(21) S.Y.B.C.A. Sem. - 3 (1)

(4)

Seat No. : _____ 4/12/23

DC-105

December-2023

BCA., Sem.-III

CC-204 : Fundamentals of Operating System

Time : 2½ Hours] **[Max. Marks : 70**

1. (A) Explain : Single user contiguous scheme and Fixed partition memory management. 7

   (B) Discuss : Segmented memory allocation. 7

OR

1. (A) What is Operating System ? What are the functions of managers of the operating system ? 7

   (B) Consider the following reference string : 7
   7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1
   With memory of 3 page frames, use the following page replacement methods, do trace analysis and also find success rate and failure rate with number of page faults
   (a) FIFO (b) LRU

2. (A) What are the criteria of process scheduling ? Also define the following : 7
   - Preemptive scheduling policy
   - Non-preemptive scheduling policy

   (B) Given the following : 7

Process	Burst Time
P1	21
P2	6
P3	3
P4	2

   Arrival time of all processes is the same. Draw a timeline and calculate average turnaround time and average waiting time for each of the following algorithms.
   (a) FCFS (b) SJN (c) Round Robin (Time quantum = 5ms)

OR

2. (A) Discuss : Process Control Block in detail 7

   (B) Discuss : Different process states and process state transitions. 7

3. (A) Discuss : Dining Philosophers Problem 7

   (B) What is deadlock ? List and explain methods to recover from deadlock. 7

OR

3. (A) What is parallel processing ? Explain loosely coupled configuration. 7

   (B) Discuss : Producers and Consumers Problem. 7

P.T.O.

4. (A) Explain the functions of I/O traffic controller, I/O scheduler and I/O device handler in detail. 7

(B) Explain : Direct memory access and Channel status word(CSW). 7

OR

4. (A) What is File Management System ? Explain the responsibilities of file manager. 7

(B) Discuss : Data Compression 7

5. Answer any 7 : 14

(1) In _____ storage allocation, records are stored one after another.
(a) Non-contiguous (b) Indexed
(c) Contiguous (d) None of the above

(2) _____ is a data structure used with indexed storage allocation which contains the addresses of each disk sector used by that file.
(a) Index Block (b) Index File
(c) Index Folder (d) Index List

(3) Which of the following are the categories of the system devices ?
(a) Dedicated devices (b) Shared devices
(c) Virtual devices (d) All of the above

(4) Which of the following is known as Elevators Algorithm ?
(a) FCFS (b) SSTF
(c) LOOK (d) None of the above

(5) Which of the following is an asymmetric multi-processing configuration consisting of a single processor system ?
(a) Master-slave (b) Loosely - coupled
(c) Symmetric (d) None of the above

(6) Parallel processing is also known as _____.
(a) Multi-programming (b) Multi-tasking
(c) Multi-processing (d) None of the above

(7) Which of the following is the required condition for a deadlock to occur ?
(a) Mutual Exclusion (b) Resource Holding
(c) Circular wait (d) All of the above

(8) _____ is the situation in which the system has enough available resource to guarantee the completion of at least one job running on the system.
(a) safe state (b) unsafe state
(c) race (d) spooling

(9) Process Scheduler is also known as _____.
(a) High-level scheduler (b) Low-level scheduler
(c) Job-Scheduler (d) Middle-level scheduler

(10) Which among the following consists fragments of free memory between the blocks of allocated memory ?
(a) Internal fragmentation (b) External fragmentation
(c) An indirect partitioning (d) None of the above

(11) Interactive systems are also called _____.
(a) Batch System (b) Time-sharing System
(c) Hybrid System (d) Real time system

(12) _____ is a preemptive scheduling policy that allocates the processor to the job closest to completion.
(a) FCFS (b) SRT
(c) SFJ (d) Round Robin