the predictive parser table, M, of the grammar the entries M[S, id] | {S → FR} | {S → S} | {S → R} | {S → id} | | A |
| 23 | | Which of the following is a phase of a compilation process? | Lexical Analysis | Code Generation | Both a and b | None | | C |
| 24 | | Assembler is a program that | places programs into memory and prepares them for execution | automates the translation of assembly language into machine language | accepts a program written in a high level language and produces an object program. | None | | B |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 25 | | A programmer by mistakenly, writes an instruction to divide, instead of a multiply, such error can be detected by a/an | Compiler | Interpreter | Both | None | | D |
| 26 | | _____ is a program(s) that takes as input a program written in one format representation and produces output as another format representation. | Translator | Assembler | Compiler | Interpreter | | A |
| 27 | | The compilation process is partitioned into a series of sub processes called | Phases | Sub-program | Module | Subsets | | A |
| 28 | | The first phase of the compiler is also called as | Scanner | Parser | Tokens | Macro | | A |
| 29 | | Syntactic structure can be regarded as a tree whose leaves are the ___ | Scanner | Parser | Tokens | Macro | | C |
| 30 | | _____ phase designed to improve the intermediate code. | Intermediate code generator | Code Generation | Code optimization | Syntax Analyzer | | C |
| 31 | | The ------------- phase receives optimized intermediate codes and generates the code for execution | Lexical Analyzer | Syntax analyzer | Code optimization | Code generator | | D |
| 32 | | Compiler may run on one machine and produce object code for another machine, such a compiler is called a -------------. | Medium Compiler | Cross Compiler | Back Compiler | Mixed Compiler | | B |
| 33 | | A string is a finite | Symbols | Tokens | Instructions | Passes | | A |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | sequence of _____ | | | | | | |
| 34 | | The concatenation of any string with an empty string is the ____ | Null | String it-self | Symbol | Alphabet | | B |
| 35 | | The symbol table keeps account of the attributes of the _____ | Identifier | Values | Numbers | Text | | A |
| 36 | | _____ is a tool that automatically generating lexical analyzer | HEX | LEX | SLR | CLR | | B |
| 37 | | In CFG the basic symbols of the languages are called_____ | Terminal | Non-Terminals | Symbols | Digits | | A |
| 38 | | Tokens are _____ | Terminals | Non-terminals | Symbols | Digits | | A |
| 39 | | The symbol => means ____ | Derives in one or more steps | Derives in zero or more steps | Derive in one step | Does not derive | | A |
| 40 | | In LL(1), second 'L' stands for | Input scanning from left to right | Left recursion | Linear | Leftmost derivation | | D |

## UNIT-III

| | Level | Question | A | B | C | D | E | Answer |
|---|---|---|---|---|---|---|---|---|
| 1 | | Type checking is normally done during? | Lexical Analysis | Syntax Analysis | Semantic Analysis | Code generation | | C |

| 2 | | The ------------ action is enclosed in braces. | Syntax | Semantic | Both A and B | Error | | B |
|---|---|---|---|---|---|---|---|---|
| 3 | | -------- is a tree in which each leaf represents an operand and each interior node an operator. | Parser Tree | Semantic Tree | Syntax Tree | Structured Tree | | C |
| 4 | | Usually the "Three address code" contains address two for the -------- and one for the result. | Operand | Operator | Instruction | Statement | | A |
| 5 | | Which is not the way of implement the 3-address statement? | Quadruples | Triples | Indirect Triples | Parse Tree | | D |
| 6 | | -------------- record structure has 4 fields. | Quadruples | Triples | Indirect Triples | Parse Tree | | A |
| 7 | | A synthesized attribute is an attribute whose value at a parse tree node depends on | Attributes at the siblings only | Attributes at parent node only | Attributes at children nodes only | None of the mentioned | | C |
| 8 | | A parse tree showing the value of attributes at each node | Syntax tree | Semantic tree | Annotated parse tree | Parse tree | | C |
| 9 | | Three address code involves | Exactly 3 address | At most 3 address | No unary operators | None | | B |
| 10 | | An intermediate code form is | Postfix notation | Syntax trees | Three address code | All | | D |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| 11 | | Synthesized attribute can be easily simulated by | Top down parser | Bottom up parser | Both A and B | None | | B |
| 12 | | . Intermediate code generation phase gets input from | Lexical Analyzer | Syntax Analyzer | Semantic Analyzer | Error Handler | | C |
| 14 | | A Inherited attribute is an attribute whose value at a node depends on | Attributes at the siblings only | Attributes at parent node only | Attributes at the node itself only | All | | D |
| 15 | | A syntax directed definition is said to be .........., if dependency graph contains cycle. | Circular | Cycle | DAG | All | | C |
| 16 | | An SDD that have only synthesized attributes is called ____ | S-attributed | L-attributed | Both A and B | None | | A |
| 17 | | ------- are useful tool for determining an evaluation order for the attribute instance in given parse tree | DAG | Graph colouring | Dependency graph | None | | C |
| 18 | | In L-attributed SDD, attributes may be inherited or synthesized | True | False | BOTH True &false | True or False | | A |
| 19 | | Dag is used for | Identifying parse tree for expression | Identifying common sub-expression in expression | Identifying syntax tree for expression | All | | B |
| 20 | | L-attributed definition can always | Breadth | Depth First | Either a or b based on | Nonel | | B |

| | | | First Search | Search | situation | | |
|---|---|---|---|---|---|---|---|
| | | be evaluated in | | | | | |
| 21 | | Quadruple is a record structure with four fields | Op, arg1, arg2, result | Op1, Op2, arg, result | Arg1, Op, arg2, result | All | A |
| 22 | | ---------------- Triples are listing pointers to triples, rather than listing the triples themselves. | Direct | Indirect | Multiple | New | B |
| 23 | | Information about the name is entered into the symbol table during _____ and _____. | Lexical and syntactic analysis | Lexical and code generation | Lexical and error handler | Lexical and code optimization | A |
| 24 | | Type incompatibilities are _____. | Syntactic errors | Semantic errors | Lexical Phase errors | Reporting errors. | B |
| 25 | | Full form of DAG | Dynamic acyclic graph | Data acyclic graph | Directed acyclic graph | Detecting acyclic graph. | C |
| 26 | | Constructing a DAG from _____ is a good way of determining common sub expression. | 2 address statement | 4 address statement | 3 address statement | 5 address statement. | C |
| 27 | | Which 3-address code form is difficult to rearrange its code? | Quadruples | Triples | Indirect Triples | Parse Tree | B |
| 28 | | Which 3-address code form allows indirect addressing? | Indirect Quadruples | Indirect Addressing | Triples | Both B and C | C |

| 29 | | How many number of lines of three address statements getting for the below expression<br><br>If A < B then 1 else 0 | 3 | 4 | 5 | 6 | | C |
|----|--|---|---|---|---|---|--|---|
| 30 | | How many number of lines of three address statements getting for the below expression<br><br>If A < B and C < D then t = 1 else t = 0 | 6 | 7 | 8 | 9 | | B |
| 31 | | How many number of lines of three address statements getting for the below expression<br><br>x[i] := y | 2 | 3 | 5 | 6 | | A |
| 32 | | Three address code for the below statement<br><br>b1 = x + x < y | t0 = x<y<br><br>t1 = x<br><br>b = t0+t1 | t0 = x+x<br><br>t1 = y<br><br>b = t0+t1 | Both A and B | None | | B |
| 33 | | The input of the Semantic Analysis is____ | Stream of tokens | Parse tree | Intermediate code form | Source program | | B |
| 34 | | The output of the Semantic Analysis is____ | Stream of tokens | Parse tree | Intermediate code form | Semantically verified parse tree | | D |
| 35 | | The output of the Intermediate code generator is____ | Stream of tokens | Parse tree | Intermediate code form | Semantically verified parse tree | | C |
| 36 | | The input of Intermediate code | Stream of | Parse tree | Intermediat | Semantically verified | | D |

| | | | | | e code form | parse tree | | |
|---|---|---|---|---|---|---|---|---|
| | | generator is____ | tokens | | | | | |
| 37 | | The Semantic Analysis is also called as____ | Hierarchal Analysis | Parser | Scanner | Both A and B | | A |
| 38 | | The postfix notation of the following expression: a+b*c | ab+*c | ab*c+ | ab+c* | abc*+ | | D |
| 39 | | Postfix notation is also known as ____ | Polish notation | Infix notation | Reverse polish notation | None | | C |
| 40 | | Prefix notation is also known as ____ | Polish notation | Infix notation | Reverse polish notation | None | | A |