

Time: 3 hours

Max. Marks: 75

Answer any five questions

All questions carry equal marks

- 1.a) i) Explain Bootstrapping process with suitable diagram.
ii) Explain differences between pass and phase.
- b) Explain the different phases of the compiler, showing the output of each phase using the example for the statement: $z = (a * 20) + b - c$ [15]

- 2.a) What is left recursion and left factoring?
Eliminate left recursion for the following grammar

$$E \rightarrow E + E / \text{num}$$

- b) Consider following grammar

$$S \rightarrow (L) | a$$

$$L \rightarrow L, S | S$$

Find parse trees for the sentences

- i) $(a, (a,a))$
ii) $(a, (a,a), (a,a))$ [15]

- 3.a) Explain about Top down parsing techniques.

- b) Show that the following grammar is LL(1).

$$S \rightarrow AaAb | BbBa$$

$$A \rightarrow \epsilon$$

$$B \rightarrow \epsilon$$
 [15]

4. Construct LR (1) parsing table.

$$S \rightarrow Aa$$

$$S \rightarrow bAc$$

$$S \rightarrow dc$$

$$S \rightarrow bda$$

$$A \rightarrow d$$
 (Write all necessary procedures) [15]

- 5.a) What are self-organizing lists? How can this be used to organize a symbol table? Explain with an example.

- b) Discuss storage allocation for non block structured languages. [15]

6. What is activation record and activation tree? How are these related with runtime storage organization? [15]

- 7.a) Differentiate between S-attributed grammar and L-attributed grammar.

- b) Explain the steps involved in converting an L-attributed grammar into translated scheme. [15]

- 8.a) Explain how Redundant sub-expression elimination can be done at global level in a given problem.

- b) What is flow graph? Explain how flow graph can be constructed for a given problem. [15]
