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① The hardware mechanism that enables a device to notify CPU is called.

- (a) interrupt ✓ (c) Trap
(b) Signal (d) Process

② The section of the control block comprises of page and segment table

↳ memory related information

↳ Accounting information.

↳ Register information

↳ Scheduling information. ✓

③ The system call suspends the calling process.

- (a) Fork (c) Exec
(b) Wait ✓ (d) Exit

(4) In _____ addressing, the recipient is not required to name the sender.

- (a) Symmetric
- (b) Asymmetric ✓
- (c) Both Symmetric and Asymmetric
- (d) None of the given options.

(5) _____ Command gives a snapshot of the current process.

- (a) ps ✓
- (b) top
- (c) who
- (d) is

(6) _____ Command to resume the execution of suspended job in the foreground.

- (a) fg ✓
- (b) Bg
- (c) jobs
- (d) kill

7 You can use the _____ Command to display the status of suspended and background process.

- (a) fg
- (b) bg
- (c) Jobs ✓
- (d) kill

8 You can terminate a foreground process by pressing _____.

- (a) `ctrl - A`
- (b) `ctrl - C` ✓
- (c) `ctrl - Z`
- (d) None of these.

9 A time sharing system is _____.

- (a) Multitasking
- (b) Interactive
- (c) Multiuser
- (d) All of these ✓

10 The main characteristic of real time system is _____.

- (a) Efficiency
- (b) large virtual memory
- (c) large secondary storage device
- (d) Usability ✓

11 Shared Libraries and Kernel modules are stored in _____.

- (a) `lib`
- (b) `ldes`
- (c) `lbeat`
- (d) `llib` ✓

12 _____ Scheduler selects the process from the job pool and put them in main memory.

- (a) Long Term ✓
- (b) Short term
- (c) Medium Term
- (d) Swapper

(13) In Indirect inter process communication a sender — mentions the name of the recipient.

→ Do (B) do not ✓

(14) A — is an integer variable that, apart from initialization is accessible only through two standard atomic operations. wait & signal.

(A) Semaphore ✓ (B) Monitor
(C) Critical region (D) Critical section.

(15) A semaphore that cause busy waiting is termed as —

(A) Spinlock ✓ (B) Monitor
(C) Critical region (D) Critical section

(16) The execution of critical section must not be mutually exclusive.

(A) True (B) False ✓

(17) The performance of Round Robin algorithm does not depend heavily on the size of time quantum.

(A) True ✓ (B) False

(18) —, direct select answer is — → Round waiting ✓

(19) → Firmware based solution. ✓

(20) → Medium term scheduler. ✓

Section B.

Q21 Write the formula or procedure for calculating the waiting time in a preemptive shortest job first.

Preemptive SJF scheduling is sometimes called shortest remaining-time-first scheduling. We illustrate the working of the SJF algorithm by using the system state.

Process	Arrival time	Burst/	Completion T	TAT	waiting time
P ₁	0	8	20	20	0
P ₂	1	1	20	1	0
P ₃	2	3	5	3	0
P ₄	3	2	7	4	2
P ₅	4	6	13	9	3

Grant	P ₁	P ₂	P ₃	P ₄	P ₅	P ₁
	0	1	2	5	7	13
						20

$$\text{Average TAT} = \frac{20 + 1 + 3 + 4 + 9}{5} = \frac{37}{5} = 7.4$$

$$\text{Average Time of waiting} = \frac{17}{5} = 3.4$$

Q22) If a process exits and there are still threads of that process running will they continue to run?

Ans: No, threads of the process will no longer run once the process is terminated. Because all threads in a process share the same address space and all the threads are suspended at the same time. Similarly, a termination of a process terminates all threads within that process.

Q23) Ans: Resource sharing has both advantages and disadvantages of threads. Some of them are listed below.

① Advantage: ① Responsiveness. Multithreading in interactive applications may allow a program to continue running even if part of it is blocked or is performing a lengthy operation thereby increasing responsiveness to the user.

② Resource sharing. By default, threads share the memory and the resources of the process to which they belong. Code sharing allows an application to have several different threads of activity all within the same address space.

3.

Economy

Allocating memory and resources for process creation is costly alternatively, because threads share resources of the process to which they belong. It is more economical to create and context switch threads.

Disadvantages

①

Resource sharing

Where as resource sharing is one of the major advantage of threads it is also a disadvantage because proper synchronization is needed between threads for accessing the shared resources e.g. data & file.

②

Difficult programming model.

It is difficult to write, debug and maintain multi-threaded programmes for an average user. This is particularly true when it comes to writing code for synchronized access to shared resources.