NTK/KW/15–7434

Fifth Semester B. E. (C.T.) (C.B.S.) Examination

OPERATING SYSTEM

Time : Three Hours] [Max. Marks : 80

N. B. : (1) All questions carry marks as indicated.
(2) Solve Six questions as follows :—
Que.No.1 OR Que.No.2
Que.No.3 OR Que.No.4
Que.No.5 OR Que.No.6
Que.No.7 OR Que.No.8
Que.No.9 OR Que.No.10
Que.No.11 OR Que.No.12
(3) Illustrate the answers with figures/drawings wherever necessary.

1. (a) Define operating system. Explain Batch, Time, Sharing and real time operating system. 8

(b) What is system call ? Explain various system calls. 5

OR

2. (a) What is a scheduler ? Explain different types of scheduler. 6

(b) What is multithreading ? Explain difference thread models. 7

3. (a) What are the different scheduling criterias ? 5

(b) Consider the following set of processes with the arrival time and CPU Burst time given in msec.

Process	Arrival Time	Burst Time
P_0	0	5
P_1	1	3
P_2	2	3
P_3	3	2

Compute average turn around time, waiting time with following algo.

(1) SSTF

(2) RR (quantum = 2)

(3) FCFS 9

OR

4. (a) Explain semaphore with suitable example. 6

(b) Explain producer consumer problem. 8

5. (a) What is deadlock ? Explain the condition for deadlock. 6

(b) Write and explain Banker's algorithm for deadlock avoidance. 7

OR

6. (a) What are the goals of protection in a computer system ? 3

(b) Describe the deadlock prevention methods. 7

(c) Explain resource allocation graph. 3

7. (a) What is virtual memory ? Explain demand paging in detail. 7

(b) Explain paged segmentation system with neat diagram. 6

OR

8. (a) What are different types of memory fragmentation ? Under what circumstance does each occur ? 4

(b) Consider the following page reference string :

1, 2, 3, 4, 5, 3, 1, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9, 5, 4, 5, 4, 2

How many page fault would occur for the following page replacement algorithm assuming for four page frames ? All frames are initially empty.

(i) LRU

(ii) FIFO

(iii) Optimal Replacement. 9

9. (a) What are the different file access methods ? 6

(b) Explain different directory structures. 8

OR

10. (a) Explain SCAN, CSCAN algorithm with respect to disk arm scheduling strategies. 7

3.75

(b) Explain various disallocation methods with their advantages and disadvantages. 7

11. (a) Explain RAID Structure. 7

(b) How I/O are transformed to Hardware operation. 6

OR

12. (a) Explain Kernel I/O subsystem. 7

(b) Explain disk scheduling. 6