COLLEGE OF ENGINEERING, PUNE

(An Autonomous Institute of Government of Maharashtra.)

END Semester Examination

Programme: T.Y B.Tech
Course Code: PCC/IT-09007
Branch: Information Technology
Duration: 03 Hrs.
Student MIS No.

Semester: V
Course Name: Language Processor.
Academic Year: 2016-17
Max Marks: 60

Instructions:

1. Figures to the right indicate the full marks.
2. Mobile phones and programmable calculators are strictly prohibited.
3. Writing anything on question paper is not allowed.
4. Exchange/Sharing of stationery, calculator etc. not allowed.
5. Write your MIS Number on Question Paper.

2.

Q.1.[A] State whether the following statements are true or false. Justify your answer.   06
(Any six)

1) An interpreter is a language translator.

2) Knowledge of software engineering helps us to bridge the semantic gap.

3) Macro definition table is maintained to hold value of sequencing symbols

4) During code optimization a complier may rearrange the computation in the program.

5) Default specification of parameters is useful in situations where a parameter has the different value in most calls

6) Constants and literals are two names having the same meaning

7) The ORIGIN Statement indicates what address the next instruction in the program should have

[B] Whether the following statements are absolute or relative (Relocation is needed).   06
Justify the answers.

1. mvi A ,00
2. jmp * -6
3. store c
4. x-y
5. x+y-z
6. x+7+v-w

(note: x,y,z,v,w may be either symbol or label)

Q.2.[A] What are the different types of errors that an assembler should handle ? Also write   06
support provided for error detection

OR

What is meant by forward referencing of symbols? State and explain two different approaches to provide forward referencing in an assembly language.

[B]   For the following assembly code, for hypothetical machine show the contents of   06
symbol table, literal table ,pool table and output code.
(Assume your own MOT,POT, and **length of instruction two bytes only**)

```
          START   1000
A         DC      01
          LOAD    A
          ADD     '=1'
          MULT    '=10'
          GOTO    L
          LTORG
L         ADD     '=1'
          ADD     B
B         DS      1
          END
```

Q.3.[A]   Elaborate the use of stack data structure in expansion of nested macro calls.   04

OR

An assembly language program performs certain task at 10 places .under what
conditions would you code this action as
    (a) A Macro ?
    (b) A Subroutine ?
Justify your answer with the help of appropriate example

[B]   Show MNT, MDT entries and output file after the following shown file undergoes   04
a macro expansion.

```
          MACRO     EVAL &X, &Y
                    LOAD &X
                    ADD  &Y
                    STORE &X
          MEND
          MACRO     MAJOR &A, &B, &C
                    EVAL  &A, &B
                    EVAL  &A, &C
          MEND
                    LOAD D
                    LOAD A
                    LOAD G
                    MAJOR  D,A,G
          END
```

[C]   Write the advantage and disadvantage of an absolute Loader   04

Q 4 [A]   1. Construct a Regular Expression and DFA which accepts set of all strings over   06
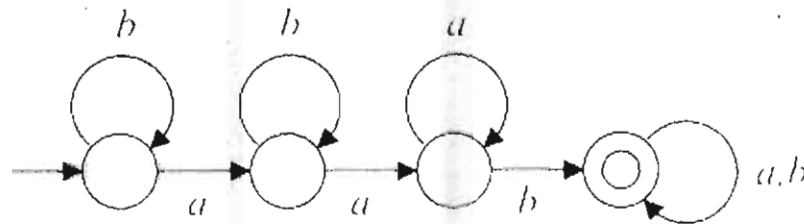the alphabet {a , b} where string consist substring ab.

2. Construct a Regular Expression and DFA which accepts set of all strings over
the alphabet {a, b} where each string start and end with same symbol.

ToC

3. Write a regular expression for following automata.

[B]   1) Write a lex code to recognize following tokens of the C language (Any three)   06
- Comment *.................*\
- Logical operators: &&, ||,!
- Identifiers
- Float numbers

2) Construct three address code for
1. z := p+q*r+s
2. x|y & -z
3. a[i] = b[i]+c;
   P= a[i];

Q 5 [A]   Explain in detail the process of compilation? Explain the output of each phase for   06
the following statement with and without considering precedence and associativity
of operators.

$$A= B*C+2*6.3+2*B$$

[B]   Optimise following code by applying suitable code optimization technique   06
1)   B1:
        a = 2 * c
        goto B3
        B2:
        b = a
        B3:
        b = 33
2)   for (i=0;i<n; i++)
        {
            Z = x+5;

            Y = x+5*60;
        }

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