





## Read the questions carefully and check one option

<p><b>Question 1:</b> Which of the following statements is correct for attributes of a syntax directed definition:</p> <p>A. Synthesized attributes are initialized by the scanner.</p> <p><b>B. Synthesized attributes depend only on information below them in the parse tree</b></p> <p>C. Inherited attributes are useful only in object-oriented languages.</p> <p>D. Synthesized attributes are computed at run time.</p>
<p><b>Question 2:</b> The main difference between a sentence and a sentential form is</p> <p>A. there is no difference;</p> <p><b>B. a sentence contains only terminal symbols but a sentential form can contain some non-terminal symbols</b></p> <p>C. sentential forms are a subset of sentences but the converse is not true</p> <p>D. sentences are derived from S but sentential forms are not</p>
<p><b>Question 3:</b> Which of the following systems is used to describe syntax of a programming language?</p> <p><b>A. LNF</b></p> <p><b>B. Syntax directed definition</b></p> <p>C. Finite automaton</p> <p>D. Regular expression</p>
<p><b>Question 4:</b> In KPL, the declaration <math>const\ y = 0 + y + 1;</math> leads to an error because we can not apply constant folding to its expression.</p> <p><b>A. TRUE</b> <b>B. FALSE</b></p>
<p><b>Question 5:</b> How many tokens are there in the following assignment <math>ac := ba\ (.1.)</math> of KPL?</p> <p>A. 6</p> <p>B. 7</p> <p>C. 8</p> <p>D. 9</p> <p style="text-align: center; color: blue; font-size: 2em;">3</p>
<p><b>Question 6:</b> What programming languages are classified as low-level language?</p> <p>A. Basic, Fortran, Java</p> <p><b>B. Machine code and Assembly</b></p> <p>C. Visual C and Visual Foxpro</p> <p>D. Prolog</p>
<p><b>Question 7:</b> What are the stages in the compilation process?</p> <p>A. Feasibility study, system design and testing</p> <p>B. Implementation and documentation</p> <p>C. Left recursion elimination</p> <p><b>D. Lexical analysis, syntax analysis and code generation</b></p>
<p><b>Question 8:</b> Shift reduce parsers are</p> <p><b>A. Top down parser</b></p> <p>B. Bottom up parser</p> <p>C. May be top down or bottom up parser</p> <p>D. None of the above</p>
<p><b>Question 9:</b> A grammar will be meaningless</p> <p><b>A. if terminal set and non-terminal set are not disjoint</b></p> <p>B. if left hand side of a production is a single terminal</p> <p>C. if left hand side of a production has no non terminal</p> <p>D. all of these</p>
<p><b>Question 10:</b> A computer software that translates some form of source code into machine code is called</p> <p>A. Language processor</p> <p>B. Interpreter</p> <p>C. Compiler</p> <p><b>D. Assembler</b></p>
<p><b>Question 11:</b> Consider the context free grammar: <math>A \rightarrow ABaa, A \rightarrow bCb, A \rightarrow \epsilon, B \rightarrow BbC, B \rightarrow \epsilon, C \rightarrow b, C \rightarrow \epsilon</math>. What is <math>FIRST(A)</math>?</p> <p>A. <math>\{\epsilon\}</math> <span style="margin-left: 100px;">C. <math>\{\epsilon, b\}</math></span></p> <p><b>B. <math>\{\epsilon, a, b\}</math></b> <span style="margin-left: 100px;">D. None of the above</span></p>
<p><b>Question 12:</b> Given the following KPL program segment</p> <pre> Procedure A, x, y : integer ; Procedure B;     x, z : real ; begin     S1 end; (*B *); Procedure C; i : integer ; begin     S2 end; (*C*) end ; (*A*) </pre> <p>The variables accessible in S1 and S2 are</p> <p>A. x of A, y, x of B and z in S1 and x of B, y and i in S2</p> <p>B. x of B, y and z in S1 and x of B, i and z in S2</p> <p>C. x of B, z and y in S1 and x of A, i and y in S2</p> <p><b>D. none of these</b></p>

Time period: 60 minutes

This is a close book exam. You are not allowed to bring reference materials.

<p><b>Question 13 :</b> Given grammar <math>S \rightarrow aSb</math>, <math>S \rightarrow c</math> and string <math>aacbb</math>. Which of the following is the next configuration of <math>(q, 3, S1aS1aS2, aSbbb)</math>?</p> <p>A. <math>(q, 3, S1aS1aS2, cbb\#)</math>  B. <math>(q, 4, S1aS1aS2c, bb\#)</math>  <b>C. <math>(b, 3, S1aS1aS1, aSbbb\#)</math></b>  D. None of the above</p>
<p><b>Question 14:</b> The translator used in C language is</p> <p>A. <b>Compiler</b>  B. Interpreter  C. Assembler  D. Linker</p>
<p><b>Question 15:</b> Which of the following statement is correct about array data type in KPL?</p> <p>A. KPL supports only one- dimensional and two- dimensional arrays  B. KPL supports only one-dimensional arrays  <b>C. KPL supports arrays with arbitrary number of dimension</b>  D. KPL does not support arrays</p>
<p><b>Question 16:</b> Which of the following systems is used to describe syntax of a programming language?</p> <p>A. Push down automaton  <b>B. Syntax directed definition</b>  C. Finite automaton  D. Formal grammar</p>
<p><b>Question 17:</b> We can optimize code by</p> <p>A. <b>Dead code elimination</b>  B. Common subprograms  C. Copy intermediate loop  D. Loop declaration</p>
<p><b>Question 18:</b> Left parse is</p> <p>A. The sequence of productions used in an arbitrary derivation of a from S.   <b>B. Reversion of the sequence of productions used in left derivation of a from S</b>  C. The sequence of productions used in left derivation of a from S  D. None of the above</p>
<p><b>Question 19:</b> Which of the following grammars is <math>LL(1)</math></p> <p><b>A. <math>S \rightarrow 1SA, S \rightarrow 0A1, S \rightarrow 2, A \rightarrow 0A1, A \rightarrow 1</math></b>  B. <math>S \rightarrow aAS \mid B, A \rightarrow cS \mid \epsilon, B \rightarrow c</math>  C. <math>S \rightarrow aSa \mid bSb \mid cSc \mid a \mid b \mid c \mid \epsilon</math>  D. <math>S \rightarrow \epsilon \mid ab \mid ba \mid aSb \mid bSa</math></p>
<p><b>Question 20:</b> Task of the lexical analysis is</p> <p>A. <b>To parse the source program into the basic elements or tokens of the language</b>  B. To build a literal table and an identifier table  C. To build a uniform symbol table  D. All of these</p>
<p><b>Question 21:</b> The output of the parser is</p> <p>A. A set of regular expressions  <b>B. Syntax tree</b>  C. Set of tokens  D. Strings of character</p>
<p><b>Question 22:</b> Which of the following instructions is written in three address code?</p> <p>A. <math>t[i] := x[1] + 1</math>  B. <math>t[i] := y[j]</math>  C. <math>t[i] := 1 + x[i]</math>  D. <math>a := t[i] + b</math></p> <p style="text-align: center; color: blue; font-size: 2em;">ko có</p>
<p><b>Question 23 :</b> Each syntax diagram defines a</p> <p> A. Non-terminal   B. Grammar symbol  C. Terminal  D. Production</p>
<p><b>Question 24:</b> Which of the following software tool is parser generator ?</p> <p>A. Bison   B. Yacc  C. Both A and B  D. None of these</p>
<p><b>Question 25:</b> With which of the following kind of grammar the top down parser falls into an infinite derivation chain?</p> <p>A. Ambiguous grammar  B. Left linear grammar  C. LR grammar  <b>D. Left recursive grammar</b></p>

<p><b>Question 26:</b> Recursive descent parser is an example of</p> <p>A. Top down backtracking parser  B. Bottom up backtracking parser  C. Predictive parser  D. None of the above</p>
<p><b>Question 27:</b> Consider the following context free grammar:</p> $\begin{aligned} \text{List} &\rightarrow \text{ids}; \\ \text{ids} &\rightarrow \text{id}, \text{ids} \mid \text{id} \end{aligned}$ <p>Which of the following is a sentential form for this language?</p> <p>A. id,id,ids;  B. ids,id,id;  C. ids,ids;  D. all of the above</p>
<p><b>Question 28:</b> Whether a given pattern constitutes a token or not depends on the</p> <p>A. Source language  B. Target language  C. Compiler  D. All of these</p>
<p><b>Question 29:</b> Which of the following is used to describe the result of a predictive parser?</p> <p>A. State  B. Stack  C. Configuration  D. Left parse</p>
<p><b>Question 30:</b> The graph that shows basic blocks and their successor relationship is called</p> <p>A. Directed acyclic graph  B. Flow graph  C. Control graph  D. Hamiltonion graph</p>
<p><b>Question 31:</b> Semantics analysis generate intermediate code</p> <p>A. TRUE  B. FALSE</p>
<p><b>Question 32:</b> Which of the following productions will match zero or more occurrences of the letter b followed by exactly one c?</p> <p>A. <math>A \rightarrow Ab \mid c</math>  B. <math>A \rightarrow bA \mid c</math>  C. <math>A \rightarrow Ac \mid b</math>  D. <math>A \rightarrow bA \mid c</math></p>
<p><b>Question 33:</b> Consider the context free grammar <math>\{L \rightarrow TL', L' \rightarrow \vee TL', L' \rightarrow \epsilon, T \rightarrow PT', T' \rightarrow \wedge PT', T' \rightarrow \epsilon, P \rightarrow i, P \rightarrow (L)\}</math>. What is Follow(T)?</p> <p>A. <math>\{(\vee)\}</math>  B. <math>\{\vee, )\}</math>  C. <math>\{\vee, \\$, )\}</math>  D. None of the above</p>
<p><b>Question 34:</b> A grammar that produces at most one parse tree for each string is called</p> <p>A. Ambiguous  B. Unambiguous  C. Regular  D. None of these</p>
<p><b>Question 35:</b> The phases of a compiler includes</p> <p>A. Source Code, Token stream  B. Testing and Coding  C. Parse tree, Intermediate Code, Object Code  D. All of the above  E. None of the above</p>