# COLLEGE OF ENGINEERING, PUNE
**(An Autonomous Institute of Govt. of Maharashtra)**
**End Sem November, 2014**
## (CT – 09004) SYSTEM PROGRAMMING
**Class: - T.Y. B.Tech (Computer Engineering)**

Year: - 2014-15                                                                     Semester: - V
Duration: - 3hr   02:00 PM - 05:00 PM                          Max. Marks: - 60
*Instructions:*

23 NOV 2014

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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Q.1   A]   Compare and explain Variant I and Variant II of intermediate code        [5]
           generation for assembler?

      B]   **(a)** Given the source program:                                        [5]

```
            START     100
A           DS        3
L1          MOVER     AREG,B
            ADD       AREG,C
            MOVEM     AREG,D
            MOVER     BREG,='2'
            MOVER     CREG,='4'
D           EQU       A+1
L2          PRINT     D
            LTROG
                      ='2'
                      ='4'
            ORIGIN    A-1
C           DC        5
            ORIGIN    L2+3
            STOP
B           DC        '19'
            END       L1
                      ='5'
```

      1) Show the contents of symbol table at the end of pass I.
      2) Explain the significance of EQU and ORIGIN statements in the program
         and explain how they are processed by the assembler.

Q.2   A]   Define Assembler and give the assembler directives? List of machine      [5]
           dependent and independent assembler futures. Explain any one of them?
                                    **OR**
      B]   Define forward references. How it can be solved using back-patching?      [5]
           Explain with example.

      C]   Explain lexical and semantic expansion of macro with example.             [5]

| Q.3 | A] | Explain attributes of formal parameters, default specifications of parameter and semantic expansion for macro by giving examples. | [5] |
|---|---|---|---|

**OR**

| | B] | Explain following terms with suitable example. (Any Three) | [5] |
|---|---|---|---|

(i) Expansion time variable   (iii) Semantic Expansion
(ii) Positional parameter      (iv) Macro Preprocessor

| | C] | Define two macros of your choice to illustrate nested calls to these macros. Also show their corresponding expansion. | [5] |
|---|---|---|---|

| Q.4 | A] | Explain with examples - expansion time variables, expansion time statements - AIF and AGO for macro programming. Show their usage for expansion time loop by giving example. | [5] |
|---|---|---|---|

| | B] | What are the two different techniques used for relocation? Explain any one technique with suitable example? | [5] |
|---|---|---|---|

**OR**

| | C] | What are the basic functions of a loader? What do you mean by relocating loaders? Explain the method for relocation. | [5] |
|---|---|---|---|

| Q.5 | A] | Draw and explain the structure of compiler. | [5] |
|---|---|---|---|
| | B] | Explain lexical analysis and syntax analysis phase in compilation process. | [5] |

| Q.6 | A] | Describe various optimizing transformations commonly used in compilers. | [5] |
|---|---|---|---|
| | B] | Explain the types of editors in details? | [5] |