

**R15**

Code No: 125EH

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year I Semester Examinations, November/December - 2017****OPERATING SYSTEMS****(Common to CSE, IT)****Time: 3 hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART - A****(25 Marks)**

- 1.a) Describe about control card in batch-system. [2]
- b) Define Real time operating systems. [3]
- c) What do you turn around Time? [2]
- d) Define Process Control Block. [3]
- e) Describe about hashed page table. [2]
- f) What do you mean by external fragmentation? [3]
- g) Describe about File Allocation Table. [2]
- h) Mention two important functions of Virtual File System. (VFS) Layer. [3]
- i) Describe about resource allocation Graph. [2]
- j) List the necessary conditions to occur the Deadlock. [3]

**PART - B****(50 Marks)**

- 2.a) Define operating system? Elaborate the operating system operations with examples?
- b) Discuss in detail the main advantage of the layered approach to system design? What are the disadvantages of using layered approach? [5+5]

**OR**

3. Explain the following terms with examples and neat diagrams: [5+5]
  - a) Java Virtual Machine
  - b) Para-Virtualization

- 4.a) Differentiate between Long terms, Short term, Medium term Scheduler.
- b) By illustrating the structure of process P1, explain the Petersons solution to critical section problem. [5+5]

**OR**

- 5.a) Discuss in detail about the Dining –Philosophers solution using monitors.
- b) Illustrate the semaphore functions with examples. [5+5]

6.a) Perform optimal page replacement on the following reference string:  
-7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1 find number of page faults and define optimal page replacement?

b) Define thrashing? Explain its causes and write any two solutions to increase CPU utilization in case of thrashing. [5+5]

**OR**

7. What is fragment? Explain the difference between internal and external fragments. Explain how best fit allocation scheme minimized the fragment size? [5+5]

8.a) What are the disadvantages of single contiguous memory allocation? Explain.

b) Explain and compare the FCFS and SSTF disk scheduling algorithms. [5+5]

**OR**

9. Illustrate the following terms with examples.

a) Bit vector

b) Swap space management. [5+5]

10. Describe in detail the implementation methods of Access matrix. [10]

**OR**

11. How does deadlock avoidance differ from deadlock prevention? Write about deadlock avoidance algorithm in detail. [10]

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