



GIET Main Campus (Autonomous)

Gunupur-765 022

Reg.No.:

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B.TECH. DEGREE EXAMINATION-NOV-DEC. 2018

End Semester Examination

BCSPC3020/BITPC3020 - Operating System

(Regulations 2017)(Common to CSE and IT Branches)

Time : 3 Hours

Maximum : 100 Marks

Question Code:241012

Answer ALL Questions

PART A - (10 X 2 = 20 Marks)

1. (a) Process is [CO1] [PO1]
 - A.program in High level language kept on disk
 - B.contents of main memory
 - C.a program in execution
 - D.a job in secondary memory
 - E.None of the above

 - (b) The FIFO algorithm [CO1] [PO1]
 - A.executes first the job that last entered the queue
 - B.executes first the job that first entered the queue
 - C.execute first the job that has been in the queue the longest
 - D.executes first the job with the least processor needs
 - E.None of the above

 - (c) In priority scheduling algorithm, when a process arrives at the ready queue, its priority is compared with the priority of: [CO2] [PO1]
 - a) all process
 - b) currently running process
 - c) parent process
 - d) init process

 - (d) The processes that are residing in main memory and are ready and waiting to execute are kept on a list called: [CO2] [PO1]
 - A. job queue
 - B. ready queue
 - C. execution queue
 - D. process queue

 - (e) In multilevel feedback scheduling algorithm: [CO2] [PO1]
 - A. a process can move to a different classified ready queue
 - B. classification of ready queue is permanent
 - C. processes are not classified into groups
 - D. none of the mentioned

 - (f) The memory allocation scheme subject to "external" fragmentation is [CO3] [PO1]
 - A.segmentation
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- B.swapping
- C.pure demand paging
- D.multiple contiguous fixed partitions
- E.None of the above

- (g) Which of the following statements is false? [CO3] [PO1]
A.a small page size causes large page tables
B.internal fragmentation is increased with small pages
C.large page size causes instructions and data that will not be referenced brought into primary storage
D.I/O transfers are more efficient with large pages
E.None of the above
- (h) With relocation and limit registers, each logical address must be.....the limit register. [CO3] [PO1]
a. Less than
b. equal to
c. greater than
d. None of these
- (i) Preparation of disc for subsequent file storage is classified as [CO4] [PO1]
1. disc format
2. disc address
3. disc footer
4. disc header
- (j) File which is created to carry out processing of data is classified as [CO4] [PO1]
1. master file
2. transaction file
3. particular file
4. reference file

PART B - (10 X 2 = 20 Marks)

2. (a) What is a Kernel? [CO1] [PO1]
- (b) What is the use of Fork and Exec System Calls? [CO1] [PO1]
- (c) What is starvation? How it is resolved. [CO2] [PO1]
- (d) What are the different scheduling criteria for CPU scheduling? [CO2] [PO1]
- (e) What are the benefits of multithreaded programming? [CO2] [PO1]



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- (f) Distinguish between logical address space and physical address space. [CO3] [PO1]
- (g) Differentiate between internal and external fragmentation. [CO3] [PO2]
- (h) What is the role of a page table in paging? [CO3] [PO1]
- (i) Differentiate between sequential access and direct access. [CO4] [PO1]
- (j) Explain briefly about DMA.. [CO4] [PO1]

PART C - (4 X 15 = 60 Marks)

3. (a) (i) Explain the various types of System calls with an example for each. [5][CO1] [PO2]
- (ii) Define operating system and list out the function and component of operating system with a neat diagram. [10] [CO1] [PO2]
- (or)
- (b) (i) What do you mean by a Process? How it differs from a Program? Explain the structure of a Process Control Block. [7][CO1] [PO1]
- (ii) Differentiate between long term scheduler and short term scheduler. What is the purpose of medium term scheduler? [8][CO1] [PO2]
4. (a) (i) What is a thread? Discuss and differentiate between user level and Kernel level thread with their advantages and disadvantages. What are the different thread models we are having? Explain them in detail. [8] [CO2] [PO1]
- (ii) What is the purpose of CPU Scheduling? Mention various scheduling criteria's. Explain in brief various CPU scheduling algorithm. [7] [CO2] [PO1]
- (or)
- (b) (i) Differentiate between Multi level feedback queue scheduling and Multiprocessor scheduling with example.. [7][CO2] [PO1]
- (ii) Briefly describe the different CPU scheduling algorithms and their working. [8][CO2] [PO1]
5. (a) (i) Distinguish between internal and external fragmentation. Provide any two solutions to avoid external fragmentation. [5][CO3] [PO1]



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- (ii) Explain about the necessary conditions for deadlock. How we can prevent deadlock by using these? [10][CO3] [PO1]

(or)

- (b) (i) Write short notes on [8] [CO3] [PO1]
i. TLB
ii. Semaphore
- (ii) Given memory partitions of 120K, 520K, 320K, 324K and 620K (in order). How would each of the First fit, Best fit and worst fit algorithms place processes of 227K, 432K, 127K and 441K (in order)? Which algorithm makes the most efficient use of memory? [7][CO3] [PO2]
6. (a) (i) What is a file? Explain various file allocation techniques with their advantages and disadvantages. [7][CO4] [PO1]
- (ii) Suppose that the head of a moving hard disk with 200 tracks, numbered 0 to 199, is currently serving a request at track 143 and has just finished a request at 125. The queue of request is kept in the FIFO order 86, 147, 91, 177, 94, 150, 102, 175 and 130.
What is the total number of head movements needed to satisfy these requests for the following disk-scheduling algorithms? [8][CO4] [PO3]
1. FCFS Scheduling
2. SSTF Scheduling
3. SCAN Scheduling
- (or)
- (b) (i) Discuss the linked allocation and index allocation schemes for a file allocation. Compare the index allocation scheme with the contiguous allocation scheme. [7] [CO4] [PO1]
- (ii) Answer the following [8][CO4] [PO1]
1. Disk Structure
2. RAID Structure.