	Utech
Name :	
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Invigilator's Signature :	

CS/M.Tech(CSE)/SEM-1/CS-903/2009-10 2009

SYSTEMS PROGRAMMING & OPERATING SYSTEMS

Time Allotted: 3 Hours Full Marks: 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP - A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following :

 $10 \propto 1 = 10$

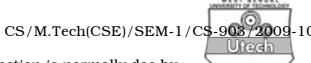
- i) System software is a program that directs the overall operation of the computer facilitates it use and interacts with the user. What are the different types of this software?
 - a) Operating system
- b) Languages
- c) Utilities
- d) All of these.
- ii) Which of the following systems software does the job of merging the records from two files into one?
 - a) Security software
 - b) Utility program
 - c) Network software
 - d) Documentation system.

200048 [Turn over

vi. i e	cn(CS	SE)/SEM-1/CS-903/20	09-10	Meda	
iii)		_		ched on, its operating	
	syst	em software has to stay	111	In Against 15th northing 2nd Explane	
	a)	Primary storage	b)	Main storage	
	c)	Floppy disk	d)	Disk drive.	
iv)	Wha	at is the name given	ı to	the values that are	
	auto	omatically provide by so	ftwar	e to reduce key strokes	
	to improve a computers users productivity?				
	a)	Defined values	b)	Fixed values	
	c)	Default values	d)	Special values.	
v)	A fo	rm of code that uses	more	than one process and	
	proc	essor, possibility of diff	erent	types and that may on	
	occa	sions have more than	one	e process or processor	
	active at the same time, is known as				
	a)	multiprogramming	b)	multithreading	
	c)	broadcasting	d)	time-sharing.	
vi)	Whi	ch of the following is	not a	a function of bootstrap	
	program ?				
	a)	Initializing the CPU			
	b) Initializing the memory contents				
	c)	Loading the OS			
	d)	Loading the compiler.			
vii)	Whe	ere does the swap space	resid	e ?	
	a)	RAM	b)	Disk	

c) ROM

d) On-chip cache.



- viii) Memory protection is normally doe by
 - a) the processor and the associated H/W
 - b) the OS
 - c) the complier
 - d) the user program.
- ix) Which of the following does not interrupt of running process?
 - a) A device
- b) Timer
- c) Scheduler process
- d) Power failure.
- x) Consider a machine with 64 MB physical memory and a 32-bit virtual address space. If the page size is 4 kb what is the approximate size of page table?
 - a) 16 Mb

b) 8 Mb

c) 2 Mb

d) 24 Mb.

GROUP - B

(Short Answer Type Questions)

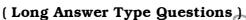
Answer any *two* of the following.

 $2 \propto 10 = 20$

- 2. With a neat sketch, describe process state diagram. Describe any two process scheduling algorithms. 5+5
- 3. Write an algorithm for readers/writers problem. Describe various principles (important) of deadlock. 5+5
- 4. Define a macro. What are the advanced macro facilities ? Describe the design issues of an assembler. 5+5

200048 3 [Turn over

GROUP - C



Answer any two of the following.



- 5. Why is perror() used ? Write down a program that shows the use of multiple fork() s. What do you mean by catchable and non-catchable signals ? Explain algorithm for fork() in details.
 2 + 6 + 6 + 6
- 6. Write down a program for orphan process. What is symbolic link? Describe one of the disk space management scheme. Compare and contrast two-level directory and single level directory structure with proper diagram. 8 + 2 + 5 + 5
- 7. Describe the design of two-pass assembler. What do you mean by literal? What are the assembler directives? Why Pseudo-Operation Table (POT) is used? Describe & draw (if possible) a schematic diagram of pass 1 and pass 2 assembler with actual function. Compare machine level language and assembly level language.

4

4 + 2 + 2 + 2 + 6 + 4

200048