

Total No. of Questions : 10]

SEAT No. :

P3005

[Total No. of Pages : 3

[5669]-597

**T.E. (Information Technology)  
SYSTEMS PROGRAMMING  
(2015 Pattern) (Semester - II)**

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7, or Q.8, Q.9, or Q.10.
- 2) Neat diagrams must be drawn whenever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data if necessary.

**Q1)** a) With syntax and example explain EQU and LTORG statements of assembly language. [4]

b) With neat diagram explain compile and go (assemble and go) loader scheme. What are the advantages and disadvantages of its. [6]

OR

**Q2)** a) What is language processor? Explain two main activities of language processing. [4]

b) Explain parameter passing methods used in macro definition. [6]

**Q3)** a) What is forward reference? Explain with suitable example. [2]

b) Define Macro, Macro definition. [2]

c) Obtain output of all phases of compiler for the following input string:

$P = e * 10 + C$  [6]

OR

**Q4)** a) List out main functions of PASS I and PASS II of two pass Assembler. [2]

b) Explain the significance of transfer vector. [2]

c) Convert the following RE to DFA. [6]

$(a|b)^* aa | (a|b)^* bb$

P.T.O.

Q5) a) Construct predictive parser for the following grammar and show the working of parser for the input string  $id_1+id_2*id_3$  [10]

$E \rightarrow E+T|T$

$T \rightarrow T * F|F$

$F \rightarrow (E)|id$

b) Write a short note on YACC and YACC specification. [4]

c) What is operator precedent Grammar? Write operator precedent grammar for arithmetic expression also construct operator precedence relation table for it. [4]

OR

Q6) a) Consider following grammar: [10]

$E \rightarrow E+E|E * E|E/E|(E) |id$

perform shift reduce parser for the string  $id_1+id_2*id_3$ . Also explain shift. Reduce conflict & reduce-reduce conflict occurred during parsing of string.

b) Write a note on predictive parser (LL1 Parser) [4]

c) What is bottom-up parsing? compare SLR & CLR parsers. [4]

Q7) a) For the statement given below generate the intermediate code in the form of: [4]

i) Triple

ii) Quadruple

$A = -P * (-Q+R)$

b) Consider the following grammar. [6]

$E \rightarrow E+T|T$

$T \rightarrow T * F|F$

$F \rightarrow id$

Design dependency graph for the expression.

$4*7+3$

c) Generate Three: Address code for: [6]

for ( $i=0;i \leq 5;i++$ )

$x = y + z$

OR

Q8) a) Explain storage allocation strategies with example. [8]

b) Convert the following production rules into semantic rules and show the annotated parse tree for the input: int a,b,c;. [8]

$S \rightarrow TL;$

$T \rightarrow \text{int}$

$T \rightarrow \text{float}$

$T \rightarrow \text{char}$

$L \rightarrow L, \text{id}$

$L \rightarrow \text{id}$

Q9) a) With examples explain at least four machine independent code optimization techniques. [8]

b) Discuss the factors affecting target code generation. [8]

OR

Q10) a) Explain machine dependent code optimization techniques with suitable example. [8]

a) Discuss run time storage management of a code generator. [8]

