

# LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



## B.Sc.DEGREE EXAMINATION –COMPUTER SCIENCE

FIFTH SEMESTER – APRIL 2018

**CS 5504– OPERATING SYSTEM**

Date: 27-04-2018  
Time: 09:00-12:00

Dept. No.

Max. : 100 Marks

### PART-A

Answer All questions

(10 × 2 = 20 Marks)

1. What is an operating system? List down its functions.
2. Define system call? What is the purpose of system calls?
3. Define process states.
4. What is the purpose of Thread?
5. Define logical address and physical address.
6. List the steps needed to perform page replacement?
7. Write notes on Graphical User Interface.
8. What are the layers of I/O software?
9. What do you mean by Access Control List?
10. What is Directory? What are the operations that can be performed on a directory?

### PART – B

Answer All questions

(5 × 8 = 40 Marks)

11. a) Explain the following with neat diagram.
  - i) Monolithic systems
  - ii) Layered Systems

(Or)

11. b) What is system call?. Explain about its various categories.

12. a) What is a Deadlock? How does a deadlock occur? How can a system recover from deadlock?

(Or)

12. b) Consider the following set of processes with the length of the CPU burst time in givenus:

Process	Burst Time	Arrival Time
P1	8	0.00
P2	4	1.001
P3	9	2.001
P4	5	3.001
P5	3	4.001

Draw four Gantt charts illustrating the execution of these processes using FCFS and SJF scheduling. Also calculate waiting time and turnaround time for each scheduling algorithms.

13. a) What is the need for page Replacement? Write down the step for page replacement.

(Or)

13. b) Explain in detail about swapping and thrashing.

14. a) Explain in detail about Direct Memory Access with suitable diagram.

(Or)

14. b) Explain the categories of **I/O** devices.

(Or)

15. a) Write in detail about File-System Implementation

(Or)

15. b) Explain in detail about the following directory structure with neat diagrams.

i) Single level directory structure

ii) Two level directory structure

iii) Hierarchical directory structure

### **PART – C**

**Answer any two questions**

**(2 × 20 = 40 Marks)**

16. a) Explain in detail the operating system concepts.

b) What is Thread?. Discuss in detail about various threading models with neat diagram.

17. a) Explain in detail about Bankers Algorithm with suitable example.

b) Explain in detail about Graphical User Interface (GUI)

18. a) Explain in detail about layers of Linux Operating System with neat diagram.

b) Consider the following page reference string: 1 2 3 2 5 6 3 4 6 3 7 3 1 5 3 6 3 4 2 4 3 4 5 1

Indicate page faults and calculate total number of page faults and successful ratio for FIFO,

optimal and LRU Algorithms. Assume there are four frames and initially all framers are empty.

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