Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Winter Examination-2018

Subject Name: Operating System (OS)

Subject Code: 5CS03MOS1 **Branch: M.C.A**

Semester: 3 **Date : 04/12/2018** **Time : 02:30 To 05:30** **Marks : 70**

Instructions:

(1) Use of Programmable calculator and 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.

SECTION – I

Q-1 **Attempt the Following questions**

a.	What is demand paging?	**01**
b.	When does thrashing occur?	**01**
c.	What does it mean to preempt a process?	**01**
d.	A machine has 48-bit virtual addresses and 32-bit physical addresses. Pages are 8K. How many entries are needed for a conventional page table?	**01**
e.	What is response time?	**01**
f.	What is kernel?	**01**
g.	What is dispatcher?	**01**

Q-2 **Attempt all questions**

(a)	What is the need of Disc Scheduling? Describe different Disc Scheduling policies in detail.	**07**
(b)	What is deadlock? State necessary conditions for deadlock to occur. Explain Banker's algorithm for deadlock avoidance.	**07**

OR

Q-2 **Attempt all questions**

(a)	What is semaphore? Give and explain the algorithm of producer/consumer Problem with bounded using general semaphore.	**07**
(b)	Explain thrashing. What is the purpose of Translation Lookaside Buffer?	**07**

Q-3 **Attempt all questions**

(a)	Explain the utility of process control block. What kind of information is stored in it?	**07**
(b)	Why is a user mode and kernel mode considered good operating system? Give an	**07**

example that illustrate a user process being switched from user mode to kernel mode, and then back to user mode.

OR

Q-3 **(a)** What is virtual memory? Describe the combined paging and segmentation approach for memory management explaining how physical address is generated in this scheme. **07**

(b) Explain RAID and its level 0-6 in detail. **07**

SECTION – II

Q-4 **Attempt the Following questions**

a. List multiprocessor thread scheduling approaches. **01**

b. State the main difference between logical from physical address space. **01**

c. What is monitor? **01**

d. Define: Starvation **01**

e. What is meant by Seek Time? **01**

f. What are the algorithms available for Deadlock avoidance? **01**

g. Give the name of operation that can be performed on semaphore. **01**

Q-5 **Attempt all questions**

(a) Explain the Dinning Philosopher Problem. Give a proper solution for the problem using semaphore. **07**

(b) List various file allocation Methods. Explain in brief free space management. **07**

OR

Q-5 **Attempt all Questions**

(a) List the steps needed to perform page replacement. Explain the different page replacement policies. Also list out the main requirements, which should be satisfied by a page replacement policy. **07**

(b) Explain Process state Model mentioning all its transitions. **07**

Q-6 **Attempt all questions**

(a) Given memory partitions of 100K, 500K, 200K, 300K, and 600K (in order), how would each of the First-fit, Best-fit, and Worst-fit algorithms place processes of 212K, 417K, 112K, and 426K (in order)? Which algorithm makes the most efficient use of memory? **07**

(b) What is the importance of scheduling? What is pre-emptive and non-preemptive Scheduling? Explain in brief FCFS and RR scheduling algorithm. **07**

OR

Q-6 **Attempt all Questions**

(a) Explain following Commands in UNIX **07**

1) man 2) lpr 3) grep 4) cat 5) chmod 6) who 7) more

(b) Discuss various Operating system design issues. **07**