

Name:

CSE

When answering the questions below, make sure to show all of your work. Pay attention to the point values on each question. State your assumptions, and explain your answers thoroughly. Remember that an explanation is expected with every answer except the multiple choice and true/false questions when the answer is true. Use blank paper if you do not have enough room..

Time: 09:00 to 12:00 | Total Marks: 75

1. How does the operating system determine which process to run next? [1]
 - a) Using the scheduler
 - b) Paging table
 - c) Interrupt vector
 - d) File table
2. Which of the following is a performance monitoring tool? [1]
 - a) top
 - b) gcc
 - c) nano
 - d) df
3. Which system call is used to create a new child process? [1]
 - a) fork()
 - b) clone()
 - c) exec()
 - d) wait()
4. In SJF, if processes arrive at different times, how is scheduling decided? [1]
 - a) By shortest burst time among arrived processes
 - b) Randomly
 - c) By arrival order
 - d) By process ID
5. What does a context switch involve? [1]
 - a) Saving and restoring registers and states
 - b) Sending signals
 - c) Scheduling memory
 - d) Resetting CPU
6. What does a return value of -1 from `fork()` indicate? [1]
 - a) Fork failed
 - b) Child process
 - c) Parent process
 - d) Normal execution
7. Which metric measures the time from submission to completion of a process? [1]

- a) Turnaround time
 - b) Response time
 - c) CPU burst
 - d) Context switch
8. Which signal cannot be caught or ignored? [1]
- a) SIGKILL
 - b) SIGTERM
 - c) SIGINT
 - d) SIGSTOP
9. Aging is a technique used to: [1]
- a) Prevent starvation
 - b) Increase response time
 - c) Create zombie processes
 - d) Prioritize I/O
10. What does `execvp()` do? [1]
- a) Searches for the program in PATH and executes it
 - b) Creates new process
 - c) Waits for process
 - d) None of the above
11. Which command is used to send a signal to a process? [1]
- a) kill
 - b) exec
 - c) fork
 - d) touch
12. Which system call replaces the current process image with a new process image? [1]
- a) exec()
 - b) fork()
 - c) wait()
 - d) exit()
13. Which of the following can be used to debug a core dump? [1]
- a) gdb
 - b) top
 - c) man
 - d) kill
14. What is the main advantage of Round Robin scheduling? [1]
- a) Fairness among processes
 - b) Shortest average waiting time
 - c) Minimizes context switches
 - d) None
15. Which of the following is not a scheduling algorithm? [1]
- a) LRU

b) Round Robin

c) SJF

d) FCFS

16. What is a named pipe?

[5]

17. What is an environment variable?

[5]

18. Name two IPC mechanisms supported in Unix.

[5]

19. What is a signal handler?

[5]

20. What is paging?

[5]

21. Describe how dynamic libraries are created and used in Unix.

[7]

22. How do `sem_init()` and `sem_wait()` manage synchronization?

[7]

23. How does `strace` work and what information does it provide?

[7]

24. Describe the internal working of a mutex and condition variable.

[9]