

R13

Code No: 812AG

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

MCA II Semester Examinations, January - 2018

OPERATING SYSTEMS

Time: 3 Hours

Max. Marks: 60

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 8 marks and may have a, b, c as sub questions.

PART - A**5 × 4 Marks = 20**

- 1.a) Explain briefly system calls with examples. [4]
- b) Explain process scheduling with various levels of scheduling. [4]
- c) In detail explain what are the requirements that memory management technique needs to satisfy? [4]
- d) Explain about caching, buffering and spooling. [4]
- e) What is Deadlock? What are the four necessary conditions necessary for a deadlock situation to arise? [4]

PART - B**5 × 8 Marks = 40**

- 2.a) Write the differences between multiprogramming, multitasking and multiprocessing? [4]
- b) What are the challenges in designing a distributed operating system? [4+4]

OR

- 3.a) What are the five major activities of an operating system in regard to process management? Explain each activity in detail. [4]
- b) Write in detail about virtual machines and operating system services. [4+4]
- 4.a) Explain the concept of Binary semaphores and bounded waiting in detail. [4]
- b) Write dining-philosophers problem? Identify an algorithm to solve the problem using semaphores? [4+4]

OR

- 5.a) Discuss the round robin CPU Scheduling algorithm in detail. [4]
- b) Define:
i) CPU-I/O burst cycle
ii) CPU schedule iii) Pre-emptive and non-preemptive scheduling. [4+4]
- 6.a) With a neat diagram, explain the basic concept of segmentation. [4]
- b) Differentiate between:
i) logical addressing and physical addressing
ii) Internal and External fragmentation. [4+4]

OR

- 7.a) Explain contiguous memory allocation concept with advantages and disadvantages? [4]
- b) What is page fault? How does page fault occurs? What action can be taken by operating system when a page fault occurs. [4+4]

- 8.a) With a neat diagram explain about Unix File system.
b) Explain the directory implementation method with respect to Linear List. [4+4]
- OR**
- 9.a) What is meant by file sharing? Explain the criteria to be followed in systems which implement file sharing.
b) Explain in detail about swap space management. [4+4]
- 10.a) A process contains 3 programs and each requires three tape units for its operation. Explain the minimum number of tape units which the system must have such that deadlocks never arise is?
b) Differentiate the various access matrix implementation techniques. [4+4]
- OR**
- 11.a) Define the terms Race condition and critical section.
b) Define the Coffman's conditions that lead to a deadlock. [4+4]

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