

## System programming &amp; Compiler Construction

Solution Key

Q1a) At least 5 differentiation points are expected.

b) Role of finite automata should be explained with diagram.

c) Functions of loader :-

1) Allocation

2) Linking

3) Relocation

4) Loading

Each function has to be explained

d) At least 5 points of difference required.

Q2a) POT, MOT, ST, LT

all this 4 tables are to be explained along with example

Q2b) Code optimization techniques :-

1) Compile Time evaluation.

2) Common subexpression elimination.

3) Variable propagation

4) Code Movement

5) Strength reduction

6) Dead code elimination

7) Loop optimization

Each technique should be explained.

- Q3a) Issues in code generation:-
- 1) Input to the code generator
  - 2) Target programs
  - 3) Memory management
  - 4) Instruction selection
  - 5) Register allocation
  - 6) Choice of evaluation order
  - 7) Approaches to code generation.
- Explanation of each is needed.

Q3b) Working of DLL along with the databases used has to be explained

Q4a)

	FIRST	FOLLOW
E	(, id	), \$
E'	+, E	), \$
T	(, id	+, ), \$
T'	*, E	+, ), \$
F	(, id	*, +, ), \$

predictive parsing table:-

	id	+	*	(	)	\$
E	E → TE'			E → TE'		
E'		E' → +TE'			E' → E	E' → E
T	T → FT'			T → FT'		
T'		T' → E	T' → *FT'		T' → E	T' → E
F	F → id			F → (E)		

Q4b) Error recovery techniques:-

- 1) panic mode
- 2) phrase level
- 3) Error productions
- 4) Global correction

Each has to be explained.

Q5a) Different storage allocation strategies:-

- 1) Code area
- 2) static data area
- 3) stack area
- 4) Heap area.

Each has to be explained.

Q5b) At least 4-5 difference points to be written.

Explanation ~~of~~ or algorithm for shift reduce parser is expected.

Q6a) phases of compiler need to be explained with diagram.

$$a = b + c * 5$$

This example has to be illustrated in all these phases.

- Q6b)
- i) ~~the~~ Concept of parameters in macros is expected.
  - ii) yacc concept has to be explained.