

Prelim

S.Y.B.C.A. Sem. - 3

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Seat No. :

1588

DD-102

December-2022

B.C.A., Sem.-III

CC-204 : Fundamentals of Operating System

(New)

Time : 2:30 Hours]

[Max. Marks : 70

1. (A) What is Operating System Software ? Explain different types of Operating Systems. 7

(B) Discuss in detail : Relocatable Dynamic Partitions. 7

OR

(A) Explain Paged Memory allocation in detail. 7

(B) System requests pages in following order : 7

1 2 3 4 1 4 1 2 3 4 1 2 1 4 3 1

With memory of 3 page frames, do trace analysis using the following page replacement policies.

1. FIFO 2. LRU

Also find the success rates and failure rates and number of page faults.

(A) Explain Job Scheduler and Process Scheduler in detail. 7

(B) Explain : Process Control Block in detail with diagram. 7

OR

(A) What is a Process ? Explain the different process states and process state transition in detail with diagram. 7

(B) Given the following details :

JOB NUMBER	CPU CYCLE
A	8
B	7
C	13
D	3

All the processes has arrived at same time. Draw a timeline for each of the following scheduling algorithm. Also calculate the average turnaround time and average waiting time using,

(a) FCFS (b) SJN (c) Round Robin [Time slice = 4ms]

3. (A) What are the conditions for deadlock to occur ? How can deadlocks be prevented ?

(B) What is Starvation ? Discuss: Dinning Philosopher's Problem.

OR

(A) What is parallel processing ? Explain the master-slave and symmetric configurations.

(B) What is semaphore ? How can we achieve synchronization using semaphore in producer and consumer problem ?

4. (A) State and explain different access verification module.

(B) Explain : Non-contiguous and Indexed storage allocation methods.

OR

(A) How communication among devices takes place ?

(B) State and explain different types of system devices. Also explain FCFS device handler seek strategy.

Attempt any 7 :

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- (1) A file manager keeps track of where each file is stored. [True/False]
- (2) Offset is also known as distance. [True/False]
relative address
- (3) An I/O bound process spends more time doing computation. [True/False]
- (4) Bankers Algorithm is used to avoid deadlock. [True/False]
- (5) Problem of busy waiting is removed with Wait and Signal. [True/False]
- (6) Shared devices are combination of dedicated and virtual devices. [True/False]
- (7) Which table contains location of a page frame and the free/busy status of the page frame ?
 - (a) Job table
 - (b) Memory map table
 - (c) Page map table
 - (d) Segmented map table
- (8) A scheduling strategy that interrupts the processing of a job and transfers the CPU to another job is called _____.
 - (a) Preemptive scheduling policy
 - (b) Non-preemptive scheduling policy
 - (c) Schedulers
 - (d) None of the above
- (9) A process is thrashing if :
 - (a) It spends more time paging than executing.
 - (b) It spends less time paging than executing.
 - (c) When there is excessive amount of page swapping.
 - (d) None of the above

(10) All deadlocks involve conflicting needs of

- ☒ (a) resources
- (b) programs
- (c) users
- (d) computers

(11) Mutex stands for

- ☒ (a) Mutual exception
- (b) Mutual execution
- (c) Mutual running
- ☒ (d) Mutual exclusion

(12) From the following which is a method for data compression ?

- (a) Front end compression
- (b) Repeated characters
- (c) Repeated terms
- ☒ (d) All of the above