



17517

11819

3 Hours / 100 Marks

Seat No.

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- Instructions :**
- (1) All questions are **compulsory**.
 - (2) Answer **each** next main question on a **new** page.
 - (3) Illustrate your answers with neat sketches **wherever** necessary.
 - (4) Figures to the **right** indicate **full** marks.
 - (5) Assume suitable data, if **necessary**.

Marks

1. a) Attempt **any three** : **(4×3=12)**
- 1) Write two advantages and disadvantages of absolute loader.
 - 2) What is the difference between :
 - i) Processor and procedure.
 - ii) Multiprocessing and multiprogramming.
 - 3) Describe linear search with suitable example.
 - 4) Write three tasks of lexical analysis phase of compiler. List databases involved in it.
- b) Attempt **any one** : **(6×1=6)**
- 1) What is system software ? Write different goals of system software.
 - 2) What is Macro Instruction ? Explain conditional macro with an example.
2. Attempt **any two** : **(8×2=16)**
- 1) Draw and explain the use of database by assembler passes.
 - 2) Draw the basic phases of compiler and explain each phase functions.
 - 3) Explain the working of address calculation sort with suitable example.
3. Attempt **any four** : **(4×4=16)**
- 1) Describe the machine structure.
 - 2) Explain the concept of hashing function with a suitable example.
 - 3) List four limitations of syntax analyzers.
 - 4) Differentiate between Relocating loader and Direct linking loader.

P.T.O.



5) Apply bottom-up parsing on given input string $a + b * c$ with production rules

$S \rightarrow E$

$E \rightarrow E + T$

$E \rightarrow E * T$

$E \rightarrow T$

$T \rightarrow id$

4. a) Attempt **any three** : (4×3=12)

- 1) Differentiate between static binders and dynamic binder.
- 2) Write rules for converting arithmetic statements into parse tree ? Convert following statement into parse tree
 $COST = RATE * (START - FINISH) + 2 * RATE * (START - FINISH) - 100.$
- 3) What is loop invariant ? State problems that need to be solved by loop invariant algorithm.
- 4) Explain the concept and types of top-down parser.

b) Attempt **any one** : (6×1=6)

- 1) Explain four function performed by macro processor.
- 2) Compare top down and bottom up parser.

5. Attempt **any two** : (8×2=16)

- 1) Explain direct linking loader scheme and format of cards it use.
- 2) Write any four optimization techniques uses by compiler.
- 3) Explain radix sort with example.

6. Attempt **any four** : (4×4=16)

- 1) Describe macro and subroutine.
 - 2) Explain interchange sort with example.
 - 3) For the following pseudo-ops (pseudo-opcodes), write suitable example :
 - i) ENTRY
 - ii) EXTRN
 - 4) Explain storage allocation phase of compiler.
 - 5) State functions of relocating loader.
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