

Total No. of Questions :6]

SEAT No. :

P5699

[Total No. of Pages :2

TE/INSEM./OCT.-145
T.E. (Information Technology)
OPERATING SYSTEM
(2015 Pattern) (Semester - I)

Time : 1 Hour]

[Max. Marks :30

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data, if necessary.

Q1) a) What is operating system? State and explain the basic functions of Operating System. **[6]**

b) Explain the following shell commands with example: **[4]**
i) echo ii) grep iii) touch iv) ls

OR

Q2) a) Differentiate between monolithic and microkernel architectures. **[4]**

b) Write a shell script to check if given string is a palindrome or not. **[6]**

Q3) a) For the table given below, calculate average waiting time and average turnaround time and draw a Gantt Chart illustrating the process execution using following scheduling algorithms. **[8]**

i) Round Robin (time slice - 2 units) ii) Priority (non-preemptive)

Process	Arrival Time	Burst Time	Priority
P1	0	3	5
P2	2	6	2
P3	4	4	4
P4	6	5	3
P5	8	2	1

Note: For priority scheduling, minimum value indicates higher priority.

P.T.O.

- b) Suppose that a process spawns another process using fork system call.[2]
 What if the parent process completes the execution before child process?
 What if the child process completes the execution before parent process?

OR

- Q4) a)** For the table given below, calculate average waiting time and average turnaround time and draw a Gantt Chart illustrating the process execution using following scheduling algorithms. [8]

i) SJF (non-preemptive)

ii) Priority (Preemptive)

Process	Arrival Time	Burst Time	Priority
P1	0	9	3
P2	1	1	2
P3	2	7	1
P4	3	1	5
P5	4	6	4

Note: For priority scheduling, minimum value indicates higher priority.

- b) Differentiate between user level and kernel level threads. [2]
- Q5) a)** Explain the following terms: [6]
- Mutual Exclusion
 - Synchronization
 - Race condition
- b) Differentiate between named pipe and unnamed pipe. [4]

OR

- Q6) a)** Write a deadlock-free solution for dining philosophers problem using semaphore. [6]
- b) Explain the necessary and sufficient conditions for the occurrence of a deadlock. [4]

