

**Answer as much as you can:****Question [1]: (35 marks) [ILOs: a1,a3,a4,b1,b3,c1,c3]**

- What is a compiler? State the compiler phases. Explain by diagram.
- What are the different kinds of errors encountered during compilation?
- What is the major stages in compilation?
- Define the following: Basic blocks and flow graphs.
- What is happen when applying the three address code on the following expression:  
Exp = (a+a\*(b-c))+d\*(b-c)

**Question [2]: (30 marks) [ILOs: a1,a3,a4,b1,b3,c1,c3]****Write True (T) or False (F) for the following:**

- Parsers do not parse the whole code if some errors exist in the program.
- Semantic analysis is the second phase of a compiler.
- The semantic analyzer breaks these syntaxes into a series of tokens, by removing any whitespace or comments in the source code.
- A lexical analyzer reads the source code line by line.
- Lexemes are said to be a sequence of characters alphanumeric in a token.
- There are some predefined rules for every lexeme to be identified as a valid token.
- CFG is a helpful tool in describing the syntax of programming languages.
- The lexical analyzer works closely with the syntax analyzer.
- If the lexical analyzer finds a token invalid, it generates an error.
- Semantic analyzer keeps track of identifiers, their types and expressions.
- Lexical Analyzer is used for grouping up of characters into token.
- Compiler can convert source code into executable file.
- In Short, Syntax Analysis Generates Parse Tree.
- Last phase of compiler is semantic analyzer.
- Syntax analyzer checks whether the parse tree constructed follows the rules of language.

**Question [3]: (25 marks) [ILOs: a1,a3,a4,b1,b3,c1,c3]****Select the suitable answer from the following**

- Lexemes can be referred to as:
  - elements of lexicography
  - sequence of alphanumeric characters in a token
  - lexical errors
  - none of the mentioned



تابع السؤال الثالث

- 2) If the lexical analyser finds a lexeme with the same name as that of a reserved word, it
  - a) overwrites the word
  - b) overwrites the functionality
  - c) generates an error
  - d) something else
- 3) The output of the lexical and syntax analyzer can stated as:
  - a) parse stream, parse tree
  - b) token tree, parse tree
  - c) token stream, parse tree
  - d) all of the mentioned
- 4) Which phase of compiler includes Lexical Analysis?
  - a) 1
  - b) 2
  - c) 3
  - d) Its primary function, not in any phase
- 5) Which of the following characters are ignored while lexical analysis?
  - a) .
  - b) =
  - c) #
  - d) WhiteSpace
- 6) The action of parsing the source code into proper syntactic classes is known as:
  - a) Parsing
  - b) Interpretation analysis
  - c) Lexicography
  - d) Lexical Analysis
- 7) Which of the following is the task of lexical analysis?
  - a) To build the uniform symbol table
  - b) To initialize the variables
  - c) To organize the variables in a lexical order
  - d) None of the mentioned
- 8) The scanner outputs:
  - a) Stream of tokens
  - b) Image file
  - c) Intermediate code
  - d) Machine code
- 9) The phase of compilation which involves type checking is:
  - a) Parsing
  - b) Scanning
  - c) Syntax directed translation
  - d) Semantic Analyzer
- 10) The process of forming tokens from an input stream of characters is called
  - a) Liberalisation
  - b) Characterisation
  - c) Tokenization
  - d) None of the mentioned
- 11) When expression  $sum=3+2$  is tokenized then what is the token category of 3
  - a) Identifier
  - b) Assignment operator
  - c) Integer Literal
  - d) Addition Operator
- 12) Which grammar defines Lexical Syntax
  - a) Regular Grammar
  - b) Syntactic Grammar
  - c) Context free Grammar
  - d) Lexical Grammar
- 13) Two Important lexical categories are
  - a) White Space
  - b) Comments
  - c) None of the mentioned
  - d) White Space & Comments
- 14) It has encoded within it information on the possible sequences of characters that can be contained within any of the tokens it handles .Above motioned function is performed by
  - a) Scanner
  - b) Parser
  - c) Syntactic Analyser
  - d) All of the mentioned

