CBCS SCHEME

USN | | | | | | | | | | |

18EC641

Sixth Semester B.E. Degree Examination, June/July 2024
Operating System

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. List common tasks performed by the operating system and when/who these tasks are performed. **(10 Marks)**

b. Make use of figures to explain the two resource allocation strategies. **(10 Marks)**

OR

2 a. Explain classes of operating systems with an emphasis on prime concerns and key concepts used. **(10 Marks)**

b. With the help of a neat diagram, explain Time Sharing system. **(10 Marks)**

Module-2

3 a. With a neat state transition diagram, explain fundamental state transition. **(12 Marks)**

b. Make use of figures to explain, (i) Kernel level threads (ii) User level threads. **(08 Marks)**

OR

4 a. Calculate average turnaround time and mean weighted turn around for the set of processes shown in Fig. Q4 (a), using (i) FCFS scheduling policy (ii) RR Scheduling policy. Assume $\delta = 1$ second.

Processes	P_1	P_2	P_3	P_4	P_5
Admission time (seconds)	0	2	3	4	8
Service time (seconds)	3	3	5	2	3

Table Fig. Q4 (a) **(12 Marks)**

b. Explain scheduling in, (i) UNIX (ii) LINUX **(08 Marks)**

Module-3

5 a. Obtain the comparison between contiguous and non-contiguous memory allocation. **(06 Marks)**

b. Explain all the fields of page table. **(06 Marks)**

c. Explain : (i) Segmentation (ii) Segmentation with paging. **(08 Marks)**

OR

6 a. With a neat diagram, explain demand loading of a page. **(08 Marks)**

b. Consider the following page reference string and time string for a process :

Page reference string	5	4	3	2	1	4	3	5	4	3	2	1	5
Reference time string	t_1	t_2	t_3	t_4	t_5	t_6	t_7	t_8	t_9	t_{10}	t_{11}	t_{12}	t_{13}

Table of Fig. Q6 (b)

Assume Alloc = 4, apply (i) LRU (ii) FIFO page replacement policies and find total number of page faults in each case. **(12 Marks)**

Module-4

7 a. List facilities provided by File System and IOCS. (02 Marks)

b. Describe file operations performed on files. (06 Marks)

c. Make use of figures to explain,
(i) Sequential file organization
(ii) Direct access file organization
(iii) Index sequential file organization. (12 Marks)

OR

8 a. Explain various fields of File Control Block (FCB). (08 Marks)

b. Explain following methods of disk space allocation using figures,
(i) Linked allocation
(ii) Indexed allocation. (12 Marks)

Module-5

9 a. Explain (i) Direct and Indirect naming
(ii) Blocking and Non blocking sends in message passing (08 Marks)

b. With the help of figures, explain
(i) Inter process message control block
(ii) Buffering of Interprocess messages in message passing. (12 Marks)

OR

10 a. Describe events related to resource allocation and condition for resource dead lock. (06 Marks)

b. Explain dead lock handling approaches. (06 Marks)

c. Explain dead lock prevention approaches with clear illustration. (08 Marks)

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