

comp / IT

COLLEGE OF ENGINEERING, PUNE
(An Autonomous Institute of Govt. of Maharashtra)

ESE -April, 2013

(CT-324) LANGUAGE PROCESSORS

Class: - T.Y. B.Tech (Information Technology)

Year: - 2012-13
Duration: - 3 hrs
Instructions:

Semester: - VI
Max. Marks: - 50

- 1. All the Questions are compulsory.**
 - 2. Assume suitable data whenever necessary.**
 - 3. Draw neat figures wherever required**
 - 4. Figures to right indicate full marks**
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- 1a) Draw the block diagram of a two pass assembler and show and explain various data structures used during both the passes. 5
- b) Describe how forward references are resolved in one-pass assembly. Mention and explain in detail, data structures used in this process. 5
- 2 Describe the data structures used by direct linking loader. Also explain how these data structures are used in the process of linking. 10
- 3 a) Construct a predictive parser for the following grammar. The non terminals are bexpr, bterm & bfactor , the terminals are and, or, not, true, false ; the start symbol is E. 10

bexpr-> bexpr or bterm | bterm
bterm->bterm and bfactor | bfactor
bfactor->not bfactor | (bexpr) | true | false

- 4 a) 1. Differentiate between macro and subroutine 5
2. Compare top down and bottom parser. 5
- b) Explain different code optimization techniques. 5
- 5 Consider the following translation scheme: 10

```
S-> if E then M1 S1 N else M2 S2
  { backpatch(E.true,M1.quad)
    backpatch(E.false,M2.quad)
    s.nextlist=merge(S1.nextlist, merge(N.nextlist,S2.nextlist)) }
```

```
E-> id1 relop id2
  { E.truelist=makelist(nextquad)
    E.falselist=makelist(nextquad + 1)
    gen(if id1 relop id2 goto_)
    gen(goto_) }
```

```
M->E M.quad=nextquad
```

```
N->E N.nextlist=makelist(nextquad)
  gen(goto_)
```

Assume additional data if necessary

using this translation scheme translate following statements to three address code:

if A<B then X=X+1 else Y=Y+1

Best of Luck