

Total No. of Questions : 10]

SEAT No. :

P6064

[Total No. of Pages : 3

**[5560]-197**  
**T.E. (Semester - II)**  
**SYSTEMS PROGRAMMING**  
**(2008 Pattern)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data if necessary.

- Q1)** a) Explain the various data structures used in a two pass macroprocessor. [6]  
b) Define the following: [4]  
i) Defined symbol  
ii) Forward referenced symbol  
iii) Back patching  
iv) Assembler

OR

- Q2)** a) Explain overlay structure and subroutine linkage w.r.t. loaders. [6]  
b) Explain how the statement [4]  
A EQU LOOP +1  
is processed if LOOP is a defined symbol/ forward referenced symbol.

- Q3)** a) Define loader and explain its functions. [4]  
b) Explain different parameter passing methods used in macroprocessors. [6]

OR

- Q4)** a) Compare single pass and two pass assembler. [5]  
b) Write short note on compile and Go Loader. [5]

- Q5)** a) With neat diagram explain classification of parsers. [6]  
b) Remove left recursion from the given grammar. [4]  
$$E \rightarrow E + E / E^* / (E) / id / num$$

**P.T.O.**

- c) For the given grammar construct the LR(0) automation of SLR parser. [8]
- $$E \rightarrow TE' \mid T$$
- $$E' \rightarrow +TE' \mid \epsilon$$
- $$T \rightarrow FT' \mid F$$
- $$T' \rightarrow *FT' \mid \epsilon$$
- $$F \rightarrow id \mid (E)$$

OR

- Q6)** a) Consider the following grammar. [10]

$$S \rightarrow Aa \mid bAc \mid Bc \mid bBa$$

$$A \rightarrow d$$

$$B \rightarrow d$$

Construct LR (1) automation of CLR parser and parse table.

- b) For the given grammar, generate the string aabbab using recursive descent parser.  $S \rightarrow aSbS \mid bSaS \mid \epsilon$  [4]
- c) Compare SLR and CLR parsers. [4]

- Q7)** a) Define the following: [4]

i) Syntax Directed Definition.

ii) Syntax Directed Translation.

iii) Synthesized Attributes.

iv) Inherited Attributes.

- b) Explain in detail quadruple generation for 1D and 2D arrays. [6]
- c) Explain dynamic allocation strategies. [6]

OR

- Q8)** a) Explain the need for Intermediate code generation and explain its types. [6]

- b) Show DAG and quadruple for the given expression. [6]

$$\text{temp} = \text{limit} * (\text{max} - \text{min}) + 3 * \text{limit} * (\text{max} + \text{min})$$

- c) Generate three address code for [4]

for(i=0; i<=10; i++)

{

    p = q \* r;

    q++;

}

- Q9)** a) Consider an example code and show the basic flow graph for it. Explain the rules for forming the blocks. [4]
- b) Explain machine dependent and independent optimization techniques. [8]
- c) Discuss machine dependent issues for code generation. [4]

OR

- Q10)** a) Write down in detail different run time storage organization and allocation strategies. [8]
- b) Discuss code generation issues. [4]
- c) Write a note on activation record. [4]

