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06AL61

**Sixth Semester B.E. Degree Examination, December 2010**  
**Management and Entrepreneurship**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1 a. Define management. Mention levels of management. Substantiate the statement that management is both science and art. (10 Marks)  
b. Explain the contributions of F.W. Taylor for scientific management process. (10 Marks)
- 2 a. Describe the reasons which make planning process, an important activity in management. (07 Marks)  
b. Differentiate between programmed and non-programmed decisions. (03 Marks)  
c. Explain the steps that are generally required in planning process. (10 Marks)
- 3 a. Describe the departmentation based on functions with its merits and demerits. (06 Marks)  
b. Explain the advantages of delegating authority to others. (06 Marks)  
c. Describe the various steps followed in recruitment process. (08 Marks)
- 4 a. Describe the Maslow's need-hierarchy theory of motivation. (08 Marks)  
b. Explain any three techniques of coordination. (06 Marks)  
c. Describe any three essential factors of effective control system. (06 Marks)

**PART – B**

- 5 a. State the different stages in entrepreneurial development process. Explain the groups of entrepreneurs classified on functional characteristics. (10 Marks)  
b. Describe any five specific management problems faced by entrepreneurs. (10 Marks)
- 6 a. Enumerate the characteristics of small scale industries. (06 Marks)  
b. Describe the objectives of setting up small scale industries in India. (06 Marks)  
c. Mention and explain briefly the steps required for establishing an SSI. (08 Marks)
- 7 a. Describe the principal services offered by NSIC for the promotion of small scale industries. (10 Marks)  
b. Explain the various focused consultancy areas of TECSOK. (10 Marks)
- 8 a. Describe the several stages required to be followed in project formulation. (10 Marks)  
b. Explain the features that the project report should include. (05 Marks)  
c. State advantages and limitations of critical path method (CPM) for network analysis. (05 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and/or equations written eg, 42+8 = 50, will be treated as malpractice.

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06CS62

**Sixth Semester B.E. Degree Examination, December 2010**  
**Unix Systems Programming**

Time: 3 hrs.

Max. Marks:100

**Note: 1. Answer any FIVE full questions, selecting at least TWO questions from each part.**  
**2. Programs must be neatly documented.**

**PART – A**

1.
  - a. Write the difference between K & R C and ANSI C. (03 Marks)
  - b. What do you mean by term feature test macros? List all the test macros along with their meaning. (06 Marks)
  - c. Write a C++ program to list the values of the following system configuration.
    - i) Maximum number of files which can be opened simultaneously.
    - ii) Maximum number of real time signals.
    - iii) Maximum value assignable to a semaphore. (06 Marks)
  - d. What is an inode? Why are inode unique only within a file system? How does OS maps inode to its file name? (05 Marks)
  
2.
  - a. Discuss the various file types in UNIX or POSIX system. (05 Marks)
  - b. What are the API common characteristics? List any five values of global variables `errno` along with their meaning whenever API fails. (06 Marks)
  - c. List the difference between hard link and symbolic link. (04 Marks)
  - d. Explain the unix Kernel support for files, with a neat diagram. (05 Marks)
  
3.
  - a. With the help of prototype, explain the following API's :
    - i) `creat`
    - ii) `lseek`
    - iii) `access`
    - iv) `link`. (05 Marks)
  - b. List the structures used to quarry the file attribute in UNIX. Write C++ program to list the following file attributes of given regular file passed as command line argument.
    - i) File type
    - ii) user ID
    - iii) file name
    - iv) File size. (08 Marks)
  - c. What is the importance of locking files? What are the mandatory and advisory locks? Why is advisory lock considered safe? What are the draw-backs of advisory lock? Explain. (07 Marks)
  
4.
  - a. With a neat diagram, explain the memory layout of C program. (07 Marks)
  - b. What do you mean by command line argument? Explain with an example. (03 Marks)
  - c. Explain the following, with an example : i) `setjmp` and `longjmp` ; ii) `setrlimit` and `getrlimit`. (04 Marks)
  - d. What are the different ways in which a process can terminate? Explain with a neat diagram. (06 Marks)

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**PART – B**

- 5 a. What is a job control? What are the three forms of support from the OS required for job control? (05 Marks)
- b. Explain the special feature of fork API, with suitable example. (07 Marks)
- c. What is a session? How do you create a session using appropriate shell command? (05 Marks)
- d. Explain the six different forms of exec API. (03 Marks)
- 6 a. What is the signal mask? Explain with prototype and example. (05 Marks)
- b. With a neat diagram, explain the method of error logging. (07 Marks)
- c. What are daemon processes? List their characteristics. Write the rules to code a daemon. (08 Marks)
- 7 a. What do you mean by pipes? List out their limitations. Write a C program that sends "Hello World" message to child process through the pipes. (06 Marks)
- b. What is the purpose of message queuing? List and explain message queuing with prototype. (08 Marks)
- c. What are the three different ways in which client and server process can get access to same IPC structure? Explain with different prototypes. (06 Marks)
- 8 a. What is a socket? Describe the socket options. Explain with suitable functions. (08 Marks)
- b. Write short notes on the following : (12 Marks)
- i) Race conditions
  - ii) POSIX.1 FIPS standard
  - iii) Device file API's
  - iv) Semaphores.

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**Sixth Semester B.E. Degree Examination, December 2010**  
**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 with neat diagram, the various phases of a compiler. Mention the input and output for each phase. (08 Marks)
- b. Define static and dynamic scoping. Explain the working and output of the following programming segment if scoping used is static and dynamic:

```

BEGIN
    Boolean b := true
    Procedure P ;
    BEGIN
        Print (b) ;
    End ;
    BEGIN
        Boolean b := false ;
        Call P ;
    End ;
END;

```

(04 Marks)

- c. With an example, explain the use and coordination between 'LEX' and 'YACC' the compiler writing tools. (08 Marks)

- 2 Consider the grammar:

$$E \rightarrow 5 + T \mid 3 - T$$

$$T \rightarrow V \mid V * V \mid V + V$$

$$V \rightarrow a \mid b$$

- a. What is the use of left factoring? Do the left factoring for the above grammar. (04 Marks)
- b. Write an algorithm to obtain the FIRST and Follow table. Obtain FIRST and Follow table for the above grammar. (08 Marks)
- c. Write an algorithm to construct the predictive parsing table. Construct predictive parsing table for the above grammar. (08 Marks)

- 3 Consider the grammar:

$$S \rightarrow E\#$$

$$E \rightarrow E - T$$

$$E \rightarrow T$$

$$T \rightarrow F \uparrow T$$

$$T \rightarrow F$$

$$F \rightarrow (E)$$

$$F \rightarrow i$$

- a. Write the algorithm to construct basic finite state control m/c for SLR (1) and action  $\alpha$  goto functions entries. (08 Marks)
- b. Construct the following for the above grammar:
- Basic finite state control.
  - SLR (1) parsing table containing action and goto function entries. (12 Marks)

4 Consider the grammar:

$G \rightarrow S$   
 $S \rightarrow E = E$   
 $S \rightarrow f$   
 $E \rightarrow T$   
 $E \rightarrow E + T$   
 $T \rightarrow f$   
 $T \rightarrow T * f$

when terminal symbols are  $\{=, +, *, f\}$

- Write an algorithm to construct finite state control for LR(1) parser. (08 Marks)
- Construct LR(1) finite state control and explain the algorithm to construct parsing table containing action  $\alpha$  goto function entries. (12 Marks)

### PART – B

- With an example, explain the concept of syntax directed definition. (08 Marks)
  - Write the grammar and syntax directed definitions for a simple desk calculator and show annotated parse tree for the expression  $(3+4)*(5+6)$ . (12 Marks)
- What is DAG? Construct a DAG for the following expression,  $a + a * (b - c) + (b - c) * d$ . (04 Marks)
  - With an example, explain the various formats of intermediate code. (10 Marks)
  - Write quadruple representation for,  $a + a * (b - c) + (b - c) * d$ . (06 Marks)
- Explain the run time storage scheme for C++-language. Give the structure of activation record and explain with suitable example. (12 Marks)
  - Explain the design goals for garbage collectors. (08 Marks)
- Discuss the following terms:
    - Basic blocks
    - Next-use information
    - Flow graph
 (10 Marks)
  - Explain the following code optimization with example:
    - Finding local common sub expression.
    - Dead code elimination. (10 Marks)

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**Sixth Semester B.E. Degree Examination, December 2010**  
**Computer Networks - II**

Time: 3 hrs.

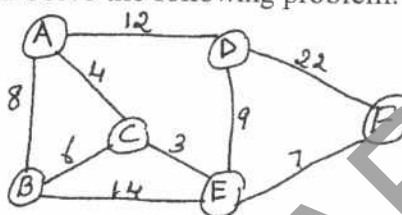
Max. Marks:100

**Note: Answer any FIVE full questions, selecting atleast TWO questions from Part – A and Part - B.**

PART – A

- 1 a. Explain Dijkstra's algorithm. Solve the following problem. (10 Marks)

Fig.Q1(a)



- b. Differentiate between virtual circuit and data grams. Explain routing table of both. (10 Marks)
- 2 a. Explain in detail about TLP architecture. (08 Marks)  
 b. Define the following terms : i) End – to – End delay ii) Jitter iii) Buffers (08 Marks)  
 iv) Queue scheduling. (04 Marks)  
 c. Write a short note on random early deduction. (04 Marks)
- 3 a. Explain the network addressing of IPV6. (08 Marks)  
 b. With a neat diagram, explain UDP datagram. (06 Marks)  
 c. Explain internet group management (IGMP) protocol. (06 Marks)
- 4 a. What are the six QoS performance parameters in ATM? (06 Marks)  
 b. With a neat diagram, explain ATM cell header format. (08 Marks)  
 c. Explain BISDN reference model. (06 Marks)

PART – B

- 5 a. Explain TLS protocol. (10 Marks)  
 b. Differentiate between DES and RSA. (05 Marks)  
 c. List the types of security services. (05 Marks)
- 6 a. Explain in detail the leaky bucket traffic shaping algorithm. (10 Marks)  
 b. Explain the resource reservation protocol. (06 Marks)  
 c. Write the parameters for classifying the resource allocation scheme. (04 Marks)
- 7 a. Explain the Raw – Image sampling and DCT. (10 Marks)  
 b. Explain Shannon's coding theorem in detail. (10 Marks)
- 8 a. Briefly explain the classification of routing protocol. (06 Marks)  
 b. With a neat sketch, explain the concept of clustering in sensor networks. (06 Marks)  
 c. Differentiate between Intra cluster and Inter cluster routing protocols. (08 Marks)

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**Sixth Semester B.E. Degree Examination, December 2010**  
**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. With a neat block diagram, explain the graphics pipeline architecture. (12 Marks)  
 b. Explain the elements of a graphics system, with a neat diagram. (08 Marks)
- 2 a. What are the graphics functions which give good API support? (10 Marks)  
 b. Write the different OpenGL primitives, with example for each primitive. (10 Marks)
- 3 a. Write a note on input mode. (10 Marks)  
 b. Explain how an event driven input can be programmed for a keyboard device. (05 Marks)  
 c. Explain how an event driven input can be performed for window events. (05 Marks)
- 4 a. Explain rotation, transformation and scaling, with respect to 2-dimensions. (08 Marks)  
 b. Explain the complete procedure of converting a world object frame into camera frame, using the model view matrix. (12 Marks)

**PART – B**

- 5 a. Explain how quaternions are used in rotation in a three-dimension space. (10 Marks)  
 b. Write a program rotating cube, with viewer movement. (10 Marks)
- 6 a. What are the simple projections? Obtain the 4×4 matrix representing simple projection. (10 Marks)  
 b. Explain the different classical views, with neat diagrams. (10 Marks)
- 7 a. Describe the Phong lighting model. Also, indicate advantages and disadvantages. (10 Marks)  
 b. Explain the classification of light material interactions, in OpenGL. (10 Marks)
- 8 Write short notes on: (20 Marks)
  - a. Hidden surface removal
  - b. Antialiasing
  - c. Rasterization
  - d. Cohen-Sutherland line clipping.

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**Sixth Semester B.E. Degree Examination, December 2010**  
**Operations Research**

Time: 3 hrs.

Max. Marks:100

**Note: 1. Answer any FIVE full questions,  
 selecting at least TWO questions from each part.  
 2. Missing data, if any, may be suitably assumed.**

**PART – A**

- 1 a. What is operations research? Explain the six phases of a study. (07 Marks)
- b. Use the graphical method to solve the problem :  
 Maximise  $Z = 10x_1 + 20x_2$   
 Subject to  $-x_1 + 2x_2 \leq 15$   
 $x_1 + x_2 \leq 12$   
 $5x_1 + 3x_2 \leq 45$   
 and  $x_1, x_2 \geq 0$ . (07 Marks)
- c. Explain the linear programming model. (06 Marks)
- 2 a. Explain the steps needed to find feasible solution using simplex method. (06 Marks)
- b. Work through the simplex method step by step to solve the following problem :  
 Minimize  $Z = x_1 - 3x_2 + 3x_3$   
 Subject to  $3x_1 - x_2 + 2x_3 \leq 7$   
 $2x_1 + 4x_2 \geq -12$   
 $-4x_1 + 3x_2 + 8x_3 \leq 10$   
 and  $x_1, x_2, x_3 \geq 0$ . (14 Marks)
- 3 a. Solve, by using Big – M method, the following linear programming problem :  
 Maximise  $Z = -2x_1 - x_2$   
 Subject to  $3x_1 + x_2 = 3$   
 $4x_1 + 3x_2 \geq 6$   
 $x_1 + 2x_2 \leq 4$   
 and  $x_1, x_2 \geq 0$ . (07 Marks)
- b. Use two-phase method to solve the problem :  
 Minimize  $Z = 0.4x_1 + 0.5x_2$   
 Subject to  $0.3x_1 + 0.1x_2 \leq 2.7$   
 $0.5x_1 + 0.5x_2 = 6$   
 $0.6x_1 + 0.4x_2 \geq 6$   
 and  $x_1, x_2 \geq 0$ . (13 Marks)
- 4 a. Apply revised simplex method to solve the following problem :  
 Maximise  $Z = 6x_1 - 2x_2 + 3x_3$   
 Subject to  $2x_1 - x_2 + 2x_3 \leq 2$   
 $x_1 + 4x_3 \leq 4$   
 and  $x_1, x_2, x_3 \geq 0$ . (14 Marks)
- b. Explain :  
 i) Weak duality property  
 ii) Strong duality property  
 iii) Complementary solutions property. (06 Marks)



## PART – B

- 5 a. Explain the key relationships between primal and dual problems. (06 Marks)  
 b. Solve the following problem by dual simplex method.

$$\text{Minimise } Z = 2x_1 + x_2$$

$$\text{Subject to } 3x_1 + x_2 \geq 3$$

$$4x_1 + 3x_2 \geq 6$$

$$x_1 + 2x_2 \geq 3$$

$$\text{and } x_1, x_2 \geq 0.$$

(14 Marks)

- 6 a. Write different steps in Hungarian algorithm to solve an assignment problem. (08 Marks)  
 b. Find the initial basic feasible solution of transportation problem where cost – matrix is given below :

		Destination				Supply
		A	B	C	D	
Origin	I	1	5	3	3	34
	II	3	3	1	2	15
	III	0	2	2	3	12
	IV	2	7	2	4	19
Demand		21	25	17	17	

(12 Marks)

- 7 a. Explain the various variations in solving games, with examples. (08 Marks)  
 b. Solve the game whose payoff matrix to the player A is given below :

		B		
		I	II	III
A	I	1	7	2
	II	6	2	7
	III	5	2	6

(12 Marks)

- 8 Explain briefly :  
 a. Decision trees  
 b. Tabu search algorithm  
 c. Genetic algorithm  
 d. Metaheuristics.

(20 Marks)

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06IS63

**Sixth Semester B.E. Degree Examination, December 2010**  
**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 briefly the evolution of file structure design. (06 Marks)
- b. Explain the different costs of disk access. (04 Marks)
- c. Explain the functions OPEN, READ and WRITE with parameters. (10 Marks)
- 2 a. Explain the different UNIX tools for sequential processing of files. (10 Marks)
- b. What is the advantage of using inheritance for record buffer classes? Explain. (10 Marks)
- 3 a. What do you understand by index? Explain simple index for sequential files. (10 Marks)
- b. What is data compression? Explain different techniques available for data compression. (10 Marks)
- 4 a. Explain object-oriented model for implementing co-sequential processes. (10 Marks)
- b. Explain K-way merging algorithm. (10 Marks)

**PART – B**

- 5 a. What are B-trees? Explain, with an example, the creation of B-trees. (10 Marks)
- b. What are the properties of B-tree? Explain worst case-search. (10 Marks)
- 6 a. Explain with an example adding a simple index to the sequence set. (10 Marks)
- b. Explain simple prefix B<sup>+</sup> tree maintenance. (10 Marks)
- 7 a. What is hashing? Write an hashing algorithm and explain with an example. (10 Marks)
- b. Explain the different collision resolution techniques. (10 Marks)
- 8 a. Explain how extendible hashing works. (10 Marks)
- b. Explain dynamic hashing and linear hashing with figures. (10 Marks)

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06IS65

**Sixth Semester B.E. Degree Examination, December 2010**  
**Information Systems**

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 framework of information systems needed by business professionals. (10 Marks)  
b. What is a system? Conceptually explain the types of information systems. (10 Marks)
- 2 a. List and describe the five basic competitive strategies, with a neat diagram. (10 Marks)  
b. Illustrate a virtual company with necessary elements. Describe the basic business strategies of virtual companies. (10 Marks)
- 3 a. Explain the transaction processing system, with an example. (10 Marks)  
b. Explain how the tools enhance enterprise collaboration. (10 Marks)
- 4 a. Define CRM. Explain the phases of CRM and support between business and its customers. (10 Marks)  
b. Explain the benefits and challenges of ERP. (05 Marks)  
c. List and explain the SCM functions, in detail. (05 Marks)

**PART – B**

- 5 a. What is E-commerce? Explain the scope and the categories of E – commerce. (10 Marks)  
b. Explain the secure E – payment system, with an example. (10 Marks)
- 6 a. Describe the OLAP and its operations, in detail. (10 Marks)  
b. List the major domain areas of AI and its commercial applications. (10 Marks)
- 7 a. What is hacking? Explain the common hacking tactics to assault the companies. (10 Marks)  
b. Explain the goal of security management. List the important security defenses. (10 Marks)
- 8 a. Explain the major components of business /IT planning process and IT architecture. (10 Marks)  
b. Describe the top issues in managing international data communications. (10 Marks)

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**Sixth Semester B.E. Degree Examination, December 2010**  
**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 the different phases of a compiler, with a neat diagram. (10 Marks)
  - b. Explain the different applications of compiler technology. (06 Marks)
  - c. Provide transition diagram to recognize : pipe, pet, item, petrol. (04 Marks)
  
2.
  - a. Consider the following grammar:  
 $R \rightarrow R'l'R \mid RR \mid R^* \mid (R) \mid a \mid b \mid c$   
 Note : Here 'l' is a 'or' symbol and not a separator between alternatives.  
 Check if the grammar is ambiguous or not. If it is an ambiguous grammar, construct an equivalent unambiguous grammar. (08 Marks)
  - b. Consider the following grammar:  
 $E \rightarrow E * T \mid T$   
 $T \rightarrow id + T \mid id$ 
    - i) Check if it is an LL(1) grammar.
    - ii) Show the sequence of moves made by the parser for  $w = id + id * id$ . (12 Marks)
  
3.
  - a. Define : i) Handle, ii) Handle pruning. (06 Marks)
  - b. Explain LR parsing algorithm. (04 Marks)
  - c. Check if the following is SLR(1) grammar:  
 $S \rightarrow Aa \mid bAc \mid dc \mid bda$   
 $A \rightarrow d$  (10 Marks)
  
4.
  - a. Construct LR(1) items for the following grammar and check if it is CLR(1) grammar:  
 $S \rightarrow AaAb \mid BbBa$   
 $A \rightarrow \epsilon$   
 $B \rightarrow \epsilon$  (07 Marks)
  - b. Construct LALR parsing table for the following grammar:  
 $S \rightarrow E$   
 $E \rightarrow (L) / a$   
 $L \rightarrow EL$  (08 Marks)
  - c. Write a short note on parser generators. (05 Marks)

**PART – B**

5.
  - a. Define attribute grammar. Explain synthesized and inherited attributes, with an example. (06 Marks)
  - b. Write SDD for a simple desk calculator. Construct annotated parse tree for the expression  $2 * 5 + 4n$  using SDD constructed for a simple desk calculator. (08 Marks)
  - c. Explain any two applications of SDT. (06 Marks)

- 6 a. Explain value number method algorithm for constructing the nodes of a DAG. Construct DAG for the expression:  
 $((x + y) - ((x + y) * (x - y))) + ((x + y) * (x - y))$  (08 Marks)
- b. Define short circuit code. Give SDD for flow-of-control statements. (06 Marks)
- c. Explain unification algorithm, with an example. (06 Marks)
- 7 a. Explain the heap management, in detail. (10 Marks)
- b. Explain the activation trees and activation recorder. (10 Marks)
- 8 a. Explain the issues involved in the design of code generator. (06 Marks)
- b. Construct basic blocks and flow graph for:  
for i from 1 to 10 do  
  for j from 1 to 10 do  
    a [i, j] = 0.0 ;  
  for i from 1 to 10 do  
    a [ i, j ] = 1.0 ;
- c. Explain the algorithm for a simple code generator. (08 Marks)  
(06 Marks)

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