Sample Question Paper

Course Name : Computer Science and Engineering Group

Course Code : CW

Semester : Sixth

Subject Title : System Programming

17634

Marks : 100   **Duration: 3 Hours**

Instructions

1. All questions are compulsory

2. Illustrate your answer with neat sketches wherever necessary

3. Figures to the right indicates full marks

4. Assume suitable data if necessary

5. Preferably, write the answers in sequential order

Q1 (a) Answer any <u>THREE</u> of the following   **(12)**

a) Draw a neat labeled diagram of foundation of system software.

b) Draw RR format of instruction. Describe the fields in it.

c) Define Macro. State two uses of macros in a program.

d) Write the expanded source code for the following :

```
Macro
Incr
A   1, Data
A   2, Data
A   3, Data
Mend
.
.
.
Incr
.
.
.
Incr
Data DC F'5'
```
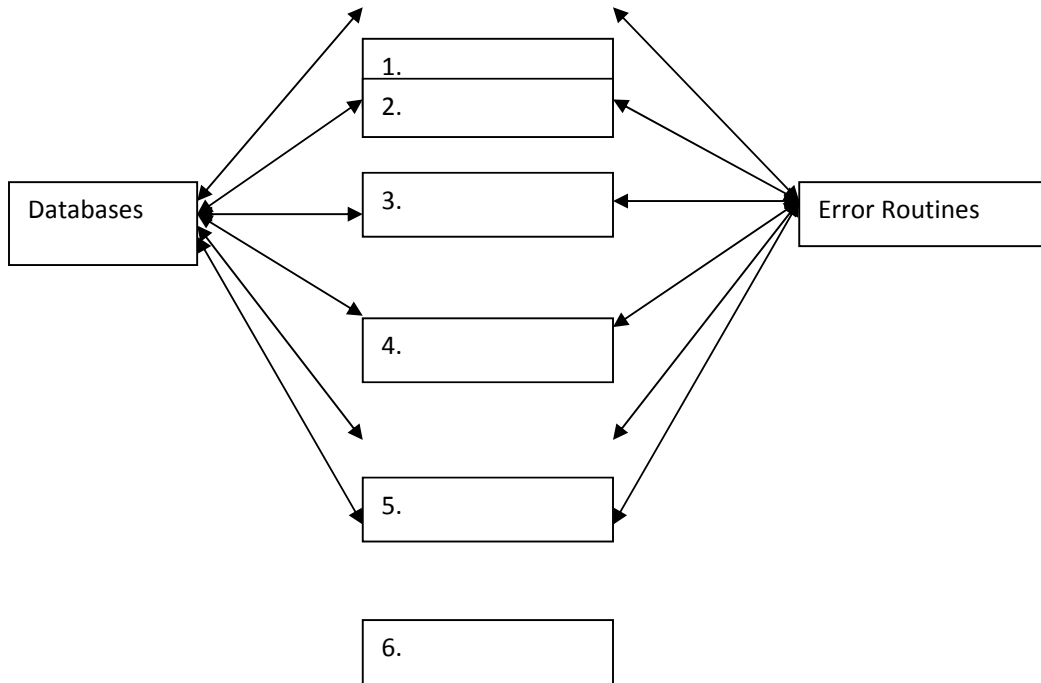
Q1 (b) Answer any <u>ONE</u> of the following   **(06)**
    a) List the four components of system programming. Write one function of two components.
    b) Observe the given diagram of compiler. Write the names of phasesfrom 1 to 6.

Q2. Answer any <u>TWO</u> of the following   **(16)**
    a) Draw the flowchart for Pass1 of a two pass assembler.
    b) Write the contents of M.N.T. and M.D.T. for the following code :
       Macro
       A   &m_v, &i_v, &reg
       Move &reg, &m_v
       Add   &reg, &i_v
       Move &reg, m_v
       Mend

    c) Draw the neat labeled diagram of compile and go loader. Describe its working.

Q3. Answer any <u>FOUR</u> of the following   **(16)**
    a) Draw the neat labeled diagram of intermediate phase of a compiler.
    b) Describe the four tasks performed by Macro Processor.
    c) Sort the following numbers in descending order using bucket sort :
       78, 354, 51, 278, 63, 89, 312, 12.
    d) List the components of system software. State the functions of two components.
    e) For the following sub expression, draw the table for intermediate code with optimization :
       $Z = (A+B) * (C-D) + (A+B)$

Q4. A) Answer any <u>THREE</u> of the following (12)
   a) Mention four notational shorthand for representing regular expression.
   b) "Variable used before declaration leads to the problem of forward reference "Give solution to rectify the problem.
   c) Give the specifications of database used in assembler design
   d) List the steps for the binary search algorithm. List the best, worst and average case complexity.

Q4. B) Answer any <u>ONE</u> of the following. (06)
   a) Define parser. Draw the parse tree for the string 'abccd' using top down parser.
   b) Describe token with respect to lexical analysis with a suitable example.

Q5. Answer any <u>TWO</u> of the following (16)
   a) Describe the designing of absolute loader with respect to its performances based upon
      1. Allocation
      2. Loading
      3. Relocation
      4. Linking
   b) With the neat diagram describe the analysis and synthesis phase of general model of compiler
   c) Draw neat labeled diagram of pass1 of a macro processor.

Q6. Answer any <u>FOUR</u> of the following (16)
   a) Mention four functions of storage assignment phase of a compiler.
   b) Write the necessity of overlays in linking loaders.
   c) List the specification of data structures in direct linking loaders.
   d) What is hashing? Write a suitable example of hashing.
   e) Draw the neat labelled diagram of general loading scheme.

Sample Test Paper - I

Course Name : Computer Science and Engineering Group

Course Code : CW

Semester : Sixth

Subject Title : System Programming

Marks : 100

17634

Duration: 1 Hour

Instructions:

1. All questions are compulsory
2. Illustrate your answer with neat sketches wherever necessary
3. Figures to the right indicates full marks
4. Assume suitable data if necessary
5. Preferably, write the answers in sequential order

Q1. Attempt any THREE   09(3*3)

a. Define module. Give importance of modularity.
b. Draw the labelled machine structure diagram of system programming.
c. Draw the RS format of instruction and describe the fields in it.
d. Write the syntax of following instructions with suitable example :
   i. START   ii. USING

Q2. Attempt any TWO   08(4*2)

a. Draw the neat labelled diagram of foundation of system programming.
b. Give the formats of databases for the design of assembler.
c. List the steps of algorithm of shell sort and give example to sort five numbers.

Q3. Attempt any TWO   08(8*1)

a. Sort the given numbers using Bucket sort technic with the pictorial representation in ascending order.
   110, 628, 576, 78, 9915,38,692,42,69,21,83,95

b. Write the binary search algorithm and give the example to search a number from the list of 10 numbers.

Sample Test Paper - II

Course Name : Computer Science and Engineering Group

Course Code : CW

17634

Semester   : Sixth

Subject Title : System Programming

Marks   : 100   **Duration: 1 Hour**

Instructions:

1. All questions are compulsory

2. Illustrate your answer with neat sketches wherever necessary

3. Figures to the right indicates full marks

4. Assume suitable data if necessary

5. Preferably, write the answers in sequential order

Q1. Attempt any THREE   **09(3*3)**

a. Describe the working of compile and go loader with neat labelled sketch.
b. Draw the parse tree for the sting 'ccdeef' using bottom up parsing approach.
c. List the tasks performed by macro processor.
d. Write the four functions performed by loader.

Q2. Attempt any TWO   **08(4*2)**

a. Write the expanded source code for the following code.

```
MACRO
Sub_div
B       1,DATA
B       2,DATA
B       3,DATA
MEND
.
.
Sub_div
.
.
Sub_div
 DATA DC    F'10'
```

b. Describe the working of interpretation phase of compiler.

c. State the importance of overlays in linking loaders.

Q3. Attempt any TWO   08(8*1)

a. Write the contents of macro name table and macro definition table for the following code.

Macro

A   &c_d, &e_d, &reg

Move   &reg, &c_d

Sub   &reg, &e_d

Mov   &reg, &c_d

Mend

b. What is done in code optimization process? Why is it required? Write one suitable example.