

**University of Mumbai**  
**Examination 2020 under cluster 4 (PCE)**

Program: BE Computer Engineering  
Curriculum Scheme: Rev2012  
Examination: Third Year Semester VI  
Course Code: **CPC601** and Course Name: **System Programming and Compiler Construction**

Time: 1 hour

Max. Marks: 50

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Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	Assembler is _____
Option A:	A program that places programs into memory and prepares them for execution
Option B:	Is a program that appears to execute a source program as if it were machine language
Option C:	A program that automates the translation of assembly language into machine language
Option D:	A program that accepts a program written in high level language and produces an object program
Q2.	The last statement of the assembly program should be _____
Option A:	STOP
Option B:	RETURN
Option C:	TERMINATE
Option D:	END
Q3.	The assembler stores all the names and their corresponding values in _____
Option A:	Special purpose Register
Option B:	Symbol Table
Option C:	Value map Set
Option D:	Literal Table
Q4.	To overcome the problems of the assembler in dealing with branching code we use _____
Option A:	Interpreter
Option B:	Debugger
Option C:	Op-Assembler
Option D:	Two-pass assembler
Q5.	The end of a macro can be represented by the directive
Option A:	END
Option B:	ENDS
Option C:	MEND
Option D:	ENDD

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Q6.	Which of the following statements is incorrect?
Option A:	Complete code of instruction string is inserted at each place, wherever the macro name appears
Option B:	Macro requires less time of execution than that of procedure
Option C:	Macro uses stack memory
Option D:	Macro name can be anything except registers and mnemonics
Q7.	Which is not a function of a loader
Option A:	allocation
Option B:	translation
Option C:	relocation
Option D:	loading
Q8.	Which of the following data structures is used by Dynamic Linking loader ?
Option A:	Public & Extern table
Option B:	Transfer Vector table
Option C:	Literal table
Option D:	Argument List Array table
Q9.	Which are the facility not provided by debug monitor
Option A:	Setting breakpoints in programs
Option B:	Automated test driver
Option C:	Display value of variable
Option D:	Testing user defined assertion and predict involving programs variables
Q10.	Compiler should report the presence of _____ in the source program, in the translation process.
Option A:	Classes
Option B:	Objects
Option C:	Errors
Option D:	Text
Q11.	Following are the stages involved in the compilation process?
Option A:	Feasibility study, system, design, and testing
Option B:	Implementation and documentation
Option C:	Lexical analysis, Syntax analysis and code generation
Option D:	Debug, parse, linking, loading

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Q12.	<p>Consider the CFG with <math>\{S, A, B\}</math> as the non-term, <math>\{a, b\}</math> as the terminal alphabet, <math>S</math> as the start symbol and the following set of production rules:</p> <p><math>S \rightarrow aB \quad S \rightarrow bA</math>  <math>B \rightarrow b \quad A \rightarrow a</math>  <math>B \rightarrow bS \quad A \rightarrow aS</math>  <math>B \rightarrow aBB \quad A \rightarrow bAA</math></p> <p>Which of the following strings is generated by the grammar?</p>
Option A:	aaaabb
Option B:	aabbbb
Option C:	aabbab
Option D:	abbbba
Q13.	<p>Consider the grammar with non-terminals <math>N = \{S, C, S1\}</math>, terminals <math>T = \{a, b, i, t, e\}</math>, with <math>S</math> as the start symbol, and the following set of rules:</p> <p><math>S \rightarrow iCtSS1 \mid a</math>  <math>S1 \rightarrow eS \mid \epsilon</math>  <math>C \rightarrow b</math></p> <p>The grammar is NOT LL(1) because:</p>
Option A:	it is left recursive.
Option B:	it is right recursive.
Option C:	it is ambiguous.
Option D:	it is not context-free.
Q14.	<p>Consider the following two statements:</p> <p>P: Every regular grammar is LL(1)  Q: Every regular set has a LR(1) grammar</p> <p>Which of the following is TRUE?</p>
Option A:	Both P and Q are true
Option B:	P is true and Q is false
Option C:	P is false and Q is true
Option D:	Both P and Q are false
Q15.	<p>What is the maximum number of reduce moves that can be taken by a bottom-up parser for a grammar with no epsilon- and unit-production (i.e., of type <math>A \rightarrow \epsilon</math> and <math>A \rightarrow a</math>) to parse a string with <math>n</math> tokens?</p>
Option A:	$n/2$
Option B:	$n-1$

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Option C:	2n
Option D:	2n-1
Q16.	<p>Consider the following Syntax Directed Translation Scheme (SDTS), with non-terminals {S, A} and terminals {a,b}.</p> <p>S → aA {print1}</p> <p>S → a {print2}</p> <p>S → Sb {print3}</p> <p>Using the above SDTS, the output printed by a bottom-up parser, for the input aab is:</p>
Option A:	132
Option B:	223
Option C:	231
Option D:	SYNTAX ERROR
Q17.	<p>Consider the basic block given below.</p> <p>a = b + c</p> <p>c = a + d</p> <p>d = b + c</p> <p>e = d - b</p> <p>a = e + b</p> <p>The minimum number of nodes and edges present in the DAG representation of the above basic block respectively are</p>
Option A:	6 AND 6
Option B:	8 AND 10
Option C:	9 AND 12
Option D:	4 AND 4
Q18.	Which of the following is used to represent Three-Address Code?
Option A:	Indirect Triples
Option B:	Activation Record
Option C:	Symbol table
Option D:	Stack
Q19.	Which of the following is called the subsequent filling of the labels when they are determined?
Option A:	Backpatching
Option B:	Bootstrapping
Option C:	Parsing
Option D:	Forward patching

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Q20.	Which of the following is the graphical representation of three address statements?
Option A:	Quadruples
Option B:	Flow graph
Option C:	Basic block
Option D:	DFD
Q21.	Which of the following is not applicable for DAG?
Option A:	used for common subexpression elimination
Option B:	To determine which identifiers have values used in the block
Option C:	To determine which statements can compute values that can be used outside the blocks
Option D:	To identify tokens
Q22.	Consider the following statements: $a = 6*3 \Rightarrow a = 18$ . Which of the following transformations is applicable?
Option A:	loop optimisation
Option B:	Constant folding
Option C:	Copy propagation
Option D:	Dead-code elimination
Q23.	Which of the following happens to the storage when blocks of memory are allocated and deallocated over time?
Option A:	Compaction
Option B:	Fragmentation
Option C:	Garbage Collection
Option D:	Implicit allocation
Q24.	Which of the following parameter passing method is applicable when actual parameters are evaluated and their r-values are then passed to the called procedure?
Option A:	Call by Value
Option B:	Call by Reference
Option C:	Copy Restore
Option D:	Macro expansion
Q25.	In which section of Yacc source program, grammar productions and associated semantic actions are listed?
Option A:	Declarations section
Option B:	Translation rules section
Option C:	Supporting C routines section
Option D:	Header section

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<b>Question</b>	<b>Correct Option (Enter either 'A' or 'B' or 'C' or 'D')</b>
Q1.	<b>C</b>
Q2.	<b>D</b>
Q3.	<b>B</b>
Q4	<b>D</b>
Q5	<b>C</b>
Q6	<b>C</b>
Q7	<b>B</b>
Q8.	<b>A</b>
Q9.	<b>B</b>
Q10.	<b>C</b>
Q11.	<b>C</b>
Q12.	<b>C</b>
Q13.	<b>C</b>
Q14.	<b>B</b>
Q15.	<b>B</b>
Q16.	<b>C</b>
Q17.	<b>A</b>
Q18.	<b>A</b>
Q19.	<b>A</b>
Q20.	<b>B</b>
Q21.	<b>D</b>
Q22.	<b>B</b>
Q23.	<b>B</b>
Q24.	<b>A</b>
Q25.	<b>B</b>

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