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10AL61

Sixth Semester B.E. Degree Examination, June/July 2015

Management and Entrepreneurship

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Define Management. (02 Marks)
b. Explain Roles of management. (06 Marks)
c. Explain early management approaches. (12 Marks)
- 2 a. Explain importance of Planning. (05 Marks)
b. Explain strategic planning. (05 Marks)
c. Write and explain steps in planning and planning premises. (10 Marks)
- 3 a. Explain types of organization. (10 Marks)
b. Explain process of selection and Recruitment. (10 Marks)
- 4 a. Explain Behavioral Approach of Leadership styles. (10 Marks)
b. Explain essentials of a sound control system. (10 Marks)

PART – B

- 5 a. Write and explain Types of entrepreneur. (10 Marks)
b. Explain stages in Entrepreneurial process. (10 Marks)
- 6 a. Write Advantages of SSI. (10 Marks)
b. Write and explain supporting Agencies of government for SSI. (10 Marks)
- 7 Write short notes on : (20 Marks)
i) KIADB ii) KSFC iii) NSIC iv) KSIMC.
- 8 a. Explain project Identification and project selection. (10 Marks)
b. Explain Guidelines by planning commission for project report. (10 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.

Sixth Semester B.E. Degree Examination, June/July 2015

Unix System Programming

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1
 - a. All posix conforming system are not unix system (True/False). (01 Marks)
 - b. What are the restrictions specified to POSIX.1 by FIPS standard? (07 Marks)
 - c. Define different C preprocessor symbols defined by ANSI C. (06 Marks)
 - d. What is errno variable? Write a C/C++ program to print error diagnostic message of API executions (using this variable). (06 Marks)

- 2
 - a. With a neat structure, explain how Kernel supports for files (file operation open, read/write, lseek). (10 Marks)
 - b. What is the relationship between file stream pointer and file descriptor? What functions to be used to convert them one from each other. (06 Marks)
 - c. Give any four differences between hard link and symbolic link files. (04 Marks)

- 3
 - a. What is umask value? What is the actual permission set for newly created file, if umask value is 0002 and permission specified in open call is 0664? Define how umask value can be changed by calling process to remove write permission of group members and read, write permission for other members. (05 Marks)
 - b. Write C/C++ command line program to implement Unix mv command. (05 Marks)
 - c. What access permission is set for a process created while executing executable file, if set UID and set GID flags are ON? (05 Marks)
 - d. Define structure flock. Create a write lock for a region behind 5 bytes from current file offset position to the end of the file. Consider file size is 100 bytes and current file offset is at 10 bytes. (05 Marks)

- 4
 - a. Illustrate with simple program how atexit function is used to register exit handler function. (07 Marks)
 - b. What alloca function? Indicate any one advantage and disadvantage of this function. (03 Marks)
 - c. What is the use of setjmp and longjmp functions? Illustrate them with simple program. (10 Marks)

PART – B

- 5
 - a. What is the effect when following happens in the system?
 - i) Parent terminates before child.
 - ii) Child terminates before parent and parent not waited for child termination status.
 - iii) Any of the Init child process terminates. (06 Marks)
 - b. Explain wait and waitpid functions. What are the macros defined by POSIX.1 to check how process is terminated? (08 Marks)
 - c. What is exec function? Describe different exec functions with their prototypes. (06 Marks)

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Sixth Semester B.E. Degree Examination, June/July 2015

Compiler Design

Time: 3 hrs.

Max. Marks:100

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

PART – A

1.
 - a. Explain with a diagram, the phases of compiler. (08 Marks)
 - b. Write regular definitions for the following using extended regular expression notation :
 - i) identifier
 - ii) unsigned number. (06 Marks)
 - c. Write a program for look ahead code with sentinels. (06 Marks)

2.
 - a. Define left – recursive grammar. Eliminate left recursion from the following grammar :

$$E \rightarrow E + T \mid T$$

$$T \rightarrow T * F \mid F$$

$$F \rightarrow (E) \mid \text{id.}$$
(05 Marks)
 - b. Given the grammar :

$$S \rightarrow AaAb \mid BbBa$$

$$A \rightarrow \epsilon$$

$$B \rightarrow \epsilon$$
 - i) compute FIRST() and FOLLOW() functions
 - ii) construct predictive parsing table
 - iii) parse the input string $w = ab$. (09 Marks)
 - c. Show that the following grammar is ambiguous $E \rightarrow E + E \mid E * E \mid (E) \mid \text{id}$, write an equivalent un-ambiguous grammar for the same. (06 Marks)

3.
 - a. What is meant by handle pruning? construct Bottom – up parse tree for the input string $w = aaa * a ++$. Using the grammar :

$$S \rightarrow SS + \mid SS * \mid a.$$
(06 Marks)
 - b. Explain the working of shift reduce parser. Parse the input string $\text{id} * \text{id}$. Using the grammar of question no, 2(a). (08 Marks)
 - c. With a diagram, explain the model of an LR parser. (06 Marks)

4.
 - a. Write an algorithm to construct LALR parsing table. (06 Marks)
 - b. Construct the parsing table for LALR(1) parser using the grammar :

$$S \rightarrow CC$$

$$C \rightarrow aC$$

$$C \rightarrow d.$$
(10 Marks)
 - c. Compare LALR and canonical LR parsers. (04 Marks)

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.

PART – B

- 5 a. Explain the concept of syntax directed definition. (04 Marks)
- b. Consider the context free grammar given below :
 $S \rightarrow EN$
 $E \rightarrow E + T \mid E - T \mid T$
 $T \rightarrow T * F \mid T / F \mid F$
 $F \rightarrow (E) \mid \text{digit}$
 $N \rightarrow ;$
 i) Obtain SDD for the above grammar
 ii) Annotated parse tree for the input string $5 * 6 + 7$. (10 Marks)
- c. Define :
 i) Synthesized attribute
 ii) Inherited attribute. (06 Marks)
- 6 a. Construct DAG and three address code for the following expression :
 $a + a * (b - c) + (b - c) * d$. (08 Marks)
- b. Explain the following with an example : i) quadruples ii) triples. (08 Marks)
- c. Generate three address code for the following statement :
 switch (ch)
 { case 1 : $c = a + b$; break ;
 case 2 : $c = a - b$; break ;
 } (04 Marks)
- 7 a. With a neat diagram, describe the general structure of an activation record. (06 Marks)
- b. Explain in the strategy for reducing fragmentation in heap memory. (08 Marks)
- c. Explain briefly the performance metrics to be considered while designing a garbage collector. (06 Marks)
- 8 a. Discuss the various issues in the design of a code generator. (10 Marks)
- b. What are basic blocks and flow graphs? Write an algorithm to partition the three address instructions into basic blocks. (06 Marks)
- c. List the characteristics of a peephole optimization. (04 Marks)

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Sixth Semester B.E. Degree Examination, June/July 2015
Computer Networks – II

Time: 3 hrs.

Max. Marks: 100

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

PART – A

- 1 a. Explain datagram and virtual circuit packet switching with delay calculation diagrams. (08 Marks)
- b. With neat diagram, explain the generic packet switch. (04 Marks)
- c. Consider the network in Fig.Q.1(c).

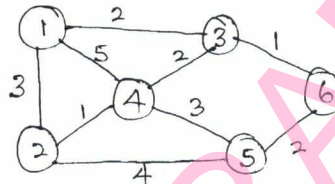


Fig.Q.1(c)

- i) Use the Dijkstra's algorithm to find the set of shortest paths from node 4 to other nodes.
 - ii) Find the set of associated routing table entries. (08 Marks)
- 2 a. Discuss the priority and weighted fair queuing. (06 Marks)
 - b. Explain the concept of Random Early Detection (RED). (04 Marks)
 - c. Give the classification of congestion control algorithms. Explain the leaky bucket and token bucket traffic shaper with neat diagram. (10 Marks)
- 3 a. Describe the various fields of IP version 4 header. (06 Marks)
 - b. i) A small organization has a class C address for seven networks each with 24 hosts. What is an appropriate subnet mask?
ii) Perform CIDR aggregation on the /24 IP address 200.96.86.0/24, 200.96.87.0/24, 200.96.88.0/24, 200.96.89.0/24. (06 Marks)
 - c. Why transition from IPV4.0 to IPV6.0 is required? Explain the IPV6 network addressing. (08 Marks)
- 4 a. Explain the TCP 3 way handshake for establishing a TCP connection. (06 Marks)
 - b. What are the classification of internet routing protocols? Explain in detail routing information protocol (RIP). (08 Marks)
 - c. Write note on: i) Reverse path multicasting ii) Mobile IP. (06 Marks)

PART – B

- 5 a. Explain the remote login protocols. (06 Marks)
- b. What are the elements of network management? Discuss the interaction between SNMP management station and SNMP agent. (08 Marks)
- c. Write RSA algorithm. For RSA algorithm of 4 bit message 1001, choose $a = 3$ and $b = 11$, find the public keys and private keys for this and show the cipher text. (06 Marks)

- 6 a. Describe the various types of resource allocation schemes. (06 Marks)
b. Define VPN. Discuss the concept of tunneling and point to point protocol in VPN. (06 Marks)
c. What is MPLS network? Explain MPLS operation. (08 Marks)
- 7 a. Explain the JPEG compression for still images. (06 Marks)
b. Explain the following:
i) Huffman encoding
ii) Lempel – Ziv – wetch encoding with an example. (08 Marks)
c. Briefly explain with neat diagram, how Content Distribution Network (CDN) interaction with DNS (Domain Name System). (06 Marks)
- 8 a. Explain DSDV, TORA routing protocols for mobile adhoc networks. (08 Marks)
b. What are the classifications of sensor networks? Explain with relevant diagram DEEP clustering protocol in sensor network. (06 Marks)
c. Describe the direct or multihop intracluster routing protocols with neat diagram. (06 Marks)

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Sixth Semester B.E. Degree Examination, June/July 2015
File Structures

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Briefly explain History of file structure design. (06 Marks)
- b. Explain the sector based data organization in magnetic Disk with a neat diagram. (08 Marks)
- c. Explain the organization of data on Nine – Track Tapes with a neat diagram. (06 Marks)
- 2 a. Define Field and Record. Explain the different methods for organizing fields and records of a file, with examples. (12 Marks)
- b. Define RRN (Relative Record Number), Explain how does it support direct access with example. (06 Marks)
- c. Distinguish between File access and File organization. (02 Marks)
- 3 a. What is redundancy reduction? Explain how Run – Length – Encoding helps in redundancy reduction with an example. (06 Marks)
- b. Explain How space can be reclaimed in files, using record deletion and storage compaction technique. (06 Marks)
- c. Write an algorithm for searching a record from a file using (i) Binary search (ii) Sequential search. (06 Marks)
- d. Define Indexing and its significance in File structures. (02 Marks)
- 4 a. What is co – sequential processing and what are assumptions and components of the model? (08 Marks)
- b. Explain the object – oriented model for implementing Co-Sequential process. (06 Marks)
- c. Explain the K – Way merge algorithm with an example. (06 Marks)

PART – B

- 5 a. What are the two – major drawbacks with binary search to search a simple sorted index on secondary storage. (02 Marks)
- b. Define B – Tree. Show the B – Tree of order – 4 (four) that result from loading the following sets of keys in order. i] CGJXNSUOAEHBIF ii] CSDAMPBIBWNGURKE (08 Marks)
- c. With example explain the following operations in B – Tree, with example. i) Deletion ii) Merging iii) Redistribution. (10 Marks)
- 6 a. What is indexed sequential access? Explain the Block splitting and merging due to insertion and deletion in sequence set with example. (10 Marks)
- b. Explain the internal structure of index set blocks. (10 Marks)
- 7 a. Define Hashing? Discuss the various collision resolution techniques with example to avoid collision. (10 Marks)
- b. Suppose that 10,000 addresses are allocated to hold 8000 records in a randomly hashed file and that each address can hold one record. Compute the following values. i) The packing density for the file ii) The expected number of address with no records assigned to them by the hash function. iii) The expected number of addresses with one record assigned. iv) The expected number of overflow records. (10 Marks)
- 8 a. Write short notes on the following: i) Dynamic Hashing ii) Linear Hashing iii) Extendible Hashing. (12 Marks)
- b. Explain, How does Extendible Hashing works? (08 Marks)

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Sixth Semester B.E. Degree Examination, June/July 2015

Operations Research

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Define : i) Feasible solution ii) Feasible region iii) Optimal solution. (06 Marks)
 b. A manufacturer produces three models I, II, III of certain product using raw materials A and B. The following table gives the data for the problem.

Raw material	Requirement per unit			Availability
	I	II	III	
A	2	3	5	4000
B	4	2	7	6000
Minimum Demand	200	200	150	-
Profit per unit (Rs)	30	20	50	-

Formulate the problem as a linear program model. (07 Marks)

- c. Using graphical method solve the LPP

$$\text{Maximize } Z = 5x_1 + 4x_2$$

$$\text{Subject to } 6x_1 + 4x_2 \leq 24$$

$$x_1 + 2x_2 \leq 6$$

$$-x_1 + x_2 \leq 1$$

$$x_2 \leq 2, \quad x_1, x_2 \geq 0$$

(07 Marks)

- 2 a. Define slack variable and surplus variable. (04 Marks)
 b. Solve the following LPP by simplex method :

$$\text{Maximize } z = 6x_1 + 8x_2$$

$$\text{Subject to } 2x_1 + 8x_2 \leq 16$$

$$2x_1 + 4x_2 \leq 8$$

$$x_1, x_2 \geq 0$$

(10 Marks)

- c. Explain the following :

i) A standard form of the LPP

ii) Basic solution of a LPP

iii) Degeneracy and un bounded solution with respect to simplex methods. (06 Marks)

- 3 a. Solve the following LPP by Charne's big M method

$$\text{Maximize } z = 20x_1 + 10x_2$$

$$\text{Subject to : } x_1 + x_2 = 150$$

$$x_1 \leq 40$$

$$x_2 \geq 20$$

$$\text{where } x_1, x_2 \geq 0$$

(15 Marks)

- b. Write procedure to solve LPP of two phase simplex method. (05 Marks)

- 4 a. Explain the computational procedure of revised simplex method in standard form. (10 Marks)

- b. Explain the following:

i) Weak duality property

ii) Strong duality property

iii) Complementary solutions property

iv) Complementary optimal solution property. (10 Marks)

(10 Marks)

PART – B

- 5 a. User dual simplex method and solve the following LPP:
 Maximize $z = 3x_1 + x_2$
 Subject to : $x_1 + x_2 \geq 1$
 $2x_1 + 3x_2 \geq 2$
 $x_1, x_2 \geq 0$ (10 Marks)
- b. Explain the role of duality theory in sensitivity analysis. (05 Marks)
- c. Write any five key relationships between the primal and the dual problems. (05 Marks)

- 6 a. Find an initial solution to the following transportation problem using VAM

		Destination					
		D ₁	D ₂	D ₃	D ₄	D ₅	
Origin	O ₁	7	6	4	5	9	40
	O ₂	8	5	6	7	8	30
	O ₃	6	8	9	6	5	20
	O ₄	5	2	7	8	6	10
		30	30	15	20	5	
		Demand					

- b. Solve the following assignment problem

		Jobs				
		J ₁	J ₂	J ₃	J ₄	J ₅
Machine	M ₁	11	17	8	16	20
	M ₂	9	7	12	6	15
	M ₃	13	16	15	12	16
	M ₄	21	24	17	28	26
	M ₅	14	10	12	11	15

- 7 a. Define the following with respect to games
 i) Pay – off ii) Zero – sum game iii) Saddle point (03 Marks)
- b. Solve the following game graphically

		Player B		
		B ₁	B ₂	B ₃
Player A	A ₁	2	6	22
	A ₂	16	10	24

- c. Solve the following game:

		B			
		I	II	III	IV
A	1	20	15	12	35
	2	25	14	8	10
	3	40	2	19	5
	4	5	4	11	0

- 8 a. Write the outline of a basic table search algorithm. Explain it with the help of a minimum spanning tree problem with constraints. (10 Marks)
- b. Write short notes on : i) simulated annealing ii) Genetic algorithms. (10 Marks)

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Sixth Semester B.E. Degree Examination, June/July 2015
Compiler Design

Time: 3 hrs.

Max. Marks: 100

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

PART – A

1.
 - a. Explain the various phases of compiler. Show the translations for an assignment statement position = initial + rate * 60, clearly indicate the output of each phase. (12 Marks)
 - b. Construct transition diagram for the following: i) Relational operators; ii) Unsigned number. (08 Marks)

2.
 - a. Show that the following grammar is ambiguous: $E \rightarrow E + E / E * E / (E) / id$. Write an equivalent unambiguous grammar for the same. (06 Marks)
 - b. Write a recursive descent parser for the grammar: $S \rightarrow cAd$ $A \rightarrow ab/a$ and for the input "cad" trace the parser. (04 Marks)
 - c. Consider the grammar:

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

$$T \rightarrow V / V * V / V + V$$

$$V \rightarrow a / b$$
 - i) Do the left factoring for the above grammar.
 - ii) Obtain FIRST and FOLLOW table for the above grammar.
 - iii) Construct predictive parsing table for the above grammar. (10 Marks)

3.
 - a. What is handle pruning? Explain with the help of the grammar. $S \rightarrow SS + / SS * / a$ and input string $aaa * a++$, give a bottom-up parse of the given input string. (10 Marks)
 - b. For the following grammar $S \rightarrow 0S1 / 01$ indicate the handle in the following right sentential form 00001111. (04 Marks)
 - c. Show that the following grammar is not LL(1) without constructing parsing table:

$$S \rightarrow iC t SS' / a$$

$$S' \rightarrow eS / \epsilon$$

$$C \rightarrow b$$
 (06 Marks)

4.
 - a. Consider the following grammar

$$S \rightarrow CC$$

$$C \rightarrow cC$$

$$C \rightarrow d$$
 - i) Obtain canonical collection of LR (0) items.
 - ii) Construct SLR (1) parsing table.
 - iii) Show the sequence of moves made by the parser for the string cccd. (12 Marks)
 - b. Consider the following augmented grammar

$$S' \rightarrow S$$

$$S \rightarrow AA$$

$$A \rightarrow Aa/b$$
 Obtain LR(1) items. (08 Marks)

PART – B

- 5 a. Obtain SDD for simple type declaration. Construct a dependency graph for the declaration `int a, b, c` along with evaluation order. (08 Marks)
- b. For the given productions shown below, write semantic rules and construct annotated parse tree for $3 * 5 + 4n$
- $$L \rightarrow En \quad E \rightarrow E1 + T \quad E \rightarrow T$$
- $$T \rightarrow T1 * F \quad T \rightarrow F \quad F \rightarrow (E) \quad F \rightarrow \text{digit.}$$
- (08 Marks)
- c. Define S-attributed and L-attributed definitions with examples. (04 Marks)
- 6 a. Explain how DAG will help in intermediate code generation? Construct a DAG and a 3-address code for the expression $a + a * (b - c) + (b - c) * d$. (08 Marks)
- b. Explain the following with an example:
- i) Quadruples ii) Triples iii) Indirect triples. (06 Marks)
- c. Explain syntax directed translation of switch statement. (06 Marks)
- 7 a. Describe the general structure of an activation record. Explain the purpose of each item in the activation record. (10 Marks)
- b. What is garbage collection? Explain the design goals of garbage collector. (10 Marks)
- 8 a. Briefly discuss the various issues in code generation phase. (10 Marks)
- b. Explain the following code optimization with examples:
- i) Finding local common sub expression.
- ii) Dead code elimination. (10 Marks)
