

[Dashboard](#) / [Courses](#) / [Winter 2020-21](#) / [BTech Sem-4](#) / [CS 206](#) / [Pre-End Sem \(15%\) Quiz](#) / [Pre-End Sem \(15%\)](#)**Started on** Tuesday, 6 April 2021, 11:20 AM**State** Finished**Completed on** Tuesday, 6 April 2021, 12:18 PM**Time taken** 57 mins 57 secs**Marks** 45.00/64.00**Grade** 10.55 out of 15.00 (70%)

Question 1

Correct

Mark 2.00 out of 2.00

A total of 9 units of a resource type available, and given the safe state shown below, which of the following sequence will be a safe state?

Process	R1	
	Allocated	Maximum
P1	2	7
P2	1	6
P3	2	5
P4	1	4

- ☐ 1. None of these
- ☐ 2. <P4, P1, P3, P2>
- ☐ 3. <P4, P2, P1, P3>
- ☒ 4. <P3, P1, P2, P4>
- ☐ 5. <P4, P2, P3, P1>



The correct answer is:

<P3, P1, P2, P4>

Question **2**

Incorrect

Mark 0.00 out of 2.00

Consider a logical address space of 8 pages of 1024 words mapped into memory of 32 frames. How many bits are there in the logical address and the physical address respectively?

- ☐ a. 13 and 20 bits
- ☐ b. 10 and 15 bits
- ☐ c. 13 and 15 bits
- ☒ d. 15 and 13 bits

✗

The correct answer is:
13 and 15 bits

Question **3**

Correct

Mark 1.00 out of 1.00

Deadlock prevention is a set of methods :

- a. to ensure that at least one of the necessary conditions cannot hold
- b. to ensure that all of the necessary conditions do not hold
- c. to decide if the requested resources for a process have to be given or not
- d. to recover from a deadlock

- ☒ 1. (a) only
- ☐ 2. (b) only
- ☐ 3. (c) and (d) only
- ☐ 4. (d) only
- ☐ 5. None of these

✓

The correct answer is:
(a) only

Question 4

Incorrect

Mark 0.00 out of 1.00

Match the memory allocation techniques from the first set to their correct workings in the second set.

Set-I

(M1) Best-Fit

(M2) First-Fit

(M3) Worst-Fit

Set-II

(W1) Allocate the first hole that is big enough

(W2) Allocate the largest hole

(W3) Allocate the smallest hole that is big enough

- ☐ 1. M1-W2, M2-W1, M3-W3
- ☒ 2. M1-W1, M2-W3, M3-W2
- ☐ 3. None of these
- ☐ 4. M1-W3, M2-W1, M3-W2

✗

The correct answer is:

M1-W3, M2-W1, M3-W2

Question 5

Incorrect

Mark 0.00 out of 1.00

Which of the following statements are true ?

- a. External Fragmentation exists when there is enough total memory space to satisfy a request and the available space is non-contiguous.
- b. Memory Fragmentation can be internal as well as external.
- c. One solution to external Fragmentation is compaction.

- ☐ 1. (a) only
- ☐ 2. (c) only
- ☒ 3. None of these
- ☐ 4. (a) and (b) only
- ☐ 5. All (a), (b) and (c)

✗

The correct answer is:

All (a), (b) and (c)

Question **6**

Correct

Mark 1.00 out of 1.00

In contiguous memory allocation :

☒ 1. each process is contained in a single contiguous section of memory ✓

☐ 2. all processes are contained in a single contiguous section of memory

☐ 3. the memory space is contiguous

The correct answer is:

each process is contained in a single contiguous section of memory

Question **7**

Correct

Mark 1.00 out of 1.00

External fragmentation will not occur when

☐ 1. best-fit is used

☐ 2. first-fit is used

☒ 3. no matter which algorithm is used, it will always occur ✓

☐ 4. worst-fit is used

The correct answer is:

no matter which algorithm is used, it will always occur

Question 8

Correct

Mark 1.00 out of 1.00

Assume every process requires 3 seconds of service time in a system with single processor.

If new processes are arriving at the rate of 20 processes per minute, then estimate the fraction of time CPU is busy in system?

- ☐ a. 30%
- ☐ b. 20%
- ☐ c. 50%
- ☒ d. 100%



The correct answer is:

100%

Question 9

Correct

Mark 1.00 out of 1.00

Message passing system allows processes to_____

- ☐ a. None of these
- ☐ b. share data
- ☒ c. communicate with each other without sharing same address space
- ☐ d. communicate with one another by resorting to shared data



The correct answer is:

communicate with each other without sharing same address space

Question **10**

Correct

Mark 1.00 out of 1.00

The page table contains

- ☐ 1. page offset
- ☒ 2. base address of each page in physical memory
- ☐ 3. page size and page offset
- ☐ 4. page size



The correct answer is:

base address of each page in physical memory

Question **11**

Correct

Mark 1.00 out of 1.00

Non-preemptive version of round-robin scheduling is

- ☐ a. Shortest Remaining Time First
- ☐ b. Longest Remaining Time
- ☒ c. FCFS
- ☐ d. Shortest Job First



The correct answer is:

FCFS

Question **12**

Correct

Mark 1.00 out of 1.00

Which of the following are the optimization criterion in the design of a CPU scheduling algorithm?

- (1) Minimizing of CPU Utilization
- (2) Maximizing CPU utilization
- (3) Maximizing throughput
- (4) Minimizing turnaround time
- (5) Maximizing turnaround time
- (6) Minimizing waiting time

- ☒ a. (2), (3), (4) and (6)
- ☐ b. (1) and (3) only
- ☐ c. (1), (3), (5) and (6) only
- ☐ d. (2) and (3) only
- ☐ e. (3), (4) and (6) only



The correct answer is:

(2), (3), (4) and (6)

Question **13**

Correct

Mark 2.00 out of 2.00

Consider five memory partitions of 100KB, 500KB, 200KB, 300 KB, 600KB (in order) and four process requests of 200 KB, 410 KB, 122 KB, and 436 KB(in order).

Determine which memory allocation can optimally satisfy this requirement and make the most efficient uses of memory.

- ☒ a. best-fit
- ☐ b. first fit
- ☐ c. worst-fit
- ☐ d. None-of these



The correct answer is:

best-fit

Question **14**

Correct

Mark 1.00 out of 1.00

In which of the following four necessary conditions for deadlock processes claim exclusive control of the resources they require?

- ☐ 1. Circular wait
- ☐ 2. Hold and wait
- ☐ 3. preemption
- ☒ 4. Mutual exclusion



The correct answer is:
Mutual exclusion

Question **15**

Incorrect

Mark 0.00 out of 1.00

Which of the following process scheduling algorithm may not lead to starvation

- ☒ a. Round-robin only
- ☐ b. FIFO only
- ☐ c. Shortest job first only
- ☐ d. FIFO and Round Robin



The correct answer is:
FIFO and Round Robin

Question **16**

Correct

Mark 1.00 out of 1.00

Which is not a necessary condition for deadlock?

- ☒ a. Preemption only
- ☐ b. Circular wait and Mutual exclusion
- ☐ c. No Preemption, Mutual Exclusion and Hold-Wait
- ☐ d. Hold and Wait only



The correct answer is:
Preemption only

Question **17**

Correct

Mark 2.00 out of 2.00

Consider the following process and resource requirement of each process. There are two types of resources R1 and R2.

Process	Allocated		Maximum	
	R1	R2	R1	R2
P1	1	1	2	3
P2	1	1	3	2
P3	2	1	4	4

Predict the state of this system, assuming that there are a total of 5 instances of resource type R1 and 4 instances of resource type R2.

- ☒ 1. Unsafe state
- ☐ 2. safe state
- ☐ 3. Can go on safe or unsafe based on sequence
- ☐ 4. Deadlock state



The correct answers are:

Unsafe state,

Deadlock state

Question **18**

Incorrect

Mark 0.00 out of 1.00

At a particular time of computation, the value of a counting semaphore is 15.

Then 12 P operations and "x" V operations were performed on this semaphore.

If the final value of semaphore is 6, x will be:

- ☐ a. 10
- ☐ b. 3
- ☒ c. 5
- ☐ d. 4



The correct answer is:

3

Question 19

Correct

Mark 2.00 out of 2.00

Let P_i and P_j be two processes, R be the set of variables read from memory, and W be the set of variables written to memory. For the concurrent execution of two processes P_i and P_j which of the following conditions is not true?

- a. $R(P_i) \cap W(P_j) = \phi$
- b. $W(P_i) \cap R(P_j) = \phi$
- c. $W(P_i) \cap W(P_j) = \phi$
- d. $R(P_i) \cap R(P_j) = \phi$

- ☐ a. (b)
- ☐ b. (a)
- ☐ c. (c)
- ☒ d. (d)



The correct answer is:

(d)

Question 20

Correct

Mark 1.00 out of 1.00

The first fit, best fit and worst fit are strategies to select a

- a. process from a queue to put in memory
- b. processor to run the next process
- c. free hole from a set of available holes
- d. All of these

- ☐ 1. (d)
- ☒ 2. (c)
- ☐ 3. (a)
- ☐ 4. (b)



The correct answer is:

(c)

Question **21**

Incorrect

Mark 0.00 out of 2.00

Consider three CPU intensive processes, which require 10, 25, 15 and 5 units and arrive at times 0, 5, 10 and 30 respectively.

How many context switches are needed if shortest remaining time first is implemented? Context switch at 0 is included but context switch at end is ignored

- ☐ a. 4
- ☒ b. 3
- ☐ c. 5
- ☐ d. 6



The correct answer is:

5

Question **22**

Correct

Mark 1.00 out of 1.00

Dining Philosopher's problem is a:

- (a) Producer Consumer Problem
- (b) Classical Inter-Process Communication Problem
- (c) Starvation problem
- (d) None of the above

- ☒ i. (b) only
- ☐ ii. (d)
- ☐ iii. (a) and (c) only
- ☐ iv. (a) and (b)



The correct answer is:

(b) only

Question **23**

Correct

Mark 1.00 out of 1.00

What is compaction?

- ☒ 1. a technique of overcoming external fragmentation
- ☐ 2. a paging technique
- ☐ 3. a technique for overcoming fatal error
- ☐ 4. a technique for overcoming internal fragmentation



The correct answer is:

a technique of overcoming external fragmentation

Question **24**

Correct

Mark 1.00 out of 1.00

Program always deals with logical address.

Select one:

- ☒ True
- ☐ False

The correct answer is 'True'.

Question **25**

Correct

Mark 1.00 out of 1.00

In fixed sized partitions, when memory is divided into several partitions then each partition may contain

- ☐ 1. multiple process at once
- ☐ 2. at least one process
- ☒ 3. exactly one process



The correct answer is:

exactly one process

Question **26**

Correct

Mark 1.00 out of 1.00

Consider Peterson's algorithm for mutual exclusion between two concurrent processes i and j. The program executed by process i is shown below. Initially, flag[i] = flag[j] = false.

```
while(true){
```

```
    flag[i] = true;
    turn = j;
    while ( P ) do no-op;
    Enter critical section,
    perform actions,
    exit critical section
    flag[i] = false;
    Perform other non-critical section actions.
}
```

For the program to guarantee mutual exclusion, the *predicate P* in the while loop should be

- ☐ a. flag[i] = true and turn = i
- ☒ b. flag[j] = true and turn = j
- ☐ c. flag[j] = true and turn = i
- ☐ d. flag[i] = true and turn = j



The correct answer is:

flag[j] = true and turn = j

Question **27**

Correct

Mark 1.00 out of 1.00

When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place is called _____

- ☐ a. essential condition
- ☐ b. dynamic condition
- ☐ c. critical condition
- ☒ d. race condition



The correct answer is:

race condition

Question **28**

Incorrect

Mark 0.00 out of 1.00

Consider a system having single resource. In such system deadlock will occur

- ☐ a. Insufficient information, therefore none of these
- ☒ b. if there are more than two processes competing for that resources
- ☐ c. if there is a single process competing for that resources
- ☐ d. if there are only two processes competing for that resources

✗

The correct answer is:

Insufficient information, therefore none of these

Question **29**

Incorrect

Mark 0.00 out of 2.00

Consider a 32-bit machine where 2-level paging scheme is used. If the hit ratio to TLB is 98%, and it takes 20 nanosecond to search the TLB and 100 nanoseconds to access the main memory what is effective memory access time in nanoseconds?

- ☐ a. 132
- ☐ b. 128
- ☐ c. 124
- ☐ d. 130
- ☒ e. None of these

✗

The correct answer is:

124

Question **30**

Incorrect

Mark 0.00 out of 1.00

Consider the following statements about user level threads and kernel level threads.

Which one of the following statement is True?

- (a) Context switch time is longer for kernel level threads than for user level threads
- (b) User level threads do not need any hardware support
- (c) Related kernel level threads can be scheduled on different processors in a multi-processor system.
- (d) Blocking one kernel level thread blocks all user level threads (many-to-many model).

- ☐ i. (a) only
- ☐ ii. (a), (b), (c) and (d)
- ☐ iii. (a), (b) and (c) only
- ☒ iv. (d) only



The correct answer is:

(a), (b) and (c) only

Question **31**

Correct

Mark 1.00 out of 1.00

If there are 32 segments, each size 1 k bytes, then the logical address should have

- ☒ a. 15 bits
- ☐ b. 13 bits
- ☐ c. 16 bits
- ☐ d. 20 bits



The correct answer is:

15 bits

Question **32**

Incorrect

Mark 0.00 out of 2.00

Suppose we want to synchronize two concurrent processes P and Q.

We are using binary semaphores S and T. The code for the processes P and Q is shown below.

P:	Q:
while(1)	while(1)
{	{
X:_____	U:_____
print(0);	print(1);
print(1);	print(0);
Y:_____	V:_____
}	}

Synchronization statements can be inserted only at points X, Y, U and V. **Which of the following will always lead to an output starting with '011001100110' ?**

- ☐ 1. P(S) at X, V(T) at Y, P(T) at U, V(S) at V, S and T initially 1
- ☐ 2. P(S) at X, V(S) at Y, P(T) at U, V(T) at V, S initially 1, and T initially 0
- ☐ 3. P(S) at X, V(T) at Y, P(T) at U, V(S) at V, S initially 1, and T initially 0
- ☒ 4. P(S) at X, V(S) at Y, P(T) at U, V(T) at V, S and T initially 1

✗

The correct answer is:

P(S) at X, V(T) at Y, P(T) at U, V(S) at V, S initially 1, and T initially 0

Question **33**

Correct

Mark 2.00 out of 2.00

Which of the following is NOT a valid deadlock prevention scheme?

- a. Release all resources before requesting a new resource.
- b. Number the resources uniquely and never request a lower numbered resource than the last one requested.
- c. Never request a resource after releasing any resource.
- d. Request and all required resources be allocated before execution.

- ☐ 1. (a) , and (c) only
- ☐ 2. None of these
- ☒ 3. (c) only
- ☐ 4. (a) only
- ☐ 5. (d) only



The correct answer is:

(c) only

Question **34**

Correct

Mark 1.00 out of 1.00

In a system if there are n tasks whose run times are known to us.

Let us consider r_1, r_2, \dots, r_n be the run times on an uniprocessor.

which of the following scheduling algorithm will result in the maximum throughput?

- ☒ a. shortest job first
- ☐ b. shortest remaining time first
- ☐ c. round robin
- ☐ d. First come first serve



The correct answer is:

shortest job first

Question **35**

Correct

Mark 1.00 out of 1.00

Which of the following conditions must be satisfied to solve the critical section problem?

- ☐ a. Mutual Exclusion only
- ☐ b. Progress and Bounded waiting only
- ☒ c. Mutual Exclusion, Progress and Bounded Waiting
- ☐ d. Progress only



The correct answer is:

Mutual Exclusion, Progress and Bounded Waiting

Question **36**

Correct

Mark 1.00 out of 1.00

If the wait for graph contains a cycle _____

- ☐ a. then the system is in a safe state
- ☐ b. either deadlock exists or system is in a safe state
- ☐ c. then a deadlock does not exist
- ☒ d. then a deadlock exists



The correct answer is:

then a deadlock exists

Question **37**

Correct

Mark 1.00 out of 1.00

TestAndSet instruction is executed _____

- ☐ a. After a particular process
- ☐ b. periodically
- ☒ c. atomically
- ☐ d. none of the above



The correct answer is:

atomically

Question **38**

Incorrect

Mark 0.00 out of 2.00

A specific editor has 200 K of program text, 15 K of initial stack, 50 K of initialized data, and 70 K of bootstrap code. If five editors are started simultaneously, they have their own 50 K of private data, how much physical memory is needed if shared page concept is used?

- ☐ a. 585 K
- ☐ b. 1675 K
- ☐ c. 1135 K
- ☐ d. 385 K
- ☒ e. 335 K



The correct answer is:
585 K

Question **39**

Correct

Mark 1.00 out of 1.00

The wait-for graph is a deadlock detection algorithm that is applicable when

- a. all resources have a single instance
- b. all resources have multiple instances

- ☐ 1. (b) only
- ☐ 2. (a) and (b) both
- ☐ 3. none
- ☒ 4. (a) only



The correct answer is:
(a) only

Question **40**

Incorrect

Mark 0.00 out of 1.00

At particular time, the value of a counting semaphore is 20, it will become 13 after:

- (a) 3 Signal operations
- (b) 7 Wait operations
- (c) 5 Signal operations and 2 Wait operations
- (d) 2 Signal operations and 9 Wait operations

Which of the following option is correct?

- ☐ i. (d) only
- ☒ ii. (a) and (c) both
- ☐ iii. only (a)
- ☐ iv. (b) and (d) both
- ☐ v. only (b)

✗

The correct answer is:

(b) and (d) both

Question **41**

Correct

Mark 2.00 out of 2.00

In a 64-bit machine, with 2 GB RAM, and 8 KB page size, how many entries will be there in the page table if it is inverted?

- ☒ a. 18
- ☐ b. 33
- ☐ c. 20
- ☐ d. 51

✓

The correct answer is:

18

Question **42**

Correct

Mark 2.00 out of 2.00

Consider a system having 'm' resources of the same type. The resources are shared by 3 processes A, B, C, which have peak time demands of 3, 4, 6 respectively. The minimum value of 'm' that ensures that deadlock will never occur is

- ☐ a. 13
- ☐ b. 12
- ☐ c. 14
- ☒ d. 11



The correct answer is:

11

Question **43**

Correct

Mark 1.00 out of 1.00

To ensure that the hold and wait condition never occurs in the system, it must be ensured that :

- a. whenever a resource is requested by a process, it is not holding any other resources
- b. each process must request and be allocated all its resources before it begins its execution
- c. a process can request resources only when it has none
- d. all of the above

- ☒ 1. (d)
- ☐ 2. (c) only
- ☐ 3. (b) only
- ☐ 4. (a) only



The correct answer is:

(d)

Question **44**

Correct

Mark 2.00 out of 2.00

If the page size in a 32-bit machine is 4K bytes and each entry in the page table need 4 bytes then the size of page table is

- ☐ a. 16MB
- ☒ b. 4 MB
- ☐ c. 8 KB
- ☐ d. 2 MB



The correct answer is:

4 MB

Question **45**

Incorrect

Mark 0.00 out of 1.00

In fixed sized partition, the degree of multiprogramming is bounded by

- a. the number of partitions
- b. the CPU utilization
- c. the memory size
- d. All of these

- ☐ 1. (b)
- ☒ 2. (d)
- ☐ 3. (c)
- ☐ 4. (a)



The correct answer is:

(a)

Question **46**

Correct

Mark 1.00 out of 1.00

Threads share registers, program counter and data files.

Select one:

- ☐ True
- ☒ False ✓

The correct answer is 'False'.

Question **47**

Correct

Mark 2.00 out of 2.00

An operating system uses Shortest Remaining Time first (SRT) process scheduling algorithm. Consider the arrival times and execution times for the following processes:

Process	Arrival time	Burst Time
P1	0	20
P2	15	25
P3	30	10
P4	45	15

What is the total waiting time for process P4?

- ☐ a. 45
- ☐ b. 0
- ☒ c. 10 ✓
- ☐ d. 15

The correct answer is:
10

Question **48**

Correct

Mark 1.00 out of 1.00

Consider the following three processes with the arrival time and CPU burst time given in milliseconds:

Process	Arrival time	Burst Time
---------	--------------	------------

P1	0	7
----	---	---

P2	1	4
----	---	---

P3	2	8
----	---	---

Find the completion time of each process if preemptive SJF scheduling approach is followed.

- ☐ a. None of these
- ☒ b. P1 =11, P2=5, P3 = 19
- ☐ c. P1 =7, P2=13, P3 = 21
- ☐ d. P2 =4, P3=12, P1 = 19
- ☐ e. P1 =7, P2=11, P3 = 19



The correct answer is:

P1 =11, P2=5, P3 = 19

Question **49**

Incorrect

Mark 0.00 out of 1.00

If a particular program can legally access all physical addresses from 300040 through 420940(inclusive), what will be the value stored in its LIMIT register?

- ☒ a. 420940
- ☐ b. 300040
- ☐ c. 179140
- ☐ d. 120900



The correct answer is:

120900

Question **50**

Correct

Mark 1.00 out of 1.00

The address of a page table in memory is pointed by

- ☐ 1. program counter
- ☐ 2. page table limit register
- ☒ 3. page table base register
- ☐ 4. stack pointer



The correct answer is:
page table base register

[◀ Virtual Memory Part-5](#)

Jump to...

[Memory Management Part 1 ▶](#)

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Started on	Wednesday, 3 March 2021, 10:08 AM
State	Finished
Completed on	Wednesday, 3 March 2021, 10:46 AM
Time taken	38 mins 8 secs
Marks	36.00/40.00
Grade	9.00 out of 10.00 (90%)

Question **1**

Correct

Mark 1.00 out of 1.00

Message passing system allows processes to_____

- ☒ a. communicate with each other without sharing same address space
- ☐ b. share data
- ☐ c. communicate with one another by resorting to shared data
- ☐ d. None of these

Question **2**

Correct

Mark 2.00 out of 2.00

Two processes, P1 and P2, need to access a critical section of code. Consider the following synchronization construct used by the processes. Here, x1 and x2 have shared variables, which are initialized to false. Which one of the following statements is TRUE about the above construct?

Process 1

Process 2

```
while(true)
{
x1 = true;
while(x2 == true);
Critical section
x1 = false;
}
Remainder Section
```

```
while(true)
{
x2 =true;
while(x1==true);
Critical section
x2=false;
}
Remainder Section
```

- ☐ a. It prevents from deadlock
- ☐ b. It does not ensure mutual exclusion.
- ☒ c. It ensures mutual exclusion but does not prevent deadlocks
- ☐ d. It ensures both deadlock prevention and mutual exclusion



Question **3**

Correct

Mark 1.00 out of 1.00

Which of the following scheduling algorithms may cause starvation ?

- (a). First-come-first-served
- (b). Round Robin
- (c). Shortest job next
- (d). Priority

- ☐ i. (c) only
- ☐ ii. (d) only
- ☐ iii. (a) and (b) only
- ☒ iv. (c) and (d) only

Question **4**

Correct

Mark 1.00 out of 1.00

Consider the following statements about user level threads and kernel level threads.

Which one of the following statement is True?

- (a) Context switch time is longer for kernel level threads than for user level threads
- (b) User level threads do not need any hardware support
- (c) Related kernel level threads can be scheduled on different processors in a multi-processor system.
- (d) Blocking one kernel level thread blocks all user level threads (many-to-many model).

- ☒ i. (a), (b) and (c) only
- ☐ ii. (d) only
- ☐ iii. (a) only
- ☐ iv. (a), (b), (c) and (d)



Question **5**

Correct

Mark 1.00 out of 1.00

Which are the correct definition of a valid process transition in an operating system?

- (a) Dispatch:- ready->running
- (b) Block:- running->ready
- (c) Wake-up:- blocked->ready
- (d) Timer run-out:- running->ready

- ☐ i. (a) and (d) only
- ☐ ii. (d) only
- ☐ iii. (b) only
- ☒ iv. (a), (c) and (d) only

Question **6**

Correct

Mark 1.00 out of 1.00

We can construct a resource allocation graph to find whether any process in the system is in deadlocked state or not.

Among the following options, which one is true?

- (a) If each resource type has exactly one instance, deadlock exists in the system if and only if the Resource allocation graph contains a cycle.
- (b) If each resource type has several instances, then a cycle must imply that a deadlock has occurred.

- ☐ 1. both are false
- ☐ 2. None of these
- ☐ 3. (a) is false, and (b) is true
- ☐ 4. both are true
- ☒ 5. (a) is true, and (b) is false



Question **7**

Correct

Mark 2.00 out of 2.00

Consider three processes T1, T2 and T3 are sharing a semaphore (S).

Initial value of the semaphore is 1.

Let us assume that negative value of semaphore represents the number of processes that are waiting in queue.

Now assume processes access the semaphore in following order :

- (a) T2 needs to access
- (b) T1 needs to access
- (c) T3 needs to access
- (d) T2 exits critical section
- (e) T1 exits critical section

The final value of semaphore will be :

- ☐ i. -1
- ☐ ii. 1
- ☒ iii. 0
- ☐ iv. -2

Question **8**

Correct

Mark 1.00 out of 1.00

Non-preemptive version of round-robin scheduling is

- ☒ a. FCFS
- ☐ b. Shortest Remaining Time First
- ☐ c. Shortest Job First
- ☐ d. Longest Remaining Time

Question **9**

Correct

Mark 2.00 out of 2.00

Four jobs to be executed on a single processor system arrive at time 0 in the order A, B, C, D .

Their burst CPU time requirements are 4, 3, 8, 1 time units respectively.

The completion time of A under round robin scheduling with time slice of one time unit is

Answer: 11



Question **10**

Correct

Mark 1.00 out of 1.00

Assume every process requires 3 seconds of service time in a system with single processor.

If new processes are arriving at the rate of 20 processes per minute, then estimate the fraction of time CPU is busy in system?

- ☐ a. 20%
- ☒ b. 100%
- ☐ c. 30%
- ☐ d. 50%

Question **11**

Correct

Mark 1.00 out of 1.00

When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place is called _____

- ☐ a. critical condition
- ☐ b. essential condition
- ☐ c. dynamic condition
- ☒ d. race condition

Question **12**

Correct

Mark 1.00 out of 1.00

Given a set of 4 processes (P), arrival time (AT) and burst time (CT) of each process. Time quantum is 2.

P P1 P2 P3 P4

AT:- 0 1 2 3

CT:- 5 4 2 2

How many context switches are needed if the operating system implements a round robin first scheduling algorithm? Do not count the context switches at time zero and at the end.

- ☐ a. 8
- ☐ b. 6
- ☒ c. None of these
- ☐ d. 9



Question **13**

Correct

Mark 1.00 out of 1.00

At a particular time of computation, the value of a counting semaphore is 15.
Then 12 P operations and "x" V operations were performed on this semaphore.
If the final value of semaphore is 6, x will be:

- ☐ a. 10
- ☒ b. 3
- ☐ c. 5
- ☐ d. 4

Question **14**

Correct

Mark 1.00 out of 1.00

Consider the 3 processes, P1, P2 and P3.

Processes- P1 P2 P3

Arrival time- 0 3 5

Burst Time- 5 7 4

The completion order of the 3 processes under the policies FCFS and RR (consider time quantum of 2 time unit) are

- ☐ a. FCFS: P1, P3, P2
RR: P1, P2, P3
- ☐ b. FCFS: P1, P2, P3
RR: P1, P2, P3
- ☒ c. FCFS: P1, P2, P3
RR: P1, P3, P2
- ☐ d. FCFS: P1, P3, P2
RR: P1, P3, P2

Question **15**

Correct

Mark 1.00 out of 1.00

Which of the following process scheduling algorithm may not lead to starvation

- ☐ a. Shortest job first only
- ☒ b. FIFO and Round Robin
- ☐ c. FIFO only
- ☐ d. Round-robin only



Question **16**

Correct

Mark 1.00 out of 1.00

Which of the following conditions must be satisfied to solve the critical section problem?

- ☒ a. Mutual Exclusion, Progress and Bounded Waiting
- ☐ b. Mutual Exclusion only
- ☐ c. Progress and Bounded waiting only
- ☐ d. Progress only

Question **17**

Correct

Mark 1.00 out of 1.00

Which of the following is not a necessary condition for deadlock?

- ☒ a. Preemption
- ☐ b. Hold and Wait
- ☐ c. Mutual Exclusion
- ☐ d. Circular wait

Question **18**

Correct

Mark 2.00 out of 2.00

At particular time, the value of a counting semaphore is 20, it will become 13 after:

- (a) 3 Signal operations
- (b) 7 Wait operations
- (c) 5 Signal operations and 2 Wait operations
- (d) 2 Signal operations and 9 Wait operations

Which of the following option is correct?

- ☐ i. only (b)
- ☒ ii. (b) and (d) both
- ☐ iii. only (a)
- ☐ iv. (a) and (c) both
- ☐ v. (d) only



Question 19

Correct

Mark 1.00 out of 1.00

Threads share registers, program counter and data files.

Select one:

- ☐ True
- ☒ False ✓

Question 20

Incorrect

Mark 0.00 out of 2.00

Consider the Producer-consumer problem where synchronization issue is resolved by semaphores *empty*, *full* and *mutex*.

Initial value of *empty* = N;

Initial value of *full* = 0;

Initial value of *mutex* = 1;

Producer process

```
while(true)
{
    item=item_produce();
    A:_____
    wait(mutex);
    //insert the item into buffer
    Signal(mutex);
    B:_____
}
```

Consumer Process

```
while(true)
{
    C:_____
    wait(mutex);
    //consume the item from buffer
    Signal(mutex);
    D:_____
}
```

What would be the correct ordering of *wait()* and *signal()* operations on *empty* and *full* semaphore so that only one process can access the buffer at a time.

- ☐ 1. A:-wait(empty), B:- signal(empty), C:- wait(full), D:- signal(full)
- ☒ 2. A:-wait(full), B:- signal(empty), C:- wait(empty), D:- signal(full)
- ☐ 3. A:-wait(empty), B:- signal(full), C:- wait(full), D:- signal(empty)
- ☐ 4. None

✗

Question **21**

Incorrect

Mark 0.00 out of 1.00

Consider a system consists a set of active processes P and a set resources R.

$P = \{P1, P2, P3\}$

$R = \{R1, R2, R3, R4\}$

R1 and R3 has only one instance, R2 has 2 instances, and R4 has 3 instances.

Now we have given the properties as

P1 is holding one instance of R2, and requesting one instance of R1

P2 is holding one instance of R1 and one instance of R2, and requesting an instance of R3.

P3 is holding one instance of R3 and requesting an instance of R2.

Which one is true?

- ☐ a. Deadlock must exist
- ☐ b. None of these
- ☒ c. Cycle exists but no deadlock
- ☐ d. No cycle, thus no deadlock

Question **22**

Correct

Mark 1.00 out of 1.00

TestAndSet instruction is executed _____

- ☐ a. none of the above
- ☒ b. atomically
- ☐ c. After a particular process
- ☐ d. periodically

Question **23**

Correct

Mark 1.00 out of 1.00

Which of the following two operations are provided by the IPC facility?

- ☐ a. send and delete message
- ☐ b. delete and receive message
- ☒ c. send and receive message
- ☐ d. write and delete message



Question **24**

Correct

Mark 2.00 out of 2.00

Let us consider two processes P1 and P2 need semaphores for accessing their critical sections whenever needed, as given below.

Assume, the initial values of shared boolean variables S1 and S2 are randomly assigned.

Process P1

Process P2

```
while (S1 == S2);  
Critical Section  
S1 = S2;  
Remainder Section
```

```
while(S1!=S2);  
Critical Section  
S2 =not(S1);  
Remainder Section
```

- ☐ a. Both progress and mutual exclusion
- ☐ b. Progress but not mutual exclusion
- ☐ c. neither progress nor mutual exclusion
- ☒ d. Mutual Exclusion but not progress

Question **25**

Incorrect

Mark 0.00 out of 1.00

Dining Philosopher's problem is a:

- (a) Producer Consumer Problem
- (b) Classical Inter-Process Communication Problem
- (c) Starvation problem
- (d) None of the above

- ☐ i. (b) only
- ☒ ii. (a) and (c) only
- ☐ iii. (a) and (b)
- ☐ iv. (d)



Question 26

Correct

Mark 2.00 out of 2.00

Consider Peterson's algorithm for mutual exclusion between two concurrent processes i and j. The program executed by process i is shown below. Initially, flag[i] = flag[j] = false.

```
while(true){
```

```
    flag [ i ] = true;
    turn = j;
    while ( P ) do no-op;
    Enter critical section,
    perform actions,
    exit critical section
    flag [ i ] = false;
    Perform other non-critical section actions.
}
```

For the program to guarantee mutual exclusion, the *predicate P* in the while loop should be

- ☐ a. flag [i] = true and turn = i
- ☒ b. flag [j] = true and turn = j
- ☐ c. flag [j] = true and turn = i
- ☐ d. flag [i] = true and turn = j



Question 27

Correct

Mark 2.00 out of 2.00

Consider the following three processes with the arrival time and CPU burst time given in milliseconds:

Process	Arrival time	Burst Time
---------	--------------	------------

P1	0	7
----	---	---

P2	1	4
----	---	---

P3	2	8
----	---	---

Find the completion time of each process if preemptive SJF scheduling approach is followed.

- ☐ a. P1 =7, P2=13, P3 = 21
- ☒ b. P1 =11, P2=5, P3 = 19
- ☐ c. P2 =4, P3=12, P1 = 19
- ☐ d. None of these
- ☐ e. P1 =7, P2=11, P3 = 19



Question **28**

Correct

Mark 1.00 out of 1.00

If the quantum time of round robin algorithm is very large, then it is equivalent to:

- ☐ a. Shortest-job first
- ☒ b. First-Come First Serve
- ☐ c. None of the above

Question **29**

Correct

Mark 2.00 out of 2.00

The following program consists of 3 concurrent processes and 3 binary semaphores.

The semaphores are initialized as $S_0 = 1$, $S_1 = 0$, $S_2 = 0$.

Process 1	Process 2	Process 3
<pre>while(true) { P(S0); print '0'; V(S1); V(S2); }</pre>	<pre>P(S1); V(S0);</pre>	<pre>P(S2); V(S0);</pre>

How many times will process P0 print '0'?

- ☐ a. Exactly once
- ☐ b. Exactly twice
- ☐ c. Exactly thrice
- ☒ d. At least twice



Question **30**

Correct

Mark 2.00 out of 2.00

Which of the following are the optimization criterion in the design of a CPU scheduling algorithm?

- (1) Minimizing of CPU Utilization
- (2) Maximizing CPU utilization
- (3) Maximizing throughput
- (4) Minimizing turnaround time
- (5) Maximizing turnaround time
- (6) Minimizing waiting time

- ☐ a. (2) and (3) only
- ☐ b. (3), (4) and (6) only
- ☒ c. (2), (3), (4) and (6)
- ☐ d. (1), (3), (5) and (6) only
- ☐ e. (1) and (3) only

[◀ Deadlock Part 2](#)[Process Synchronization Part 1 ▶](#)

[Dashboard](#) / [Courses](#) / [Winter 2020-21](#) / [BTech Sem-4](#) / [CS 206](#) / [Quiz](#) / [Quiz before mid-sem Group \(A+B\)](#)

Started on Thursday, 25 February 2021, 8:38 AM

State Finished

Completed on Thursday, 25 February 2021, 8:42 AM

Time taken 4 mins 3 secs

Grade 3.00 out of 5.00 (60%)

Question **1**

Incorrect

Mark 0.00 out of 1.00

Which of the following is/are shared by all the threads in a process?

- (a). Program counter
- (b). Stack
- (c). Files
- (d). Registers

- ☐ i. (a) and (b)
- ☐ ii. (c) only
- ☒ iii. (c) and (d)
- ☐ iv. None



The correct answer is:

(c) only

Question **2**

Correct

Mark 1.00 out of 1.00

A process executes the code

```
fork();  
fork();  
fork();
```

The total number of **child** processes created is .

The correct answer is: 7

Question **3**

Incorrect

Mark 0.00 out of 1.00

User level threads are threads that are visible to the programmer and are unknown to the kernel. The operating system kernel supports and manages kernel level threads.

Three different types of models relate user and kernel level threads.

Which of the following statements is/are true ?

- (a)** (i) The Many - to - one model maps many user threads to one kernel thread
(ii) The one - to - one model maps one user thread to one kernel thread
(iii) The many - to - many model maps many user threads to smaller or equal kernel threads
- (b)** (i) Many - to - one model maps many kernel threads to one user thread
(ii) One - to - one model maps one kernel thread to one user thread
(iii) Many - to - many model maps many kernel threads to smaller or equal user threads

- ☒ a. (a) is false; (b) is true
- ☐ b. both (a) and (b) are true
- ☐ c. both (a) and (b) are false
- ☐ d. (a) is true, (b) is false




The correct answer is:

(a) is true, (b) is false

Question **4**

Correct

Mark 1.00 out of 1.00

The Bounded buffer problem is also known as  problem.

The correct answer is: producer consumer

Question **5**

Correct

Mark 1.00 out of 1.00

Assuming the initial value of a counting semaphore, S is 5.

During wait operation, semaphore can take negative value.

Then 12 times wait(S) operations and "x" times signal(S) operations were performed.

If the final value of semaphore is 2, x will be:

- ☐ a. None
- ☒ b. 9
- ☐ c. 7
- ☐ d. 8
- ☐ e. 10



The correct answer is:

9

[◀ Signed Policies](#)

Jump to...

[Quiz before mid-sem Group \(C+D\) ▶](#)

[Dashboard](#) / [Courses](#) / [Winter 2020-21](#) / [BTech Sem-4](#) / [CS 206](#) / [Demo Quiz for Proctored Environment](#) / [Quizz](#)**Started on** Sunday, 25 April 2021, 12:03 PM**State** Finished**Completed on** Sunday, 25 April 2021, 12:09 PM**Time taken** 5 mins 13 secs**Marks** 3.00/25.00**Grade** 1.20 out of 10.00 (12%)Question **1**

Incorrect

Mark 0.00 out of 4.00

Consider the following set of processes P1, P2, and P3. Their CPU burst times are as follows.

Process	CPU Burst (in ms)
P1	30
P2	6
P3	8

What is the Average Waiting Time using a Round Robin Scheduling algorithm? Assume a time quantum of 5ms.

Answer: 20



The correct answer is: 15

Question **2**

Incorrect

Mark 0.00 out of 4.00

Consider the following set of processes P0, P1, P2, and P3. Their arrival times and next CPU burst times are as follows.

Process	Arrival Time.	CPU Burst
P0	0	10
P1	1	6
P2	3	2
P3	5	4

What is the Average Turnaround Time using FCFS?

Answer: 16.5



The correct answer is: 14.25



Question **3**

Correct

Mark 1.00 out of 1.00

A process executes the code

```
fork();  
fork();  
fork();
```

The total number of **child** processes created is ✓ .

The correct answer is: 7

Question **4**

Incorrect

Mark 0.00 out of 4.00

Consider the following set of processes P0, P1, P2, and P3. Their next CPU burst times are as follows.

Process	CPU Burst
P0	6
P1	8
P2	7
P3	3

What is the Average Turnaround Time using SJF?

Answer: ✗

The correct answer is: 13

Question **5**

Correct

Mark 1.00 out of 1.00

The Bounded buffer problem is also known as ✓ problem.

The correct answer is: producer consumer

Question **6**

Incorrect

Mark 0.00 out of 4.00

Consider the following set of processes P1, P2, and P3. Their arrival times, priority and next CPU burst times are as follows.

Process	Arrival Time.	CPU Burst	Priority
P1	0	10	3
P2	1	5	2
P3	2	2	1

What is the Average Waiting Time using a pre-emptive policy?

Answer: 22



The correct answer is: 3

Question **7**

Correct

Mark 1.00 out of 1.00

User level threads are threads that are visible to the programmer and are unknown to the kernel. The operating system kernel supports and manages kernel level threads.

Three different types of models relate user and kernel level threads.

Which of the following statements is/are true ?

- (a)** (i) The Many - to - one model maps many user threads to one kernel thread
 (ii) The one - to - one model maps one user thread to one kernel thread
 (iii) The many - to - many model maps many user threads to smaller or equal kernel threads
- (b)** (i) Many - to - one model maps many kernel threads to one user thread
 (ii) One - to - one model maps one kernel thread to one user thread
 (iii) Many - to - many model maps many kernel threads to smaller or equal user threads

- ☐ a. both (a) and (b) are false
- ☐ b. (a) is false; (b) is true
- ☒ c. (a) is true, (b) is false
- ☐ d. both (a) and (b) are true



Your answer is correct.

The correct answer is:

(a) is true, (b) is false

Question 8

Incorrect

Mark 0.00 out of 1.00

Which of the following is/are shared by all the threads in a process?

- (a). Program counter
- (b). Stack
- (c). Files
- (d). Registers

- ☒ i. (c) and (d)
- ☐ ii. (a) and (b)
- ☐ iii. None
- ☐ iv. (c) only

✖

Your answer is incorrect.

The correct answer is:

(c) only

Question 9

Incorrect

Mark 0.00 out of 4.00

Consider the following set of processes P0, P1, P2, and P3. Their arrival times, priority and next CPU burst times are as follows.

Process	Arrival Time.	CPU Burst	Priority
P0	0	10	5
P1	1	6	4
P2	3	2	2
P3	5	4	0

What is the Average Waiting Time using a non pre-emptive policy?

Answer: 22

✖

The correct answer is: 7.75

Question **10**

Incorrect

Mark 0.00 out of 1.00

Assuming the initial value of a counting semaphore, S is 5.

During wait operation, semaphore can take negative value.

Then 12 times wait(S) operations and "x" times signal(S) operations were performed.

If the final value of semaphore is 2, x will be:

- ☐ a. None
- ☐ b. 9
- ☐ c. 8
- ☒ d. 7
- ☐ e. 10



Your answer is incorrect.

The correct answer is:

9

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Jump to...

[File System-Part1](#) ▶

[Dashboard](#) / [Courses](#) / [Winter 2020-21](#) / [BTech Sem-4](#) / [CS 206](#) / [Quizzes](#) / [Pre-Mid Sem Quiz](#)

Started on	Wednesday, 3 February 2021, 9:13 AM
State	Finished
Completed on	Wednesday, 3 February 2021, 9:49 AM
Time taken	36 mins 27 secs
Marks	39.50/40.00
Grade	9.88 out of 10.00 (99%)

Question **1**

Complete

Mark 2.00 out of 2.00

There are two types of process terminations. Match the following child process terminations to the type of termination.

Done by executing the exit() system call.

Normal

Parent process is terminating.

Forced

Task assigned to the process is no longer required.

Forced

The process has exceeded allocated resources.

Forced

The correct answer is:

Done by executing the exit() system call. → Normal,

Parent process is terminating. → Forced,

Task assigned to the process is no longer required. → Forced,

The process has exceeded allocated resources. → Forced

Question 2

Complete

Mark 4.00 out of 4.00

Match the descriptions to the correct criteria.

Time interval from signaling an event to the time the first instruction of the respective interrupt service routine (ISR) is executed.

Response Time (Real-time System)

Total time elapsed from the time the process is created to the time the process is completed.

Turnaround Time

Average fraction of time during which CPU executes either user programs or system modules.

CPU Utilization

Time interval from entering the program to the last result appearing on the terminal.

Response Time (Time Sharing System)

Average amount of work completed per unit time.

Throughput

Total time spent by the process while waiting in suspended or ready state.

Waiting Time

The correct answer is:

Time interval from signaling an event to the time the first instruction of the respective interrupt service routine (ISR) is executed. → Response Time (Real-time System),

Total time elapsed from the time the process is created to the time the process is completed. → Turnaround Time,

Average fraction of time during which CPU executes either user programs or system modules. → CPU Utilization,

Time interval from entering the program to the last result appearing on the terminal. → Response Time (Time Sharing System),

Average amount of work completed per unit time. → Throughput,

Total time spent by the process while waiting in suspended or ready state. → Waiting Time

Question 3

Complete

Mark 2.00 out of 2.00

Which component of the PCB stores the following information?

Actual CPU time used in execution.

Accounting Information

List of open files and information about allocation of peripheral devices.

I/O Status Information

Priority of process and address of scheduling queues.

Process Scheduling Information

Address of the next instruction to be executed.

Program Counter

The correct answer is:

Actual CPU time used in execution. → Accounting Information,

List of open files and information about allocation of peripheral devices. → I/O Status Information,

Priority of process and address of scheduling queues. → Process Scheduling Information,

Address of the next instruction to be executed. → Program Counter

Question **4**

Complete

Mark 4.00 out of 4.00

Consider the following set of processes P1, P2, and P3. Their arrival times, priority and next CPU burst times are as follows.

Process	Arrival Time.	CPU Burst	Priority
P1	0	10	3
P2	1	5	2
P3	2	2	1

What is the Average Waiting Time using a pre-emptive policy?

Answer: 3

The correct answer is: 3

Question **5**

Complete

Mark 2.00 out of 2.00

It is the job of the OS to create processes. There are 4 ways of achieving it. Match the descriptions to the environments in which a process is created.

Process created when a new user attempts to log on.

Interactive Environment

Process created to perform a function on behalf of a user program.

Operating System

Multiple processes created from the main process.

Parallelism

Process created in response to the submission of a job.

Batch Environment

The correct answer is:

Process created when a new user attempts to log on. → Interactive Environment,

Process created to perform a function on behalf of a user program. → Operating System,

Multiple processes created from the main process. → Parallelism,

Process created in response to the submission of a job. → Batch Environment

Question **6**

Complete

Mark 4.00 out of 4.00

Consider the following set of processes P0, P1, P2, and P3. Their next CPU burst times are as follows.

Process	CPU Burst
P0	6
P1	8
P2	7
P3	3

What is the Average Turnaround Time using SJF?

Answer:

The correct answer is: 13

Question **7**

Complete

Mark 4.00 out of 4.00

Consider the following set of processes P0, P1, P2, and P3. Their arrival times, priority and next CPU burst times are as follows.

Process	Arrival Time.	CPU Burst	Priority
P0	0	10	5
P1	1	6	4
P2	3	2	2
P3	5	4	0

What is the Average Waiting Time using a non pre-emptive policy?

Answer:

The correct answer is: 7.75

Question **8**

Complete

Mark 4.00 out of 4.00

Consider the following set of processes P0, P1, P2, and P3. Their arrival times and next CPU burst times are as follows.

Process	Arrival Time.	CPU Burst
P0	0	10
P1	1	6
P2	3	2
P3	5	4

What is the Average Turnaround Time using FCFS?

Answer:

The correct answer is: 14.25

Question **9**

Complete

Mark 4.00 out of 4.00

Consider the following set of processes P1, P2, and P3. Their CPU burst times are as follows.

Process	CPU Burst (in ms)
P1	30
P2	6
P3	8

What is the Average Waiting Time using a Round Robin Scheduling algorithm? Assume a time quantum of 5ms.

Answer:

The correct answer is: 15

Question **10**

Complete

Mark 4.00 out of 4.00

Consider the following set of processes P0, P1, P2, and P3. Their arrival times and next CPU burst times are as follows.

Process	Arrival Time.	CPU Burst
P0	0	3
P1	2	6
P2	4	4
P3	6	5
P4	8	2

What is the Average Turnaround Time for SRTF?

Answer: 7.2

The correct answer is: 7.2

Question **11**

Complete

Mark 1.50 out of 2.00

Match the following statements to a 'program' or 'process'.

A passive and static object that exists in a file.	Program
A sequence of instruction execution.	Program
Loaded into the secondary storage device.	Program
Time span is limited.	Process

The correct answer is:

A passive and static object that exists in a file. → Program,

A sequence of instruction execution. → Process,

Loaded into the secondary storage device. → Program,

Time span is limited. → Process

Question **12**

Complete

Mark 4.00 out of 4.00

Consider the following set of processes P0, P1, P2, and P3. Their arrival times and next CPU burst times are as follows.

Process	Arrival Time.	CPU Burst
P0	0	10
P1	1	6
P2	2	2
P3	3	4

What is the Average Waiting Time for pre-emptive SJF?

Answer:

The correct answer is: 4.75

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