Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2016

Subject Name : Operating System
Subject Code : 4TE04OPS1 **Branch: B.Tech (CE,IT)**
Semester : 4 **Date : 18/05/2016** **Time :2:30 To 5:30** **Marks : 70**

Instructions:

(1) Use of Programmable calculator & any other electronic instrument is prohibited.
(2) Instructions written on main answer book are strictly to be obeyed.
(3) Draw neat diagrams and figures (if necessary) at right places.
(4) Assume suitable data if needed.

Q-1 **Attempt the following questions:** **(14)**

a) Which one of the following error will be handled by the operating system?
i) power failure ii) lack of paper in printer
iii) connection failure in the network iv) all of the mentioned

b) To access the services of operating system, the interface is provided by the
i) system calls ii) assembly instructions iii) library iv) API

c) The address of the next instruction to be executed by the current process is provided by
i) CPU registers ii) program counter iii) process stack iv) pipe

d) In priority scheduling algorithm, when a process arrives at the ready queue, its priority is compared with the priority of
i) all process ii) currently running process iii) parent process iv) init process

e) In the Zero capacity queue
i) the queue has finite capacity
ii) the sender blocks until the receiver receives the message
iii) the sender keeps sending the messages
iv) the queue can store at least one message

f) Round robin scheduling falls under the category of :
i) Preemptive scheduling ii) Non preemptive scheduling
iii) Both (i) and (ii) iv) None of these

g) Revocation is difficult in
i) Access List ii) Global Table iii) Lock Key Mechanism iv) Capability List

h) The _____ is used as an index into the page table.
i) frame bit ii) page number iii) page offset iv) frame offset

i) Deadlock prevention is a set of methods :
i) to ensure that at least one of the necessary conditions cannot hold
ii) to ensure that all of the necessary conditions do not hold
iii) to decide if the requested resources for a process have to be given or not
iv) to recover from a deadlock

j) Which one of the following is the address generated by CPU?
i) physical address ii) absolute address iii) logical address iv) none of above

k) Which file is a sequence of bytes organized into blocks understandable by the system's linker?
i) object file ii) source file iii) executable file iv) text file

l) The disadvantage of a process being allocated all its resources before beginning its execution is :
i) Low CPU utilization ii) Low resource utilization
iii) Very high resource utilization iv) None of these

m) What is known as DOS attack?
i) It is attack to block traffic of network
ii) It is attack to harm contents stored in HDD by worm spawn processes
iii) It is an attempt to make a machine or network resource unavailable.
iv) None of the mentioned

n) The offset 'd' of the logical address in segmentation must be :
i) greater than segment limit ii) between 0 and segment limit
iii) between 0 and the segment number iv) greater than the segment number

Attempt any four questions from Q-2 to Q-8

Q-2 **a)** Explain Services of Operating System. **(04)**

b) What is Thread? Explain multithreading models. **(05)**

c) Draw process state diagram and explain all states. **(05)**

Q-3 **a)** Explain Critical Region, Semaphore and Race Condition with example. **(07)**

b) Four jobs A through D arrive with following details: **(07)**

Job	Arrival Time	CPU Time
A	0	5
B	1	3
C	2	8
D	3	6

Calculate Average Waiting Time and Average Turn Around Time applying
(i) FCFS (ii)SRTF (iii) RR (with Time Quantum=3)

Q-4 **a)** Explain Fragmentation. **(04)**

b) What is Deadlock? Explain Characteristics of it. **(05)**

c) Explain Deadlock Recovery. **(05)**

Q-5 **a)** Explain Paging with diagram. Differentiate Paging and Segmentation. **(07)**

b) What is Page Fault? Consider following page reference string: **(07)**

7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1

Assuming three empty frames, how many Page Faults would occur for the following Page Replacement Algorithms:

- FIFO Page Replacement
- LRU Page Replacement
- Optimal Page Replacement

Q-6	**a)**	Define Seek Time. Suppose that a disk drive has 200 cylinders, numbered 0 to 199. The current head position is at 53. Head is moving towards 0.The queue of pending requests in FIFO order is 98, 183, 37, 122, 14, 124, 65, 67 What is the total distance that the disk arm moves to satisfy all the requests using following Disk Scheduling Algorithms: • SSTF • LOOK	**(07)**
	b)	Describe RAID levels	**(07)**
Q-7	**a)**	Explain File Attributes and File Operations.	**(07)**
	b)	Discuss Directory Structure.	**(07)**
Q-8	**a)**	Explain Trojan Horse and Logic Bombs.	**(04)**
	b)	Explain Access Matrix in detail.	**(05)**
	c)	Differentiate among various schedulers.	**(05)**