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T.Y. B.Sc. (Sem. III) EXAMINATION, 2018

COMPUTER SCIENCE

Paper I

(CS-331 : System Programming)

(2013 PATTERN)

Time : Two Hours

Maximum Marks : 40

N.B. :— (i) *All* questions are compulsory.

(ii) *All* questions carry equal marks.

(iii) Figures to the right indicate full marks.

(iv) Neat diagrams must be drawn wherever necessary.

1. Attempt *all* : [10×1=10]

(a) Write any *four* elements of programming environment.

(b) What is the need of editor ?

(c) What are the different types of assembly language statements ?

(d) What is impure interpreter ?

(e) What is a dead code ?

(f) Write the purpose of intermediate code.

(g) List any *two* computer system architecture.

P.T.O.

- (h) What is the purpose of LORG ?
- (i) Define macro assembler.
- (j) What is a system call ? List any *two* system calls.

2. Attempt any *two* of the following : [2×5=10]

- (a) Define debugging and state the functions of debugging.
- (b) Write a note on relocatable program and self relocatable program.
- (c) Consider the following assembly language program :

```

START 100
READ N
LOOP MOVER  AREG,N
      SUB    AREG,='I'
      BC     GT,LOOP
STOP
A   DS   I
END
    
```

Instruction opcode	Assembly mnemonic
00	STOP
01	READ
02	MOVER
03	SUB
04	BC

Declarative semt
DS 01

Assembler directive
START 01
END 02

Write intermediate code form using variant-I and variant-II.

3. Attempt any *two* of the following : [2×5=10]

- (a) What are the different factors affecting pass structure of an assembler.
- (b) Write a brief note on Distributed Operating System and Real time embedded operating system.
- (c) Consider the following macro :

```
MACRO
    COMPUTE    &A, &B, &REG = AREG
    LCL        &C
    &C    SET    10
    MOVER      &REG, &A
    ADD        &REG, &C
    LOOP    MOVEM    &REG, &A
    &C    SET    &C-1
    AIF      (&A NE &B).LOOP
MEND
```

Show the contents of the following data structure :

- (i) MNT
- (ii) MDT
- (iii) PNTAB
- (iv) KPDTAB
- (v) EVNTAB.

4. Attempt either (A) *or* (B) :

- (A) (a) What is a forward reference and what is the solution to solve the forward reference problem ? [4]
- (b) Explain in detail the conditional and unconditional statements in macro. [4]
- (c) Explain word processor as an editor. [2]

Or

- (B) (a) Explain peer-to-peer computing. [4]
- (b) Differentiate between compiler and interpreter. [4]
- (c) State any *four* operating system services. [2]