Reg. No. :

Question Paper Code: 41844

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

Fourth Semester

Information Technology

14UIT404 - PRINCIPLES OF OPERATING SYSTEMS

(Regulation 2014)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Batch systems are quite appropriate for executing

   (a) Medium jobs   (b) Small jobs
   (c) Larger jobs   (d) None of these

2. Which of the following is/are the part of operating system?

   (a) Kernel services   (b) Library services
   (c) Application level services   (d) All the above

3. Turnaround time is the interval from the time of _____ to the time of _____ of a process.

   (a) submission, completion   (b) creation, submission
   (c) deadlock, completion   (d) completion, creation

4. The necessary conditions needed before deadlock can occur

   (a) No Mutual Exclusion, Hold and wait, Preemption, Circular Wait
   (b) Mutual Exclusion, No Hold and wait, Preemption, Circular Wait
   (c) Mutual Exclusion, Hold and wait, No Preemption, Circular Wait
   (d) Mutual Exclusion, Hold and wait, Preemption, No Circular Wait

5. Belady's anomaly states that

    (a) Page faults may reduce and later increase
    (b) Page faults are exponential in nature
    (c) Page faults reduces and increases drastically
    (d) Page faults may increase as the number of allocated frames increases

6. Page fault occurs when

    (a) the Deadlock happens   (b) the Segmentation Starts
    (c) the page is found in the memory   (d) the page is not found in the memory

7. What is the mounting of file system?

    (a) crating of a file system
    (b) deleting a file system
    (c) attaching portion of the file system into a directory structure
    (d) removing portion of the file system into a directory structure

8. By using the specific system call, we can

    (a) open the file   (b) read the file
    (c) write into the file   (d) all the above

9. What is the responsibility of kernel in Linux operating systems?

    (a) Manages only the input request
    (b) Manages only the output request
    (c) Manages both input/output requests
    (d) Does not manage the input output

10. The interrupt vector contains

    (a) the interrupts
    (b) the memory addresses of specialized interrupt handle
    (c) the identifiers of interrupts
    (d) the device addresses

PART - B (5 x 2 = 10 Marks)

11. Define operating systems.

12. List four necessary conditions for deadlock.

13. Define swapping.

41844

14. Mention any four file attributes.

15. List the responsibilities of a Linux system administrator.

PART - C (5 x 16 = 80 Marks)

16. (a) With suitable supporting diagrams, explain how communication is done in client server systems. (16)

Or

(b) (i) Write short notes on System Programs. (8)

(ii) Describe Queuing-diagram representation of process scheduling. (8)

17. (a) (i) Explain banker's algorithm and resource allocation graph for deadlock avoidance. (8)

(ii) Write any two classic problems of synchronization. (8)

Or

(b) Consider the following snapshot, set of processes with the length of the CPU burst time given in milliseconds.

Process	Burst time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The processes have arrived in the order P1, P2, P3, P4 and P5 all at time 0.

(i) Draw four Gantt charts illustrating the execution of these processes using FCFS, SJF, a non-preemptive priority (a smaller priority number implies a higher priority) and RR (quantum = 1) scheduling. (10)

(ii) What is the turnaround time of each process for each of the scheduling algorithms? (2)

41844

(iii) What is the waiting time of each process for each of the scheduling algorithms? (2)

(iv) Which of the schedules results in the minimal average waiting time (2)

18. (a) (i) Brief about memory allocation. (8)

(ii) Illustrate paging hardware. (8)

Or

(b) (i) Compare and contrast first fit, best fit and worst-fit dynamic storage allocation strategies. (8)

(ii) Justify the use of virtual memory. (8)

19. (a) (i) Support with evidences the various structures used in file system implementation. (8)

(ii) Assess the characteristics that determine the disk access speed. (8)

Or

(b) (i) Explain contiguous file allocation method. (8)

(ii) Discuss in detail about access methods. (8)

20. (a) Design an I/O interface for a mobile application (16)

Or

(b) (i) Illustrates how the I/O-related portions of the kernel are structured in software layers. (8)

(ii) Brief about swap space management. (8)

———————

41844