Name: Enrolment No:	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, July 2020

Course: Compiler Design — **Semester: 6th**
Program: B.Tech. (CCVT+GG) — **Time 02 hrs.**
Course Code: CSEG3015 — **Max. Marks: 100**

Instructions: Attempt all questions

Points: 1

1. Multiple Choice: "In a compiler, keywords of a languag...

Question	"In a compiler, keywords of a language are recognized during"
Answer	parsing of the program
	code generation
	✓ lexical analysis
	none

Points: 3

2. Multiple Choice: How many derivatio...

Question	How many derivation trees are there for string aaa given grammar G? S → aS | Sa | a
Answer	3
	✓ 4
	5
	6

☐ **3. Multiple Choice: An identifier is permitted to be ...** Points: 3

Question	An identifier is permitted to be a letter followed by any number of letter and digits. Which of the following expression defines an identifier:
Answer	(L+D)*
	(L+D)+
	L(L+D)+
	✓ L(L+D)*

☐ **4. Multiple Choice: " The number of tokens in the followi...** Points: 3

Question	" The number of tokens in the following C statements are: printf(i=%d, &i=%x , i, &i);"
Answer	✓ 10
	3
	21
	26

☐ **5. Multiple Choice: Consider a program P having two so...** Points: 3

Question	Consider a program P having two source modules M1 and M2. If M1 contains a reference to a function defined in M2 then the reference will be resolved at
Answer	compile time

run time

link time

load time

6. **Multiple Choice: Which of the following data struc...** Points: 1

Question	Which of the following data structure is used for managing information about variables and their attributes:
Answer	parse table
	code table
	lexical table
	symbol table

7. **Multiple Choice: Which one of the following statemen...** Points: 3

Question	Which one of the following statements is FALSE?
Answer	Type checking is done before parsing.
	High-level language programs can be translated to different intermediate representations.
	Context free grammar can be used to specify both lexical and syntax rules.
	Arguments to a function can be passed using the program stack.

8. **Multiple Choice: Which of the following g...** Points: 3

Question	Which of the following grammar is free from left recursion:
Answer	" S---> AB, A--->Aa | b, B-->c"
	" S --> Aa|B, A ---> Bd|Sc, B --->d"
	" S ---> Aa|Bb, A ---> Bd, B --->Ae"
	" S ---> AB|Bb|c, A ---> Bd, B --->e"

9. **Multiple Choice: A compiler for a high-level lang...** Points: 1

Question	A compiler for a high-level language that runs on one machine and produces code for a different machine is called
Answer	optimizing compiler
	one pass compiler
	✓ cross compiler
	Multi-pass compiler

10. **Multiple Choice: The regular expression have all strin...** Points: 3

Question	The regular expression have all strings of 0s and 1s with no two consecutive 0s is :
Answer	(0+1)
	✓ (0+ ∈) (1+10)*
	(0+1)*
	(0+1)* 011

11. **Multiple Choice: Is GCC a cross Complier** Points: 1

Question	Is GCC a cross Complier
Answer	✓ yes
	no

12. **Multiple Choice: A compiler can check?** Points: 1

Question	A compiler can check?
Answer	✓ syntax error
	syntax and logical error
	logical error

none

Points: 3

13. Multiple Choice: "Given the language L = {ab, aa, baa}...

Question	"Given the language L = {ab, aa, baa}, which of the following strings are in L*? 1) abaabaaabaa 2) aaaabaaaa 3) baaaaabaaaab 4) baaaaabaa"
Answer	"1,2,3"
	"2,3,4"
	"1,3,4"
✓	"1,2,4"

Points: 1

14. True / False: For every NFA a deterministic finite ...

Question	For every NFA a deterministic finite automaton (DFA) can be found that accepts the same language
Answer	✓ True
	False

Points: 3

15. Multiple Choice: Which one of the following optio...

Question	Which one of the following options is true?
Answer	The grammar in which every production at right hand side has only 1 alternative is always LL(1).
	Non-deterministic grammars are not LL(1).
	Left recursive & ambiguous grammar is not LL(1)
✓	all are true

Points: 3

16. Multiple Choice: When there is a reduce/reduce ...

Question	When there is a reduce/reduce conflict?
Answer	If a state does not know whether it will make a shift operation using the production rule i or j for a terminal
	If a state does not know whether it will make a shift or reduction operation using the production rule i or j for a terminal

	✓ If a state e does not know whether it will make a reduction operation using the production rule i or j for a terminal
	none

☐ **17. Multiple Choice: Number o...** Points: 3

Question	Number of elements in follow of A in the following grammar? T-> AB A-> a/b B-> c/d:
Answer	1
	✓ 2
	3
	4

☐ **18. Multiple Choice: Which one of the following kinds of ...** Points: 1

Question	Which one of the following kinds of derivation is used by LR parsers?
Answer	✓ Rightmost in reverse
	leftmost in reverse
	rightmost
	leftmost

☐ **19. Multiple Choice: " Among simple LR (SLR), canonic...** Points: 3

Question	" Among simple LR (SLR), canonical LR, and look-ahead LR (LALR), which of the following pairs identify the method that is very easy to implement and the method that is the most powerful, in that order? "
Answer	✓ " SLR, CLR"
	"SLR, LALR"
	"CLR, LALR"

"LALR,CLR"

Points: 1

20. Multiple Choice: A grammar that produces more than one...

Question	A grammar that produces more than one parse tree for some sentence is called
Answer	✓ ambigious
	unambigious
	regular
	none

Points: 1

21. Multiple Choice: The optimization which avoids test at...

Question	The optimization which avoids test at every iteration is
Answer	✓ Loop unrolling
	Loop Jamming
	Constant folding
	none

Points: 3

22. Multiple Choice: " What ...

Question	" 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 A -> $\in$ and A -> a) to parse a string with n tokens?"
Answer	n/2
	✓ n-1
	n
	none

Points: 1

23. Multiple Choice: In an absolute loading scheme which l...

Question	In an absolute loading scheme which loader function is accomplished by assembler?
Answer	✓ reallocation
	allocation
	linking
	loading

Points: 3

24. Multiple Choice: An LALR(1) parser for a grammar ...

Question	An LALR(1) parser for a grammar G can have shift-reduce (S-R) conflicts if and only if
Answer	✓ The LR(1) parser for G has S-R conflicts
	The SLR parser for G has S-R conflicts
	The LR(0) parser for G has S-R conflicts
	The LALR(1) parser for G has R-R conflicts

Points: 1

25. Multiple Choice: Which of the following is a top do...

Question	Which of the following is a top down parser:
Answer	✓ Recursive descent parser
	Operator precedence parser
	shift reduce parser
	LR(k) parser

Points: 3

26. Multiple Choice: Consider...

Question

Question	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: S --> iCtSS1|a S1 --> eS|ϵ C --> b The grammar is NOT LL(1) because:
Answer	context free
	✓ ambigious
	left recursive
	right recursive

27. Multiple Choice: &n...

Points: 3

Question	A canonical set of items is given below S --> L. > R Q --> R. On input symbol < the set has
Answer	A S-R and R-R conflict
	A S-R but not R-R conflict
	A R-R but not S-R conflict
	✓ Neither S-R nor R-R conflict

28. Multiple Choice: " Consider the following ...

Points: 3

Question	" Consider the following grammar: S --->FR, R ---> S | ∈ , F ---> id In the predictive parser table, M, of the grammar the entries M[S, id] and M[R, $] respectively."
Answer	✓ {S ---> FR} and {R ---> ∈ }
	{S --->FR} and { }

{S ---> FR} and {R ---> *S}

{F ---> id} and {R --> ∈ }

29. Multiple Choice: " Consider the grammar: S ? (S) | a ... Points: 3

Question	" Consider the grammar: S ? (S) | a Let the number of states in SLR(1), LR(1) and LALR(1) parsers for the grammar be n1, n2 and n3 respectively. The following relationship holds good"
Answer	n1
✓	n1=n3
	n1=n2=n3
	n1>n2>n3

30. Multiple Choice: The grammar S ---&... Points: 3

Question	The grammar S ---> aSa | bS | c is
Answer	LL(1) but not LR(1)
	LR(1)but not LR(1)
✓	Both LL(1)and LR(1)
	Neither LL(1)nor LR(1)

31. Multiple Choice: Which of the following statements i... Points: 3

Question	Which of the following statements is false?
Answer	An LL(1) parser is a top-down parser
	LALR is more powerful than SLR
	An ambiguous grammar can never be LR(k) for any k
✓	An unambiguous grammar has same leftmost and rightmost derivation

32. **Multiple Choice: Peephole optimization is a form of**

Points: 1

Question	Peephole optimization is a form of
Answer	loop optimization
	✓ local optimization
	constant folding
	data flow analysis

33. **Multiple Choice: Substitution of values for names (who...**

Points: 1

Question	Substitution of values for names (whose values are constants) is done in
Answer	loop optimization
	local optimization
	strength reduction
	✓ constant folding

34. **Multiple Choice: In compiler terminology reduction in ...**

Points: 1

Question	In compiler terminology reduction in strength means
Answer	Replacing run time computation by compile time computation
	Removing loop invariant computation
	Removing common subexpressions
	✓ Replacing a costly operation by a relatively cheaper one

35. **Multiple Choice: Which of the following statements abo...**

Points: 1

Question	Which of the following statements about peephole optimization is False?
Answer	It is applied to a small part of the code

It can be used to optimize intermediate code

" To get the best out of this, it has to be applied repeatedly"

✔ It can be applied to the portion of the code that is not contiguous

Points: 1

36. Multiple Choice: The graph that shows basic blocks and...

Question	The graph that shows basic blocks and their successor relationship is called
Answer	DAG
	Control graph
	✔ flow graph
	hamiltonian graph

Points: 1

37. Multiple Choice: Dead-code elimination in machine code...

Question	Dead-code elimination in machine code optimization refers to:
Answer	Removal of all labels
	✔ Removal of values that never get used
	Removal of function which are not involved
	Removal of a module after its use

Points: 1

38. Multiple Choice: Some code optimizations are carried o...

Question	Some code optimizations are carried out on the intermediate code because:
Answer	✔ they enhance the portability of the compiler to other target processors
	program analysis is more accurate on intermediate code than on machine code
	the information from dataflow analysis cannot otherwise be used for optimization

	the information from the front end cannot otherwise be used for optimization

Points: 1

39. Multiple Choice: The action of parsing the source prog...

Question	The action of parsing the source program into proper syntactic classes is called
Answer	✓ lexical analysis
	syntax analysis
	interpretation analysis
	none

Points: 1

40. Multiple Choice: Running time of a program depends on

Question	Running time of a program depends on
Answer	Addressing mode
	order of computation
	the usage of machine idioms
	✓ all mentioned

Points: 1

41. Multiple Choice: Another name of lexical analyzer is

Question	Another name of lexical analyzer is
Answer	Linear phase
	linear analysis
	scanning
	✓ all mentioned

Points: 1

42. Multiple Choice: An individual token is called

Question	An individual token is called
Answer	✓ Lexeme

	lex
	Lex and Lexeme
	none

Points: 1

43. Multiple Choice: The language accepted by pushdown aut...

Question	The language accepted by pushdown automata is
Answer	type 0
	type 1
✓	type 2
	type 3

Points: 1

44. Multiple Choice: Grammar that can be translated to DFA...

Question	Grammar that can be translated to DFAs is
Answer	✓ right linear grammar
	left linear grammar
	generic grammar
	none

Points: 1

45. Multiple Choice: Cache memory works on the principle of

Question	Cache memory works on the principle of
Answer	Locality of memory
✓	Locality of reference

Locality of data

none

46. **Multiple Choice: Regular expression are** Points: 1

Question	Regular expression are
Answer	✓ type 0 language
	type 1 language
	type 2 language
	type3 language

47. **Multiple Choice: The advantage of panic mode of error ...** Points: 1

Question	The advantage of panic mode of error recovery is that
Answer	✓ it is simple to implement
	it is very fast
	it never gets into infinite loop
	none

48. **Multiple Choice: An ideal compiler should** Points: 1

Question	An ideal compiler should
Answer	detect error
	detect and report error
	✓ "detect,report and correct error"
	none

49. **Multiple Choice: YAAC builds up** Points: 1

Question	YAAC builds up
Answer	SLR parsing table

	Canonical LR parsing table
✓	LALR parsing table
	none

Points: 1

50. Multiple Choice: Which of the following is most powerf...

Question	Which of the following is most powerful compiler
Answer	SLR
	LALR
✓	Canonical LR
	operator precedence

Points: 1

51. Multiple Choice: LR stands for

Question	LR stands for
Answer	left to right
	left to right reduction
	right to left
✓	left to right and right to left derivation in reverse

Points: 1

52. Multiple Choice: Regular expressions are closed under

Question	Regular expressions are closed under
Answer	union
	intersection
	kleene closure
✓	all mentioned

53. True / False: In Right-Linea...

Points: 1

Question	In Right-Linear grammars, all productions have the form: A → xB.
Answer	✓ True False

54. True / False: Linear grammar has more than one non...

Points: 1

Question	Linear grammar has more than one non-terminal on the right-hand side.
Answer	✓ True False

55. Multiple Choice: CSG can be recognized by

Points: 1

Question	CSG can be recognized by
Answer	✓ 2 way linear bounded automata PDA FSA none

56. Multiple Choice: CFG can be recognized by

Points: 1

Question	CFG can be recognized by
Answer	PDA 2 way linear bounded automata ✓ both none

57. Multiple Choice: Representing the syntax by a grammar ...

Points: 1

Question	Representing the syntax by a grammar is advantageous because

Answer	it is concise
	it is accurate
	automation becomes easy
	✓ all mentioned

Points: 1

58. Multiple Choice: Which loader function is accomplished...

Question	Which loader function is accomplished by loader?
Answer	✓ loading
	linking
	reallocation
	allocation

Points: 1

59. Multiple Choice: Three address code involves

Question	Three address code involves
Answer	exactly three adresses
	✓ at the most three adresses
	no unary operator
	none

Points: 1

60. Multiple Choice: three address code can be implemented by

Question	three address code can be implemented by
Answer	indirect triples
	✓ quadruples
	link list
	none

Select: All None | Select by Type: - Question Type -

Delete and Regrade | Points [ ] Update and Regrade | Hide Question Details

← OK