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# Fifth Semester B.E. Degree Examination, Dec.08/Jan.09 Management and Entrepreneurship

Time: 3 hrs.

Max. Marks:100

Note: 1. Answer any FIVE full questions taking at least two from each part.

2. All questions carry equal marks.

### PART - A

		PART - A	
1	a.	Define "Management" and bring out its nature and Characteristics.	(05 Marks)
	b.	Briefly explain the functional areas of management.	(10 Marks)
	c.	List out the levels of management and also list the roles of management.	(05 Marks)
2	a.	Define planning and discuss its importance.	(04 Marks)
	b.	Briefly explain the steps in decision making.	(08 Marks)
	c.	Discuss the various steps in planning.	(08 Marks)
3	a.	Define an organization and distinguish between Formal and informal organization	on.
			(04 Marks)
	b.	Discuss any two types of organization structures with a chart highlighting their	
		demerits.	(10 Marks)
	C.	Distinguish between;	
		i) Centralization and Decentralization.	
		ii) Selection and Recruitment.	(06 Marks)
4	a.	Define "Directing" and list out the principles of Direction.	(04 Marks)
	b.	What is motivation? Explain the characteristics.	(10 Marks)
	c.	Discuss the essentials of a sound control system.	(06 Marks)
		PART - B	
5		List out the characteristics and qualities of an entrepreneur.	(04 Marks)
	b.	Bring out a broad classification of entrepreneur.	(10 Marks)
	c.	Explain the stages in entrepreneur process.	(06 Marks)
6	a.	List out the characteristics of Small Scale Industries (SSIs).	(06 Marks)
	b.	Discuss the impact of Liberalization, Privatization and Globalization on SSIs.	(06 Marks)
	C.	List out the supporting agencies of government for SSIs and explain any tw	o of them.
			(08 Marks)
7	a.	Classify and List out the institutions that assist SSIs.	(06 Marks)
	b.	Explain any two institutions that assist SSIs.	(08 Marks)
	C.	Briefly list out the objectives of KSFC.	(06 Marks)
8	a.	Briefly out line the contents of a project report.	(06 Marks)
		Explain the process of project Appraisal.	(08 Marks)
	c.	What is Social feasibility? Explain.	(06 Marks)
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		Fifth Seme				_					ec.08/.	Jan.09		
Tin	ne: í	3 hrs.		Sof	ftw	are	Eng	jinee	rin	g		Max.	Mark	s:100
		Note: Answer any	FIV	E fu	ıll qı				ıt lea	st T	WO fro			
1	a. b. c.	Give a brief descri Describe four prof Explain the activit	essic	nal r	espor	ssent sibil	ities of	outes of a a softwa	re en	ginee			(05	Marks) Marks) Marks)
2	a. What are the most important dimensions of system dependability? (05 Marks) b. Give five reasons why dependability is important in critical systems. (05 Marks) c. Describe the salient features of spiral model of software process with an illustration diagram. (10 Marks)								Marks) iagram.					
3	a. b. c.	What is non-fur requirements. Write the structure What are endurir requirement with b	of a	requ	ireme	ents o	locumei	nt sugges	sted b	y IE	EE stand	dard.	(05 (05 n of	Marks) Marks)
4	a. b. c.	"Risk managemen diagram. Explain the object For a software pro activity network as	aggr	egation diffe	on wi	ith an	examp	le.					(05 (05 ow. Di	Marks) Marks)
		Task Duration (in days)	T <sub>1</sub> 8	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub> 5	T <sub>7</sub> 20	T <sub>8</sub> 25	T <sub>9</sub> 15	T <sub>10</sub>	T <sub>11</sub> 7	T <sub>12</sub> 10
		Dependencies	-	-	T <sub>1</sub>	-	$T_2,T_4$	$T_1,T_2$	<u>T</u> 1	T <sub>4</sub>	T <sub>3</sub> ,T <sub>6</sub>	T <sub>5</sub> ,T <sub>7</sub>	T <sub>9</sub>	$T_{11}$
5	a.	With an example	desci	ribe t	he re		ory mod		give i	its ad	vantage	s and di		intages.
	b. c.	Illustrate with two Draw and explain								a typi	cal wea	ther stat	(05 ion.	Marks) Marks)
6		Give a brief descri Discuss the advant Briefly describe the distinguish between	tages	of paree ty	air pr	ograr	nming.				is it so	ometime	(05 s diff	Marks) Marks) icult to Marks)
7	a. b. c.	Explain the two di Explain the charact Discuss the difference be used together in	teris	tics of betw	f clea	n roc black	om softv k-box ar	vare dev				uggest h	(05 now th	Marks) Marks) ney can Marks)
8	a. b.	Describe with a blullustrate with an months.						OMO 8					mate	

06CS52 USN Fifth Semester B.E. Degree Examination, Dec.08/Jan.09 **System Software** Max. Marks:100 Time: 3 hrs. Note: Answer any FIVE full questions, selecting at least TWO questions from each part. PART - A Bring out the differences between Application software and System software. (04 Marks) Explain SIC/XE machine instruction formats and all addressing modes by clearly indicating (10 Marks) the setting of different flag bits. Write a subroutine in SIC/XE to read a 100-byte record from a device 'F5' into BUFFER. Use immediate and register-to-register instructions. (06 Marks) Write and explain the algorithm of PASS-1 of two-pass assembler. (10 Marks) b. Generate the complete object program for the following assembly level program. 0 **SUM** START FIRST CLEAR X #0 LDA #TOTAL +LDB TOTAL BASE LOOP ADD TABLE, X TIX COUNT LOOP JLT TOTAL STA COUNT RESW TABLE RESW 2000 TOTAL RESW END Assume below opcodes (all in hexadecimal) LDB - 68 ADD - 18CLEAR - B4 LDA - 00STA - OC (10 Marks) TIX - 2CJLT - 38 Distinguish between literal and immediate operands. How does the assembler handle the 3 literal operand? Compare a two-pass assembler with a one-pass assembler. How forward references are (10 Marks) handled in one-pass assemblers? (06 Marks) Write a note on MASM assembler. Give and explain the algorithm or source program for a simple Bootstrap loader. (08 Marks) Distinguish between linking loader and linkage editors. (04 Marks) (08 Marks) c. Explain dynamic linking with suitable diagrams. PART - B a. Explain the structure of a text editor with a neat diagram. (10 Marks) Explain the functions and capabilities of an interactive debugging system. (06 Marks) Write a note on the aspect of user-interface criteria. (04 Marks) What are the basic functions of macroprocessor? Explain the various data structures used in

(10 Marks)

the implementation of a one-pass macroprocessor.

```
b. Using the following definition, expand the following macro calls, called in sequence.
   (i) LABEL RDBUFF F2, BUFFER, LENGTH, (04, 12)
               RDBUFF OE, BUFF, RLENG, , 2048
   (ii)
      RDBUFF MACRO &INDEV, &BUFADR, &RECLTH, &EOR, &MAXLTH
     . &EORCT
                   SET
                                 %NITEMS (&EOR)
                   CLAER
                  CLEAR
                  IF
                                 (&MAXLTH EQ ' ')
                  +LDT
                                 #4096
                  ELSE
                   +LDT
                                 #&MAXLTH
                  ENDIF
      $LOOP
                  TD
                                 =X '&INDEV'
                  JEQ
                                 $LOOP
                  RD
                                 =X '&INDEV'
      &CTR
                  SET
                   WHILE
                                 (&CTR LE &EORCT)
                  COMP
                                 =X '0000 &EOR[&CTR]'
                  JEQ
                                 $EXIT
      &CTR
                  SET
                                 &CTR+1
                  ENDW
                  STCH
                                 &BUFADR, X
                  TIXR
                                 T
                  JLT
                                 $LOOP
      $EXIT
                  STX
                                 &RECLTH
                  MEND
                                                                          (07 Marks)
   Write a short note on 'Keyword macro parameters'.
                                                                          (03 Marks)
a. List and explain the different design options for a macro processor.
                                                                          (12 Marks)
b. Write a short note on 'Parser – lexer communication'.
                                                                          (03 Marks)
   Write a LEX program to count the number of vowels and consonants in a given string.
                                                                          (05 Marks)
a. Explain regular expressions in UNIX with proper examples.
                                                                          (06 Marks)
b. Explain the structure of a YACC program.
                                                                          (06 Marks)
c. Give the LEX and YACC specifications to recognize parenthesized arithmetic expressions.
                                                                          (08 Marks)
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## Fifth Semester B.E. Degree Examination, Dec.08/Jan.09 Operating System

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, answering at least Two from each part.

#### PART - A

1	a.	Define an Operating System. Discuss its role from different perspectives.	(07 Marks)
	b.	List out the different services that an operating system provides. Explain.	(06 Marks)
		Explain the concept of virtual machines. Bring out its advantages.	(05 Marks)
	d.	Differentiate between a trap and an interrupt.	(02 Marks)
2	a.	What is a process? Draw and explain the process state diagram.	(05 Marks)
	b.	Discuss the operations of process creation and process termination in UNIX.	(07 Marks)
	C.	Describe the implementation of IPC using shared memory and message passing.	(08 Marks)

a. Why is a thread called a LWP? Describe any one threading, model and cite an operating system which implements it. Also explain any one of the many threading issues. (06 Marks)

b. Consider the following data about processes

Process	Arrival Time	Burst Time	Priority
$P_1$	0	7	3
P <sub>2</sub>	3	2	2
$P_3$	4	3	1
$P_4$	4	1	1
P <sub>5</sub>	5	3	3

- i) Draw charts to illustrate execution using SRTF, preemptive priority and RR (TS = 1msec).
- ii) Compute waiting time in each of the cases.
- iii) Which of them provide minimal average waiting time and turnaround time?
- iv) Find out the time at which there are maximum numbers of processes in the ready queue in the above scenario? (10 Marks)
- c. Consider a system running 10 I/0 bound tasks and one CPU bound task. Assume I/0 bound tasks issue an I/0 once for every msecs of CPU computing and that each I/0 operation takes 10msecs to complete. Also assume that the context switching overhead is 0.1msec. and that all processes are long running tasks. Comment on the CPU utilization for a RR scheduler when TS = 1msec and TS = 10msec. (04 Marks)
- a. Define race condition. List the requirements that a solution to critical section problem must satisfy. (04 Marks)
  - b. Define the algorithms Test and Set () and Swap (). Show that they satisfy mutual exclusion.

Consider the following snap shot of resource – allocation at time t<sub>1</sub>:

	Allocation	Request	Available
	ABC	ABC	ABC
$P_0$	010	000	000
$P_1$	200	202	
$P_2$	3 0 3	000	
$P_3$	211	100	
P <sub>4</sub>	002	002	

i) Show that the system is not deadlocked by generating one safe sequence.

ii) At instance t2, P2 makes one additional request for instance of type C. Show that the system is deadlocked if the request is granted. Write down the deadlocked processes.

(10 Marks)

#### PART - B

- a. Memory partitions of 100KB, 500KB, 200KB, 300KB, 600KB (in order) are available. How would first - fit, best - fit and worst - fit algorithms place processes of 212KB, 417KB, 112KB and 426KB (in order). Which algorithm makes the most efficient use of memory?
  - b. Differentiate between internal and external fragmentations? How are they overcome?

(04 Marks)

- Consider the following page reference stream: 1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6. How many page faults would occur for LRU, FIFO and Optimal replacement algorithms assuming 3 and 5 frames? Which one of the above is most efficient? (10 Marks)
- a. What is a file? Describe the different access methods on files.

(07 Marks)

b. What is file mounting? Explain.

- (04 Marks)
- c. Draw a neat diagram and explain finked file allocation. Is FAT linked allocation? Discuss.
- a. A drive has 5000 cylinders numbered 0 to 4999. The drive is currently serving a request at cylinder 143 and the previous request was at cylinder 125. The queue of pending requests in FIFO order is: 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130. Starting from the current head position, what is the total distance travelled (in cylinders) by the disk arm to satisfy the requests using algorithms FCFS, SSTF, SCAN, LOOK. Illustrate with figures in (12 Marks)
  - b. Explain the access matrix model of implementing protection in operating systems.

(08 Marks)

- Write notes on:
  - a. Buddy system of memory management in UNIX.
  - b. Thrashing.
  - c. Solution to bounded buffer problem using Semaphore.
  - d. Bad blocks on disks.

(20 Marks)

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		Fifth Semester B.E. Degree Examination, Dec.08/Jan.09	
		<b>Database Management Systems</b>	
Tin	ne: 3		arks:100
		Note: Answer any FIVE full questions, selecting	
		at least TWO questions from each part.	
		PART – A	Talent and the same of the sam
1	a.	List advantages of DBMS over traditional file systems. Briefly explain them.	(08 Marks)
	b.	Define and explain the importance of database catalog. Explain the internal stor	age format
		of a catalog with an example.	(06 Marks)
	c.	Describe the three schema architecture. What are the problems associated with the	(06 Marks)
2		architecture.  Discuss concepts related to structural constraints of a relationship type with example.	
2	a.		(10 Marks)
	b.	Design an E-R diagram for keeping track of information about a hospital database	base taking
		into account at least entities.	(10 Marks)
3	a.	Explain the need of primary and foreign keys with suitable examples.	(04 Marks)
	b.	Explain the division operator with an example. How can a division operator be in	
		using other relational algebraic operators?	(04 Marks)
	C.	Consider the following schema for a company database:	
		Employee (Name, SSN, Salary, DNo, SuperSSN) Department (DName, DNos, MGRSSN)	
		Project (Pname, Pnumber, DNum)	
		Works ON (ESSN, PNo, Hours)	
		Dependent (ESSN, Dependent-name, Sex)	
		Write the queries in relational algebra to	
		(i) List the name of all employees with at least two dependents.	
		(ii) Find the name of employees who work on all the projects controlled by de	
		(iii) Retrieve the name of managers who do not have female dependents.	(12 Marks)
4	a.	Explain the ALTER TABLE command. Explain how a new constraint can be add	(08 Marks)
	l.	an existing constraint can be removed using suitable examples. Using the same tables given in Q.NO.3(c), write SQL queries to:	(00 14141 K3)
	b.	(i) Retrieve the name of employees who are paid the same salary as that of R.	AJ.
		(ii) Retrieve the name of employees who have two or more dependents.	
		(iii) Retrieve the name of employees and their SuperSSN name.	(12 Marks)
		PART – B	
5	a.	How are triggers and assertions defined in SQL? Explain with examples.	(10 Marks)
455	b.	Give an example of declaring a C language data type in SQL and explain it.	(10 Marks)
6	a.	Which normal form is based on the concept of full functional dependency? Expla	(08 Marks)
	l.	with an example. A relation R has four attributes ABCD. For each of the following sets of FD,	
	b.	candidate key and the highest normal form:	
		(i) $C \to D$ , $C \to A$ , $B \to C$ (ii) $B \to C$ , $D \to A$ (iii) $ABC \to D$ , $D \to A$	(12 Marks)
7	a.	Define multivalued dependency. Explain 4NF with an example.	(10 Marks)
,	b.	Explain all the phases involved in ARIES algorithm with an example.	(10 Marks)
8		rite short notes on:	(20 Marks)
	a.	Two phase locking protocol	
	b.	Write ahead log protocol	
	c.	Time stamp ordering algorithm	
	d.	Transaction support in SQL.	

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		Fifth Semester B.E. Degree Examination, Dec.08/Jan.09
		Computer Networks - I
Tin	ne.	3 hrs. Max. Marks:100
	,	Note: Answer any FIVE full questions, selecting
		at least TWO questions from each part.
		PART – A
1	a.	What is data communications? What are its characteristics? Explain. (06 Marks)
	b.	Define following terms: (i) Protocol (ii) Internet (04 Marks)
	c.	Describe with neat diagram the functionalities of each layer in the OSI model. (10 Marks)
2	a.	Calculate the Shannon channel capacity in following cases: (06 Marks)
		(i) Bandwidth = $20 \text{ kHz}$ SNR <sub>dB</sub> = $40$ (ii) Bandwidth = $200 \text{ kHz}$ SNR <sub>dB</sub> = $6$
	b.	A file contains 3 million bytes. How long does it take to download this file using a 100 kbps
		channel? (04 Marks)
	C.	Define line coding. Describe Unipolar NRZ, Polar NRZ-L, Bipolar AMI & Manchester
		encoding by applying on the information sequence 101011100. (10 Marks)
3	a.	We have four sources, each creating 250 characters/sec. If the interleaved unit is one
		character and 1 synchronising bit is added to each frame, find
		(i) The data rate of each source.
		(ii) The duration of each character in each source.
		(iii) The frame rate
		(iv) The duration of each frame
		(v) The no. of bits in each frame, and
	1	(vi) The data rate of the link. (12 Marks)
		Define synchronous TDM. (02 Marks)
	C.	Describe ASL, FSK and PSK mechanisms and apply them over the digital data 101101.
4	0	Briefly explain the econical color and entired fiber with their englishing
*	а. b.	Briefly explain the coaxial cable and optical fiber with their applications. (10 Marks)
	υ.	Explain how CRC is used in detecting errors for the following polynomial, $g(x)=x^4+x+1$ . Consider the information sequence 1101011011.
		(i) Find the codeword corresponding to this sequence.
		(ii) If the codeword has error in third bit, what does receiver obtain when it does its
		error checking? (10 Marks)
		PART - B
5	a.	Explain selective repeat ARQ. Justify how selective repeat ARQ outperforms Go-back-N
		and Stop-and-wait ARQ. (10 Marks)
	b.	Explain point-to-point protocol frame format. Also briefly describe different transition
		phases of PPP in establishing a connection from home PC to ISP. (10 Marks)
		france of the measurement of the first term from the first term fr
6	a.	Explain the following random access protocols: (i) CSMA (ii) CSMA/CD (10 Marks)
	b.	Discuss 802.3 MAC frame format. Mention the restrictions imposed on minimum and
		maximum lengths of a 802.3 frame. (10 Marks)
		(10 Marks)
7	a.	Discuss Bluetooth technology. (10 Marks)
	b.	Explain the working mechanism of following devices used to connect LANs. (10 Marks)
		(i) Bridge (ii) Router.
8	a.	What are the design goals of ATM? Briefly describe ATM layers. (12 Marks)
	b.	What is bit stuffing and unstuffing? Apply bit stuffing to the sequence: 0110111111111100

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### Fifth Semester B.E. Degree Examination, Dec.08/Jan.09 **Formal Languages and Automata Theory**

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions selecting at least Two questions from each part.

#### PART - A

a. What is Automata? Discuss why study automata.

(06 Marks)

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- b. Define DFA and design the DFA for the following languages on  $\Sigma = \{a, b\}$ .
  - i) The set of all strings that either begings or ends or both with substring 'ab'.
  - ii) The set of all strings that ends with substring 'abb'.

iii)  $L = \{W : |W| \mod 5 < > 0\}$ 

(08 Marks)

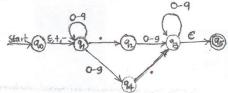
- c. Define  $\in$  NFA and design the E NFA or NFA for the following languages.
  - i) abc, abd, and aacd {Assume  $\Sigma = a, b, c, d$ }

ii) {ab, abc}\*

{Assume  $\Sigma = \{a, b, c\}.$ 

(06 Marks)

a. Convert the following ∈ I NFA to DFA using "Subset Construction scheme". (08 Marks)



- b. Define Regular expression and write Regular expression for the following languages.
  - $L = \{a^{2n} b^{2m+1} : m \ge 0, n \ge 0\}.$
  - $L = \{a^n b^m : (m+n) \text{ is even}\}.$ ii)

(06 Marks)

- $L = \{a^n b^m : n > = 4, m < = 3\}.$ iii) c. Prove that every language defined by a Regular expression is also defined by Finite automata. (06 Marks)
- a. If  $L_1$  and  $L_2$  are regular languages then prove that family of regular language are closed under  $L_1 - L_2$ . (06 Marks)
  - State and prove pumping lemma for regular languages. Apply pumping lemma for following languages and prove that it is not Regular  $L = \{a^n : n \text{ is prime}\}.$ (08 Marks)
  - c. Consider the DFA

	δ	0	1
-	q <sub>1</sub>	$q_2$	$q_3$
	$q_2$	<b>q</b> <sub>3</sub>	$q_5$
*	$q_3$	<b>q</b> <sub>4</sub>	$q_3$
	$q_4$	$q_3$	$q_5$
*	$q_5$	$q_2$	$q_5$

- i) Draw the table of distinguishable and Indistinguishable states for the automata.
- ii) Construct minimum state equivalent of automata.

(07 Marks)

(08 Marks)

	. %	"aab" $S \rightarrow as  asbs  \in .$ (0	5 Marks)
		PART - B	
5	a.	Define PDA and construct a PDA that accepts the following languages.	
_		$L = \{w : w \in (a + b)^* \text{ and } n_a(w) = n_b(w)\}$ . Write the instantaneous description	n for the
			2 Marks)
	b	For the following grammer construct a PDA.	# 17441 Alo)
	0.	S → aABB   aAA	
		$A \rightarrow aBB \mid a$	
		$B \rightarrow bBB \mid A$	
			8 Marks)
		C 7 a.	o wai ks)
6	a.	Consider the grammer.	
		S → ABC   BaB	
		$A \rightarrow aA \mid BaC \mid aaa$	
		$B \rightarrow bBb \mid a \mid D$	
		$C \rightarrow CA \mid AC$	
		$D \rightarrow \in$	
		i) Eliminate t – productions.	
		ii) Eliminate Unit productions in the resulting grammer.	
			9 Marks)
	b.	What is Chomsky normal form? Convert the following grammer b Chomsky norm	al form.
		$S \rightarrow ABa$	
		$A \rightarrow aab$	
		$B \to Ac$ .	)5 Marks)
	C.	If L <sub>1</sub> and L <sub>2</sub> are context free languages then prove that family of Context-free-languages	anguages
		are closed under Union and concatenation operations.	06 Marks)
7			06 Marks)
	b.	Design a Turing Machine to accept all set of palindromes over {0, 1}*. Also	
		transition diagram and Instantaneous description on the string "1 0 1 0 1".	14Marks)
0	***	it at a total and Cillarian	
8		rite short notes on following:	
		Post's correspondence problem. Recursive languages.	
		Universal Turning Machine.	
			20 Marks)
	11)	a uniping termina for Of D.	wo man no)
		****	
		2 of 2	

a. Define context-free grammer and write context free grammer for the following languages. i)  $L=\{a^i\,b^j\,c^k:i+j=k,\,i>=0,\,j>=0\}.$  ii)  $L=\{a^n\,b^m\,c^k:n+2m=k\}.$  (07 Marks

Find leftmost and rightmost derivation for the string +\*- xyxy and write parse tree.

c. What is ambigous grammer? Prove that the following grammer is ambigous on the string

b. Consider the grammer.  $E \rightarrow +EE | * EE | - EE | x | y$