Exam questions

L1

1. What Do Compilers Do?
2. What is an interpreter?
3. The Structure of a Compiler.
4. The role of a Lexical Analyzer.
5. The role of a Syntax Analyzer.
6. The role of a Semantic Analyzer.
7. Intermediate Code Generator.
8. Machine Independent Code Generator.
9. Machine Dependent Code Generator.

L2-L3

1. Context-free grammar.
2. Derivation , leftmost derivation, rightmost derivation.
3. Parse Trees.
4. Ambiguous grammar.
5. Associativity of Operators.
6. Precedence of Operators.
7. Syntax-Directed Translation.
8. Synthesized and Inherited Attributes.
9. Depth-First Traversals.
10. Translation Schemes.
11. Predictive parser.
12. Sets FIRST.
13. Left Factoring.
14. Left Recursion.

L4-L5

1. Tokens, Patterns, and Lexemes.
2. Alphabet, string, language.
3. String Operations.
4. Language Operations.
5. Regular Expressions.
6. Regular Definitions.
7. Coding Regular Definitions in Transition Diagrams.
8. Nondeterministic and Deterministic Finite Automata.
9. The Language Defined by an NFA.
10. Simulating an NFA.

L6-L7

1. Recursive Descent Parser.
2. Creating a top-down parser.
3. LL(1) Parsers.
4. Nullability.
5. Set FIRST.
6. Set FOLLOW.
7. Construction of a predictive parsing table.
8. Model of a table-driven predictive parser.
9. Predictive parsing algorithm.

L8-L9

1. A bottom-up parser.
2. Shift-Reduce (bottom-up) parser.
3. Action table.
4. Goto table.
5. LR Parsers.
6. An item, what it means?
7. Shift-reduce conflicts.
8. Reduce-reduce conflicts.
9. How LR parser works?

L10-L11

1. What is Lex?
2. Lex Source Program.
3. Lex Regular Expressions.
4. Lex Precedence of Operators.
5. Transition Rules.
6. Lex Predefined Variables.
7. Lex Library Routines.
8. What is **YACC** ?
9. How YACC Works.
10. YACC File Format.
11. Communication between LEX and YACC.
12. Resolving Shift/Reduce Conflicts.

L12

1. Goals of a Semantic Analyzer.
2. Kinds of Checks.
3. Inlined TypeChecker and CodeGen.
4. Typical Semantic Errors.
5. Scoping: General Rules.
6. Scope levels.

7. Dynamic Scoping.
8. Symbol Tables.
9. Type Checking.
10. Components of a Type System.

L13-L14-L15

1. High-Level Language (HLL) Translation.
2. What is SPIM?
3. Addressing Modes.
4. Memory Organization.
5. MIPS Instruction Formats.
6. Memory Access.
7. Instruction Format.
8. Control Flow Instructions.
9. Logical Operations.
10. Array Manipulation.
11. MIPS Input/Output.
12. Procedure Calls.
13. Procedure Call Frame.