

(6 pages)

No. :

Code No. : 5738

Sub. Code : ZCIM 24

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023.

Second Semester

Computer Science with Artificial Intelligence – Core

COMPILER DESIGN

(For those who joined in July 2022 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL the questions.

Choose the correct answer :

1. What is the use of a symbol table in compiler design?
(a) finding name's scope
(b) type checking
(c) keeping all the names of all entries in one place
(d) all the above

7. Which part produces the target code from the intermediate representation of source code?
(a) Lexical (b) Synthesis
(c) Analysis (d) None
8. Expand DAG
(a) Dynamic Augmented Grammar
(b) Directed Augmented Graph
(c) Directed Acyclic Graph
(d) None
9. Optimization can be categorized broadly into _____ types.
(a) 2 (b) 3
(c) 4 (d) 5
10. Substitution of values for names whose values are constant, is done in _____.
(a) Local optimization
(b) Loop optimization
(c) Constant folding
(d) None

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2. Which of the following error can a compiler check?
(a) Syntax error (b) Logical error
(c) Both (a) and (b) (d) None
3. Which one of the following is a top-down parser?
(a) Recursive descent parser
(b) Operator precedence parser
(c) An LR(K) parser
(d) An LALR(K) parser
4. Which of the following phase of the compiler is syntax analysis?
(a) First (b) Second
(c) Third (d) All the above
5. Why is semantic analysis responsible for?
(a) Static checking (b) Type checking
(c) Check semantics (d) All the above
6. Identify the output of the compiler _____.
(a) Object file (b) Data file
(c) Task file (d) Program file

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PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Write down the role of the lexical analyzer.
Or
(b) What is the use of symbol table?
12. (a) What do you mean by Handle pruning?
Or
(b) Give a brief note on context free grammar.
13. (a) Write down the applications of syntax directed translation.
Or
(b) What do you mean by inherited attribute?
14. (a) What do you mean by syntax tree? Draw the syntax tree for the assignment statement
 $a := b * -c + b * -c.$
Or
(b) Define the terms triples and quadruples.

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[P.T.O.]

15. (a) Give a brief note on Register and address descriptor.

Or

- (b) Write down any three issues in the design of a code generator.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) What is Input Buffering? Explain it in detail.

Or

- (b) Write all the compilation phases with input and output to each phase for the following statement $p := i + r * 60;$

17. (a) Construct predictive parsing table for the following grammar and hence check whether the string $(id + id)$ is accepted or not

$E \rightarrow E + T / T$

$T \rightarrow T * F / F$

$F \rightarrow (E) / id$

Or

- (b) How to write a Grammar? Explain.

18. (a) Discuss in detail about s-attributed definitions.

Or

- (b) What do you mean by storage organization? Give a brief note on stack allocation of space.

19. (a) What is three address statements? Explain its types.

Or

- (b) Write short note on procedure calls.

20. (a) Define basic block with an example. Write down algorithm for partitioning of three address statements into basic blocks.

Or

- (b) What is Peephole optimization? Explain.