BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – B.Tech.(CSE)-AIML-2021/B.Tech.(CSE)-DS-2021/B.Tech.(CSE)-AIML-2022/B.Tech.(CSE)-DS-2022/B.Tech.(CSE)-AIML-2023/B.Tech.(CSE)-DS-2023/B.Tech.(CSE)-2023
Course Name – Operating Systems
Course Code - PCC-CSM401/PCC-CSD401/PCC-CSG401
(Semester IV)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Preemptive Shortest Job First scheduling is occasionally indicate
   a) Fast SJF scheduling
   b) EDF scheduling – Earliest Deadline First
   c) HRRN scheduling – Highest Response Ratio Next
   d) SRTN scheduling – Shortest Remaining Time Next

(ii) Identify a solution to the problem of indefinite blockage of low priority processes is
   a) Starvation
   b) Wait queue
   c) Ready queue
   d) Aging

(iii) Identify a process is selected from the _____ queue by the _____ scheduler, to be executed.
   a) blocked, short term
   b) wait, long term
   c) ready, short term
   d) ready, long term

(iv) Select the correct option: "If a process is executing in its critical section, then no other processes can be executing in their critical section. This condition is expressed as - "
   a) mutual exclusion
   b) critical exclusion
   c) synchronous exclusion
   d) asynchronous exclusion

(v) Identify the deadlock avoidance algorithm.
   a) banker's algorithm
   b) round-robin algorithm
   c) elevator algorithm
   d) karn's algorithm

(vi) LRU page – replacement algorithm indicates with each page the _____
   a) the time of that page's last use
   b) time it was brought into memory
   c) page after and before it
   d) all the mentioned

(vii) Identify the reason of a page fault.

a) a page cannot be accessed due to its absence from memory
b) a page gives inconsistent data
c) a page is invisible
d) all of the mentioned

(viii) Identify correct option for: physical memory is broken into fixed-sized blocks is known as

a) frames
b) pages
c) backing store
d) None of the mentioned

(ix) Identify correct option: with paging there is no _____ fragmentation.

a) external
b) internal
c) either type of
d) None of the mentioned

(x) For larger page tables identify that they are kept in main memory and a _____ points to the page table.

a) page table base register
b) page table base pointer
c) page table register pointer
d) page table base

(xi) After turn off the computer, identify the location from the place the data is lost.

a) Non-Volatile Memory
b) Volatile Memory
c) Both
d) None

(xii) Indicate the main function of the command interpreter.

a) to get and execute the next user-specified command
b) to provide the interface between the API and application program
c) to handle the files in the operating system
d) none of the mentioned

(xiii) Indicate the system the FCFS algorithm is particularly troublesome.

a) time sharing systems
b) operating systems
c) multiprocessor systems
d) multi programming systems

(xiv) Select the main difference between protection and security in an operating system.

a) Protection deals with internal threats, while security deals with external threats
b) Security is a subset of protection
c) Protection and security are the same
d) Protection is for networks, security is for processes

(xv) Select the common technique used for intrusion detection.

a) Encryption
b) Hashing
c) Signature-based monitoring
d) Disk fragmentation

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Illustrate the concept of demand paging and its significance in virtual memory systems. (3)
3. Describe simple structure of operating system. (3)
4. Describe layered approach of Operating System. (3)
5. State the different types of operating systems. (3)
6. Explain Semaphore with an example. (3)

OR

Compare between Distributed system and Real time system. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Consider the LRU page replacement algorithm, assuming there are 3 frames and the page reference string is 7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1 8. Estimate the number of page faults. (5)
8. Describe functions of an Operating System. (5)
9. Explain different types of techniques for deadlock prevention. (5)

10. Describe Real time Operating System. (5)
11. Compare the difference between user and kernel thread. (5)
12. Justify the concept of a directory structure. (5)

OR

Explain I-node in a file system for file management and disk management operations. (5)

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