

Please check that this question paper contains 09 questions and 02 printed pages within first 10 minutes

[Total No. of Questions: 09]

[Total No. of Pages: 02.]

Uni. Roll No. ....

Program: B.Tech. (Batch 2018 onward)

Semester: 4<sup>th</sup>

Name of Subject: Operating System

Subject Code: PCCS-105.

Paper ID: 16215

**Time Allowed: 03 Hours**

**Max. Marks: 60**

**NOTE:**

- 1) Parts A and B are compulsory
- 2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
- 3) Any missing data may be assumed appropriately

**Part – A**

**[Marks: 02 each]**

**Q1.**

- a) Differentiate between External and Internal Fragmentation.
- b) Write a short note on semaphore.
- c) What is the need of Resource allocation graph?
- d) What is the cause of thrashing?
- e) Explain the term PCB in detail.
- f) Discuss various goals of security.

**Part – B**

**[Marks: 04 each]**

- Q2. Explain in detail the Layered Architecture of an OS.
- Q3. Define critical section. What are the requirements to solve critical-section problem?
- Q4. What do you mean by segmentation and paging? Is segmentation and paging combined into one scheme?
- Q5. Differentiate between UNIX and Windows based operating systems.
- Q6. Give memory partition of 100K, 500K, 200K, 300K and 600K (in order). How would each of the first fit, best fit and worst fit algorithm place process of 212 K, 417 K, 112K, and 426 K (in order)? Which algorithm makes the most efficient use of memory?
- Q7. Discuss ways by which deadlock can be detected and explain an algorithm for detected deadlock.

## Part – C

[Marks: 12 each]

Q8. Write short notes on : a) Distributed operating systems b) Features of LINUX file system

OR

Define the term process. Differentiate between heavyweight and lightweight processes.

Consider the following table

Process	Arrival Time	CPU burst Time
P1	0	7
P2	1	3
P3	1	2
P4	2	8
P5	2	4

Give Gantt chart and calculate Avg. Turn-around Time and Waiting Time for :

1) SJE Pre-emptive Scheduling algorithm

2) First come first served

3) Round robin algorithm with time quantum of 3 units

Q9. Explain various disks scheduling algorithm with example.

OR

Define a file system. What are various components of a file system? State and explain various file allocation methods.

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