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**10AL61**

# Sixth Semester B.E. Degree Examination, Dec.2017/Jan.2018
## Management and Entrepreneurship

Time: 3 hrs.  Max. Marks:100

**Note:** *Answer any FIVE full questions, selecting atleast TWO questions from each part.*

## PART – A

1  a. Define Management. Explain various functions of management. **(10 Marks)**
   b. Comment on 'Management of Science, Art and Profession'. **(04 Marks)**
   c. Discuss the contribution of F.W. Taylor towards scientific management process. **(06 Marks)**

2  a. Explain importance of planning. **(05 Marks)**
   b. Briefly explain important steps in planning. **(10 Marks)**
   c. Explain in brief on long and short range planning. **(05 Marks)**

3  a. What is Organization? Explain principle, purpose and nature of organization. **(10 Marks)**
   b. Briefly explain the steps in selection procedure. **(10 Marks)**

4  a. Explain the essential of sound controlling. **(05 Marks)**
   b. Explain Maslow's theory of motivation. **(05 Marks)**
   c. What is Communication? Briefly explain its importance and types. **(10 Marks)**

## PART – B

5  a. Differentiate between Entrepreneur and Intrapreneur and explain types of Entrepreneur. **(08 Marks)**
   b. Describe various stages in Entrepreneural processes. **(08 Marks)**
   c. Explain the barriers involved in Entrepreneurship. **(04 Marks)**

6  a. Define SSI. Explain the characteristics of SSI. **(06 Marks)**
   b. What are various problems faced by SSI? **(06 Marks)**
   c. Explain in brief the steps involved in setting up of SSI. **(08 Marks)**

7  a. List various State level and Central Government bodies providing institutional support for SSI and explain objectives and functions of KSFC and SSIB. **(10 Marks)**
   b. Explain the role of following bodies in promoting the enterprise :
      i) DIC       ii)  TECSOK. **(10 Marks)**

8  a. What is a Project? Explain the classification and criteria in selecting a project. **(10 Marks)**
   b. Explain several stages followed in project formulation. **(10 Marks)**

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**10CS62**

Sixth Semester B.E. Degree Examination, Dec.2017/Jan.2018
# Unix System Programming

Time: 3 hrs.                                                                          Max. Marks:100

**Note:** *Answer any FIVE full questions, selecting*
*at least TWO questions from each part.*

## PART – A

1   a.   List and explain the features by which ANSI C differs from K and R C with an example for each.                                                                        **(08 Marks)**
    b.   Explain POSIX standard with different subsets of POSIX. Write C/C++ program to display POSIX-VERSION.                                                          **(07 Marks)**
    c.   Explain the common characteristics of API along with error status codes with their meaning.                                                              **(05 Marks)**

2   a.   Explain different file types available in UNIX/POSIX with different commands that operate on the files.                                                                **(08 Marks)**
    b.   List and explain all the attributes of UNIX or POSIX file with their meaning. Which attributes remain unchanged for the entire life of the file and why?     **(07 Marks)**
    c.   Draw and explain with neat data structures of UNIX Kernel showing the file manipulation when a file data.txt is hard linked by another file data1.txt and also what happens when the file descriptor of data.txt is duplicated another file descriptor fd1.          **(05 Marks)**

3   a.   Write the prototype of umask and show and explain the final permissions being applied on opening a file /usr/work/fil1.txt with permissions 0557. Assume a umask value of 031 of the calling process in UNIX system. Show and explain the final permissions applied on that file.
                                                                                       **(05 Marks)**
    b.   Explain the prototypes of the following API's
           i)   open
           ii)  lseek
           iii) fstat
           iv)  chmod
                                                                                       **(08 Marks)**
    c.   What is the advantage of locking files? Explain mandatory and advisory locks? Why advisory lock in considered safe? What are the drawbacks of advisory lock? Explain.
                                                                                       **(07 Marks)**

4   a.   Explain with a neat diagram how a C-program is started and terminated in various ways?
                                                                                       **(08 Marks)**
    b.   Explain the memory layout of a C-program with a neat diagram.                 **(07 Marks)**
    c.   What are environmental variables and command line arguments? Write a C program to echo all its command line arguments to its standard output.              **(05 Marks)**

## PART – B

5   a.   Explain the fork and vfork system call. How fork system call differs from vfork? Write a program to demonstrate fork and vfork system calls.                  **(10 Marks)**
    b.   Explain the BSD terminal login with suitable diagrams and the steps involved in configuring it.                                                                       **(10 Marks)**

6  a. Explain the following API's along with their prototypes with respect to signals.
     i) sigprocmask
     ii) sigaction
     iii) alarm
     iv) kill                                                                     **(10 Marks)**
   b. What are Daemon processes?  Explain with a neat diagram the error logging facility for a daemon process.                                                          **(10 Marks)**

7  a. What are three different ways in which client and server process can get access to same IPC structure? Explain different prototype of API's that support these structures.   **(10 Marks)**
   b. Explain client/server communication using FIFO with a neat diagram.        **(10 Marks)**

8  a. What are semaphores? Explain the API's along with the relevant data structure involved in implementation of semaphores.                                           **(10 Marks)**
   b. Write short notes on any two of the following :
     i) Socket
     ii) Shared Memory
     iii) Stream pipes.                                                          **(10 Marks)**

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# Sixth Semester B.E. Degree Examination, Dec.2017/Jan.2018
## Complier Design

Time: 3 hrs.  Max. Marks:100

**Note:** *Answer any FIVE full questions, selecting atleast TWO questions from each part.*

## PART – A

1   a. With a neat diagram, explain various phases of complier. **(10 Marks)**
    b. Write the look ahead code with sentinels for input buffering strategy used in lexical analysis phase. **(05 Marks)**
    c. Construct a transition diagram for recognizing unsigned numbers. **(05 Marks)**

2   a. Explain panic mode and phrase – level error recovery strategies. **(08 Marks)**
    b. Write an algorithm to left factor a grammar. Give the left factored grammar for the following :
    $S \rightarrow iEtS/iRtSeS/a$
    $E \rightarrow b$ **(06 Marks)**
    c. Give the rules for constructing FIRST and FOLLOW sets. **(06 Marks)**

3   a. Write an algorithm to construct a predictive parsing table. Construct the predictive parsing table, considering the grammar :
    $E \rightarrow E + T/T$
    $T \rightarrow T * F/F$
    $F \rightarrow (E) /id$ **(08 Marks)**
    b. Explain the working of a shift reduce parser. **(04 Marks)**
    c. Explain the conflicts of shift reduce parsing with suitable examples. **(08 Marks)**

4   a. Write an algorithm for constructing SLR parsing table. **(06 Marks)**
    b. Construct LALR parsing table, considering the following augmented grammar :
    $S' \rightarrow S$
    $S \rightarrow CC$
    $C \rightarrow cC/d$ **(10 Marks)**
    c. Write a note on the use of ambiguous grammars. **(04 Marks)**

## PART – B

5   a. Explain the concept of syntax–directed definition. **(06 Marks)**
    b. Construct a dependency graph for the declaration float id1, id2, id3. **(06 Marks)**
    c. Explain the parser stack implementation of postfix SDT with an example. **(08 Marks)**

6   a. Obtain the directed acyclic graph for the expression :
    $a + a * (b - c) + (b - c) * d$. **(06 Marks)**
    b. List any four common three address instruction forms. **(04 Marks)**
    c. Write syntax directed definition for flow of control statements. **(10 Marks)**

7   a. With a neat diagram, explain the typical subdivision of runtime memory. **(08 Marks)**
    b. Explain the desirable properties of memory manager. **(06 Marks)**
    c. Explain the design goals for garbage collector. **(06 Marks)**

8   a. Write an algorithm to partition three-address instructions into basic blocks. **(06 Marks)**
    b. Define flow graph. How it is constructed? **(04 Marks)**
    c. With an example, explain common sub-expression and dead code elimination methods. **(10 Marks)**

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## Sixth Semester B.E. Degree Examination, Dec.2017/Jan.2018
## File Structures

Time: 3 hrs. Max. Marks:100

**Note:** *Answer any FIVE full questions, selecting*
*at least TWO questions from each part.*

### PART – A

1 a. Explain the seeking operation in detail with respect to C stream and also C++ stream class. **(08 Marks)**
   b. List and briefly explain the strength and weakness of CD ROM. **(05 Marks)**
   c. Write a C++ program to read the contents of a file and display the contents in reverse order on the terminal. **(07 Marks)**

2 a. Differentiate between fixed length record and variable length record with suitable examples. **(04 Marks)**
   b. Explain the class hierarchy for record buffer object - IOBuffer. Also write only the class structure with main members and methods of class IOBuffer. **(08 Marks)**
   c. Write a C++ program to pack the 'n' number of student records in a file. (Fixed length record structure can be used) **(08 Marks)**

3 a. Write a C++ function or algorithm to search a record using RRN. **(06 Marks)**
   b. List the needs of data compression. Explain Run-length encoding algorithm with an example. **(08 Marks)**
   c. Explain the various placement strategies. **(06 Marks)**

4 a. Define co-sequential processing. Explain the essential components of consequential processing model. **(10 Marks)**
   b. Explain K-way merge algorithm with an example. **(10 Marks)**

### PART – B

5 a. List the B-tree properties. Explain search and insert methods with respect to B-tree. **(10 Marks)**
   b. Calculate the number of levels for a B-tree given 1000000 keys and order 512. **(10 Marks)**

6 a. Explain indexed sequential access. Explain block splitting and merging in the sequence set with suitable examples. **(10 Marks)**
   b. Explain in detail simple prefix $B^+$ tree maintenance. **(10 Marks)**

7 a. Define hashing. Differentiate between hashing and indexing. Explain simple hashing algorithm with an example. **(10 Marks)**
   b. Explain double hashing and chained progressive overflow in detail **(10 Marks)**

8 Explain the following:
   a. Tries
   b. Unix directory structure
   c. Field structures
   d. Key sorting algorithm. **(20 Marks)**

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### Sixth Semester B.E. Degree Examination, Dec.2017/Jan.2018
## Computer Network – II

Time: 3 hrs.                                                              Max. Marks:100

**Note: *Answer FIVE full questions, selecting
at least TWO questions from each part.***

### PART – A

1  a.  Explain connection less and connection oriented packet switching network.    **(10 Marks)**
   b.  Discuss Bellman ford algorithm. Consider the network below and find the shortest path by applying Bellman ford algorithm to find both minimum cost from each node to destination node 6.    **(10 Marks)**
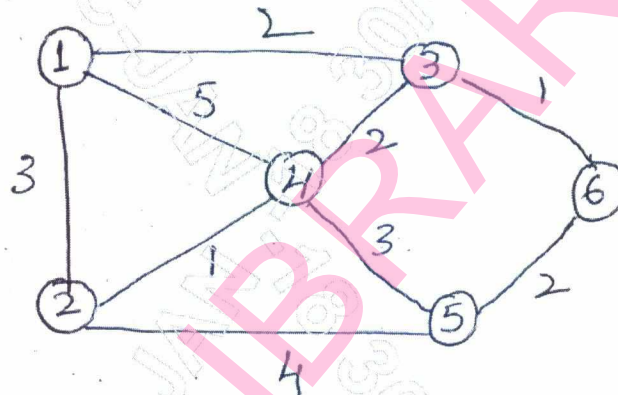


Fig. Q1 (b)

2  a.  State the purpose of traffic management at flow level and discuss about congestion control algorithms.    **(08 Marks)**
   b.  What is fragmentation? What are the causes for fragmentation?    **(08 Marks)**
   c.  Identify the address class of the following input addresses:
       (i)    14.6.12.1
       (ii)   123.14.121.14
       (iii)  197.125.1.1
       (iv)   243.18.16.2    **(04 Marks)**

3  a.  Explain the format of IPV6 header.    **(07 Marks)**
   b.  What is the purpose of ICMP, what kind of network information does it carry? Explain.    **(08 Marks)**
   c.  How is checksum in TCP header computed? Explain with an example.    **(05 Marks)**

4  a.  Explain Open Shortest Path First (OSPE) with header format.    **(07 Marks)**
   b.  Write a note on network address translation.    **(05 Marks)**
   c.  Explain Broder Gate Way Protocol (BGP).    **(08 Marks)**

## PART – B

5  a. How does FTP work? Explain the connection establishment procedure between a client and a server. **(07 Marks)**

   b. Apply RSA algorithm for the following:
- (i) Encrypt the plain text
  - Plain text = 9
  - p = 3, q = 11, e = 3
- (ii) Find the value of d and decrypt the cipher text. **(08 Marks)**

   c. Write a note on firewall. **(05 Marks)**

6  a. Discuss the different resource allocation schemes. **(06 Marks)**

   b. What are the QoS methods in integrated service? Explain admission control and RSVP protocol. **(07 Marks)**

   c. Write a note on virtual private network (VPN). **(07 Marks)**

7  a. Explain the session initiation protocol. **(10 Marks)**

   b. Design a Huffman encoder for a source generation $\{a_1, a_2, a_3, a_4, a_5\}$ with respective probability.
$\{0.50, 0.20, 0.15, 0.10, 0.05\}$ **(10 Marks)**

8  a. Explain with neat diagram, Decentralized Energy Efficient Propagation protocol (DEEP). **(08 Marks)**

   b. Explain low energy adaptive clustering hierarchy. **(05 Marks)**

   c. Explain adhoc on demand distance vector routing protocol. **(07 Marks)**

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# Sixth Semester B.E. Degree Examination, Dec.2017/Jan.2018
## Computer Graphics and Visualization

Time: 3 hrs.                                                        Max. Marks:100

**Note:** *Answer any FIVE full questions, selecting*
*at least TWO questions from each part.*

## PART – A

1   a.  Discuss the applications of computer graphics.                **(06 Marks)**
    b.  With an aid of a functional schematic, describe the graphics pipeline with major steps in the imaging process.                                           **(08 Marks)**
    c.  Explain the human visual system.                             **(06 Marks)**

2   a.  What is an openGL interface? Write an openGL program for a 2D-Sierpinski gasket using midpoint of each triangle.                                        **(10 Marks)**
    b.  Explain any two control functions used in openGL.            **(04 Marks)**
    c.  Explain the additive, subtractive and indexed color formation in computer graphics.
                                                                     **(06 Marks)**

3   a.  What are the various classes of logical input devices that are supported by openGL? Explain the functionality of each of these classes.                       **(10 Marks)**
    b.  Enlist the various features that a good interactive program should posses.   **(04 Marks)**
    c.  Suppose that the openGL window is 500 × 50 pixels and the clipping window is a unit square with the origin at the lower left corner. Use simple XOR mode to draw erasable lines.
                                                                     **(06 Marks)**

4   a.  Explain the complete procedure of converting a world object frame into camera frame using the model view matrix.                                            **(12 Marks)**
    b.  Explain translation rotation, scaling and shearing with respect to 2-dimensions.   **(08 Marks)**

## PART – B

5   a.  What is concatenation transformation? Explain rotation about a fixed point.   **(08 Marks)**
    b.  Explain how quaternions are used in rotation in a three-dimensional space, also list some of its advantages.                                              **(12 Marks)**

6   a.  Explain the various types of views that are employed in computer graphics systems.
                                                                     **(10 Marks)**
    b.  Explain g/Frustrum( ) with syntax.                           **(06 Marks)**
    c.  Define the term Axonometric projection, also list its types.   **(04 Marks)**

7   a.  Explain phong-lighting model.                                **(10 Marks)**
    b.  Write a program to display a set of values {fi} as a rectangular mesh.   **(07 Marks)**
    c.  List the possible light sources in openGL.                   **(03 Marks)**

8   a.  Explain the cohen-sutherland line clipping algorithm in detail.   **(10 Marks)**
    b.  Discuss the Bresenham's rasterization algorithm. How is it advantageous when compared to other existing methods? Describe.                                   **(10 Marks)**

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# Sixth Semester B.E. Degree Examination, Dec.2017/Jan.2018
## Software Testing

Time: 3 hrs.                          Max. Marks:100

Note: *Answer FIVE full questions, selecting*
*at least TWO questions from each part.*

## PART – A

1   a.   Explain basic definitions in perspective on testing.     (10 Marks)
    b.   Define two fundamental approaches that are used to identify the test cases.     (10 Marks)

2   a.   Define the following:
        (i)      Boundary value analysis.
        (ii)     Generalizing Boundary value analysis.
        (iii)    Limitations of boundary value analysis.
        (iv)    Robustness testing.     (10 Marks)
    b.   Develop a decision table for "second try" at the NextDate function. At the end of a 31-day month, the day is always reset to 1. For all non-December month, the month is incremented; for December, the month is reset to January and the year is incremented.     (10 Marks)

3   a.   Explain metric based testing.     (10 Marks)
    b.   Define Use testing.     (05 Marks)
    c.   Define slice-based testing.     (05 Marks)

4   a.   Explain alternative life-cycle models.     (10 Marks)
    b.   Explain decomposition-based integration.     (10 Marks)

## PART – B

5   a.   Explain basic concepts for requirements specification.     (10 Marks)
    b.   Explain different functional strategies for thread testing.     (10 Marks)

6   a.   With neat diagram, explain the validation and verification in software testing.     (10 Marks)
    b.   Explain the following:
        (i)      Redundancy.
        (ii)     Restriction.
        (iii)    Partition.
        (iv)    Visibility.     (10 Marks)

7   a.   Explain fault based adequacy criteria.     (05 Marks)
    b.   Explain self-checks as oracles?     (05 Marks)
    c.   Explain the following:
        (i)      From test case specification to test cases.
        (ii)     Scaffolding.     (10 Marks)

8      Write a short note:
    a.   Quality and process.
    b.   Test and analysis plans.
    c.   Risk planning.
    d.   Test and analysis reports.     (20 Marks)

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# Sixth Semester B.E. Degree Examination, Dec.2017/Jan.2018

## Compiler Design

Time: 3 hrs.                                                  Max. Marks:100

**Note:** *Answer any FIVE full questions, selecting*
*at least TWO questions from each part.*

## PART – A

1  a. Explain input buffering strategy used in lexical analysis phase. **(10 Marks)**

   b. Write a transition diagram for recognizing unsigned numbers. Sketch the program segment to implement it, showing the first/initial state and one final state. **(10 Marks)**

2  a. What is recursive-descent parser? Trace and explain the working of the recursive-descent parser for the input "bcd" and grammar:

        $A \to bCd$

        $C \to ce|e$ **(10 Marks)**

   b. $S \to (L)|a$

      $L \to L, S|S$

      Make the grammar suitable for top down parsing. Construct predictive parse table and parse the string $(( ))$. **(10 Marks)**

3  a. Show that the following grammar is LL(1) grammar, without constructing any parse table. Also construct first and follow set for the given grammar.

        $S \to AaAb|BbBa$

        $A \to \in$

        $B \to \in$ **(06 Marks)**

   b. Explain "handle" and "handle pruning". Show the handles during the parse of input "$id_1*id_2$" for the grammar.

        $E \to E + T|T$

        $T \to T*F|F$

        $F \to id|(E)$ **(06 Marks)**

   c. What are the different conflicts encountered during shift-reduce parsing? Explain the conflicts during the parse of the input "$id*id$" for the grammar given in Q3(b). **(08 Marks)**

4  a. For the given grammar, construct SLR(1) parse table and parse the string "aa".

        $S \to SA|A$

        $A \to a$ **(10 Marks)**

   b. Construct canonical parse table for the grammar:

        $S \to CC$

        $C \to cC|d$ **(10 Marks)**

## PART – B

5  a. Write an SDD for simple desktop calculator. Show the annotated parse free for the expression $(5*7) + (1*2)$. **(10 Marks)**

   b. Explain parser stack implementation of postfix SDT with an example. **(10 Marks)**

**6** a. Explain the following with example:
   i) Value membered method for constructing DAG
   ii) Triples
   iii) Indirect triples
   iv) Quadruples
   v) Static-single assignment form **(15 Marks)**

   b. Write an algorithm for unification of a pair of nodes in a type graph. **(05 Marks)**

**7** a. Describe the structure of activation record. Also explain the task division between a caller and callee in implementing the procedure calls. **(12 Marks)**

   b. Explain the design goals of a garbage collector. **(08 Marks)**

**8** a. Write the algorithm for partitioning three-address instructions into basic blocks. Generate intermediate code for the following statements and identify the basic blocks, (given w = 8 bytes).

           for i from 0 to 10 do
               for j from 0 to 10 do
                   Result = c[i, j] * d[i, j];
               for i from 0 to 09 do
                   a[i, i] = 1.0; **(10 Marks)**

   b. Find liveliness and next-use info for the following code block. Given only c, d, e are live on exit.
   i)   d = b * c
   ii)  e = a + b
   iii) b = b * c
   iv)  a = e − d

   Construct DAG and simplify the above code. **(10 Marks)**

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