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GIET UNIVERSITY, GUNUPUR – 765022

B. Tech (Third Semester – Regular) Examinations, December – 2020

BPCCS3020 / BPCCT 3020 – OPERATING SYSTEM

(CSE & CST)

Time: 2 hrs

Maximum: 50 Marks

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions)(1 x 10 =10 Marks)

Q.1. Answer **ALL** questions

- a. Which is the Linux operating system?

(i) Private operating system	(ii) Windows operating system
(iii) source operating system	(iv) Open-source operating system
- b. Which of the following is a single-user operating system

(i) Ms-Dos	(ii) MAC
(iii) Windows	(iv) None of these
- c. Who provides the interface to access the services of the operating system?

(i) API	(ii) System call
(iii) Library	(iv) Assembly instruction
- d. Common technique used for protecting a critical section in Linux is the

(i) Lock Step	(ii) Program lock
(iii) Spinlock	(iv) None
- e. In a pure kernel thread facility all of work of thread management is done by the

(i) application	(ii) program
(iii) kernel	(iv) threads
- f. Where are placed the list of processes that are prepared to be executed and waiting?

(i) Job queue	(ii) Ready Queue
(iii) Process Queue	(iv) Execution queue
- g. Common technique used for protecting a critical section in Linux is the

(i) Lock Step	(ii) Program lock
(iii) Spinlock	(iv) None
- h. Banker's algorithm is used?

(i) To prevent deadlock	(ii) To deadlock recovery
(iii) To solve the deadlock	(iv) None of these
- i. Which of the following is a condition that causes deadlock?

(i) Mutual exclusion	(ii) Circular wait
(iii) Hold and wait	(iv) All of these
- j. Which of the following condition is required for deadlock to be possible?

(i) mutual exclusion	(ii) a process may hold allocated resources while awaiting assignment of other resources
(iii) no resource can be forcibly removed from a process holding it	(iv) all of the mentioned

PART – B: (Short Answer Questions)

(2 x 5 = 10 Marks)

Q.2. Answer ALL questions

- a. What is time-sharing operating system?
- b. What does Process Control Block contain?
- c. Define Semaphore.
- d. What are different methods for handling deadlocks?
- e. List out the various file operations.

PART – C: (Long Answer Questions)

(6 x 5 = 30 Marks)

Answer ANY FIVE questions

Marks

- 3. Explain the various objectives and functions of the operating system. (6)
- 4. Briefly Explain Virtual Machines. (6)
- 5. Consider the following set of processes with their CPU Burst time, arrival time given in milliseconds and priority. (6)

Process	CPU Burst time	Arrival time	Priority
P1	3	0	1
P2	2	1	0
P3	4	3	2
P4	5	4	0
P5	3	5	1

Draw three Gantt charts for execution of the processes using SRTF, RR (Time quantum=2) and preemptive priority scheduling. Separately compute average waiting time and average turnaround time of the processes on execution of the three algorithms.

- 6. Distinguish between process and threads. (6)
- 7. Explain about contiguous memory allocation. (6)
- 8. Consider the following snapshot of a system. (6)

	Allocation	Max	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	

Using Banker’s algorithm, answer the following questions.

- (i) What is the content of matrix need?
- (ii) Is the system in a safe state?
- (iii) If a request from process P1 arrives for (0, 4, 2, 0) can the request be granted immediately?

- 9. Write short note on (6)
 - i. The concept of a file
 - ii. Access Methods
- 10. What is an access matrix? Explain its implementation. (6)