

# CBCS Scheme

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15EC553

Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018

## Operating Systems

Time: 3 hrs.

Max. Marks: 80

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

### Module-1

- 1 a. Define operating system. What are the goals of an operating system? Explain. (08 Marks)  
b. List and explain the different computational structures of operating system. (08 Marks)

OR

- 2 a. What are the different classes of operating system? Explain them with their primary concern. (10 Marks)  
b. Explain the terms : i) Efficiency ii) System performance iii) user service. (06 Marks)

### Module-2

- 3 a. With the help of a neat sketch, explain the view of processor. (08 Marks)  
b. Define process state. Write a neat sketch, explain the fundamental state transitions of processes. (08 Marks)

OR

- 4 a. For the given set processes, perform FCFS and SRN scheduling. Compare their performance in terms of mean turnaround time and mean weighted turnaround time. (10 Marks)

Processes	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	P <sub>5</sub>
Admission time	0	2	3	5	9
Service time	3	3	2	5	3

- b. Write a neat sketch, explain long – medium and short term schedulers. (06 Marks)

### Module-3

- 5 a. Compare contiguous and non-contiguous memory allocation techniques. (08 Marks)  
b. Define  
i) Internal and external fragmentation  
ii) Paging and segmentation  
iii) Logical address and physical address  
iv) Page and page frame. (08 Marks)

OR

- 6 a. Write a neat sketch, explain the concepts involved in demand loading of a page. (08 Marks)  
b. Explain FIFO and LRU page replacement policies. Show the operation of FIFO and LRU policies for the page reference string : 0, 1, 0, 2, 0, 1, 2 and time reference sting : t<sub>1</sub>, t<sub>2</sub>, t<sub>3</sub>, t<sub>4</sub>, t<sub>5</sub>, t<sub>6</sub>, t<sub>7</sub> and find out number of page faults. Given : number of page frames = 2. (08 Marks)

**Module-4**

- 7 a. Explain the file system and the IOCS with necessary sketches. (08 Marks)  
b. Explain the fundamental file organizations. (08 Marks)

**OR**

- 8 a. What is a directory? Explain directory fields and its operation with a simple directory structure. (08 Marks)  
b. Explain the file system actions when a file is opened. (08 Marks)

**Module-5**

- 9 a. Define message passing. Illustrate the implementation of message passing. (08 Marks)  
b. Define mailbox. Explain message passing using a mailbox with necessary sketches. Also mention the advantages of using mail boxes. (08 Marks)

**OR**

- 10 a. Define Deadlock. Explain the deadlock handling approaches. (08 Marks)  
b. With necessary sketches, explain the different deadlock prevention approaches. (08 Marks)

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