SEAT No. :

P5386

T.E./Insem.-644
T.E. (Information Technology)
OPERATING SYSTEM (Semester - I)
(2015 Pattern)

Time :1 hour]   *[Max. Marks :30*

Instructions to the candidates:

    1)   *Answer Q.1 or Q.2, Q.3or 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)   State and explain different services provided by an Operating System.**[6]**

    b)   Explain the following shell commands with example.   **[4]**

       i)   Chmod   ii) Grep   iii)   Cat   iv)   Sort

OR

Q2) a)   Explain the concept of virtual machine with its benefits.   **[4]**

    b)   Write a shell script for sorting a given list of numbers using any sorting strategy.   **[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)   RR (Time slice-2units)   ii) SJF (non-preemptive)

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

    b)   Differentiate between process and thread.   **[2]**

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

  i) FCFS   ii) SJF (preemptive)

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

  b) Define Context Switch. **[2]**

Q5) a) Consider the following snapshot of a system: **[6]**

	Allocation				Maximum				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2	1	5	2	0
P1	1	0	0	0	1	7	5	0				
P2	1	3	5	4	2	3	5	6				
P3	0	6	3	2	0	6	5	2				
P4	0	0	1	4	0	6	5	6				

Answer the following questions using banker's algorithm.

  i) What are the contents of Need matrix?

  ii) Is the system in a safe state?

  b) Explain busy waiting with appropriate example? **[4]**

Q6) a) Write a pseudo code for producer-consumer problem using semaphores.**[6]**

  b) Explain the necessary and sufficient conditions for the occurrence of a deadlock. **[4]**

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