SRK/KW/14/7089

Faculty of Engineering & Technology

Fifth Semester B.E. (Computer Technology) (C.B.S.)
Examination

OPERATING SYSTEMS

Time—Three Hours]   [Maximum Marks—80

INSTRUCTIONS TO CANDIDATES

(1) All questions carry marks as indicated.

(2) Solve SIX questions as follows :

    (1) Question No. 1 OR Question No. 2.

    (2) Question No. 3 OR Question No. 4.

    (3) Question No. 5 OR Question No. 6.

    (4) Question No. 7 OR Question No. 8.

    (5) Question No. 9 OR Question No.10.

    (6) Question No. 11 OR Question No. 12.

(3) Illustrate the answers with necessary figures/drawings wherever necessary.

1. (a) What is operating system ? Explain types of operating system and its functions.   8

    (b) Explain structure of operating system.   5

OR

2. (a) What is schedular ? What are different types of schedulers ? Explain in detail.   7

(b) What are threads ? Explain different types of threads with neat sketches. 6

3. (a) Give the performance criterion for selection of scheduling algorithms. 7

(b) Assume you have the following jobs to execute with one processor with jobs arriving in the order listed below :

Job	B.T.	A.T.
0	80	0
1.	20	10
2.	10	10
3	20	80
4	50	85

Suppose a system uses RR scheduling with quantum of 15, find Avg. Waiting time, turn around time of these jobs. 6

OR

4. (a) Explain producer-consumer problem in detail. 6

(b) Explain three conditions that a critical section problem must justify. 7

5. (a) What is Dead lock ? Explain 4 conditions of deadlock. Also explain how deadlocks can be prevented. 7

(b) Explain with the help of example the Resource Allocation graph in detail. 6

OR

6. (a) Consider the following snap shot :

	Allocation	Max	Available
	A B C D	A B C D	A B C D
P_0	0 0 1 2	0 0 1 2	1 5 2 0
P_1	1 0 0 0	1 7 5 0	
P_2	1 3 5 4	2 3 5 6	
P_3	0 6 3 2	0 6 5 2	
P_4	0 0 1 4	0 6 5 6	

Using Banker's Algorithm solve the following :—

(i) What is contents of need matrix ?

(ii) Whether system is in safe state ? Give sequences.

(iii) If a request for P_1 arrives (0 4 200) can request be granted immediately. 8

(b) Write short notes on issues involved in deadlock recovery. 5

7. (a) Explain contiguous memory allocation policies in detail. 6

(b) Discuss the paging technique for mapping the virtual address with physical address with neat sketch and example. 7

OR

8. (a) Explain the demand paging concept for the following reference string :

1 2 3 4 1 2 5 1 2 3 4 5

assuming three frames, workout the number of page faults for the replacement algorithms LRU, FIFO and optimal. 9

(b) Explain the concepts :

    (i)   Locality of reference

    (ii) Working sets.   4

9. (a) Discuss the disk space management concept. 6

    (b) Discuss with neat diagrams various file allocation methods.   8

OR

10. (a) Explain the following disk scheduling algorithms with examples :

    FCFS, SCAN C–SCAN & C–LOOK. 8

    (b) Explain various attributes related with a file. 6

11. (a) Explain kernel I/O subsystem. 5

    (b) Explain RAID architecture. 6

    (c) What is I/O system ? Explain. 3

OR

12. (a) Explain swap-space management in detail. 7

    (b) Write short notes on (any **TWO**) :—

    (i)   DMA

    (ii) I/O controller

    (iii) DCB.   7