

Seat No. : _____

ND-116

November-2013

BCA. Sem.-III (CBCS)

CC-204 : Fundamentals of OS

Time : 3 Hours]

[Max. Marks : 70

1. (a) Explain how semaphore can be useful in solving problem of producer and consumer. 7

OR

List out the names of multiprocessing configurations and explain Loosely coupled configuration in detail with diagram.

- (b) Answer the following :

- (1) Consider the following set of jobs with the length of CPU Burst time given in milliseconds : 4

| Job | Burst Time |
|------------|-------------------|
| A | 10 |
| B | 1 |
| C | 2 |
| D | 1 |
| E | 5 |

The jobs are assumed to have arrived in the order A, B, C, D, E all at time 0. Draw a timeline and also calculate the average waiting time and average turnaround time for each of the following process scheduling algorithms;

- (a) FCFS
(b) SJN
- (2) Write a short note on types of operating system. 3

OR

Answer the following :

- (1) Explain the Process Control Block in detail. 4
- (2) Write a short note on managers of the operating system. 3

2. (a) List out four conditions required for the existence of a deadlock and discuss about them. 7

OR

Discuss starvation in detail with dining philosopher problem.

- (b) Answer the following :
- (1) Disk requests came to the disk driver for cylinders 10, 22, 20, 2, 40, 6 and 38 in that order. Arm is initially at 20. Find out the total number of cylinders travelled by the arm to satisfy all the requests for all the following strategies. 4
- (a) FCFS
- (b) SSTF
- (2) Write a short note on components of the I/O subsystem. 3

OR

Discuss about Channel Status Word and Direct Memory Access in detail. 7

3. (a) What is best-fit allocation ? Discuss about best-fit allocation with an example. 7

OR

Explain Fixed-partitions memory allocation scheme in detail with required diagrams and example.

- (b) Answer the following :
- (1) For the memory with 2 page frames and with the following reference string : 4
4 3 4 1 2 5 3 2 1
Find out the number of page faults and failure rate and success rate for the following page replacement algorithms :
- (a) FIFO
- (b) LRU
- (2) Write a short note on demand paging. 3

OR

Answer the following :

- (1) Given the following reference string : 4
7 6 5 4 7 6 8 7 6 5 4 8
With memory of 3 page frames, use following page replacement methods, do trace analysis and also find out the failure rate and success rate with number of page faults :
- (a) FIFO
- (b) LRU
- (2) Write the full form of the following tables and discuss about them : 3
- (a) JT
- (b) PMT
- (c) MMT

4. (a) Discuss about sequential record organization and direct record organization. 7

OR

Discuss about contiguous and non-contiguous storage allocation.

- (b) Discuss about Viruses and Antivirus software. 7

OR

Discuss about role of operating system in security.

5. Answer the following : 14

- (1) Hybrid system is the combination of Real-time and Batch Systems. (True/False)
- (2) Give full form of SJF.
- (3) _____ is a non-negative integer variable that is used as a flag.
 - (a) Interrupt
 - (b) Proberen
 - (c) Verhogen
 - (d) Semaphore
- (4) If there is a cycle in the graph then there is a deadlock involving the processes and the resources in the cycle. (True/False)
- (5) RAID stands for Redundant Array of Independents Drums. (True/False)
- (6) LOOK is also known as _____.
 - (a) Elevator algorithm
 - (b) FCFS
 - (c) SSTF
 - (d) None of these
- (7) _____ consist of fragments of free memory between blocks of allocated memory.
 - (a) Internal fragmentation
 - (b) External fragmentation
 - (c) (a) & (b) both
 - (d) None of these

- (8) The sections of main memory are called _____.
- (a) Page Frames
 - (b) Page
 - (c) Segments
 - (d) Blocks
- (9) Belady's Anomaly is also known as _____.
- (10) Give full form of MFD.
- (11) A record is a group of related _____.
- (a) bytes
 - (b) fields
 - (c) files
 - (d) directories
- (12) A _____ hides important network information from outsiders by making the network server invisible.
- (13) A process is also known as a task. (True/False)
- (14) From the following which is not the data compression technique ?
- (a) Repeated characters
 - (b) Repeated Terms
 - (c) Frontend Compressions
 - (d) Overlay
-