

CBSE NET January 2017 PAPER II

OPERATING SYSTEM

Q. There are three processes P1, P2 and P3 sharing a semaphore for synchronising a variable. Initial value of semaphore is one. Assume that negative value of semaphore tells us how many processes are waiting in queue. Processes access the semaphore in following order:

- (a) P2 needs to access
- (b) P1 needs to access
- (c) P3 needs to access
- (d) P2 exits critical section
- (e) P1 exits critical section

The final value of semaphore will be:

- (A) 0
- (B) 1
- (C) -1
- (D) -2

Ans :- (A)

Explanation:-

Given, Initial value of semaphore $S = 1$.

- (a) When P2 needs to access, $S=0$
- (b) Now P1 needs to access, $S=-1$, which says 1 process P1 on wait, because P2 in section.
- (c) Now P3 needs to access, $S= -2$, which says 2 processes P1 and P2 on wait, because in P2 in section.
- (d) Now P2 exits critical section, so P1 enter, $S= -1$, because only P2 on wait.
- (e) Now P1 exits critical section, so P2 enter, $S= 0$, because no process on wait.

So, correct answer is A.

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93. Multiple Processor Scheduling
94. What do you mean by Virtual Memory? Write down its advantages?
95. Compare Paging and Segmentation?
96. What is Process Scheduling, CPU Scheduling, Disk Scheduling? Explain Short, Medium and Long term Scheduler?
97. Explain concept of a process with its components ?
98. Explain the following in brief Contiguous and Linked list allocation for implementing file system?
99. Explain various Disk scheduling algorithms with Illustrations ?
100. Define process and thread. What is PCB ? Explain its various entries with their usefulness ?
101. Discuss advantages and disadvantages of the Buffer cache ?
102. Explain different types of OS with examples of each ?
103. What is an Operating System? Write down its desirable characteristics ?
104. Define a deadlock ? Write down the conditions responsible for deadlock? How can we recover from deadlock ?
105. What are the various services provided by Operating system ?
106. What do you mean by PCB? Where is it used? What are its contents? Explain.

107. What is Binary and Counting semaphores ?
108. What is File? What are the different File attribute and operations?
109. What are System call? Explain briefly about various types of system call provided by an Operating System?
110. Describe necessary conditions for deadlocks situation to arise.
111. What are points to be consider in file system design? Explain linked list allocation in detail?
112. Write a Semaphore solution for dining Philosopher's problem?
113. Consider the following page reference string:1,2,3,4,5,3,4,1,2,7,8,7,8,9,7,8,9,5,4,5.
How many page faults would occur for the following replacement algorithm, assuming four frames:a) FIFO b) LRU
114. Explain CPU schedulers in operating system?
115. Write the different state of a process with the help of Process state diagram?
116. What is Mutex in operating system?
117. Explain Network operating system?
118. What do you mean by paging in operating system ?