



Sri Indu Institute of Engineering & Technology

Recognized Under 2(f) of UGC Act 1956

Approved by AICTE, New Delhi

Affiliated to JNTUH, Hyderabad.

COURSE FILE

ON

OPERATING SYSTEMS

Course Code – CS403PC

II B. Tech II-SEMESTER

A.Y.: 2022-2023

Prepared by

Mrs. T. RAMYA PRIYA

Assistant Professor

B. Lakshmi Kaul
Computer Science & Engg. Dept.
SRI INDU INSTITUTE OF ENGG & TECH.
Sheriguda(V), Ibrahimpatnam(M), R.R. Dist-501 10.


PRINCIPAL
Sri Indu Institute of Engineering & Techn.
Sheriguda(VIII), Ibrahimpatnam
R.R. Dist. Telangana-501 510.



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Academic Year	2022-2023
Course Title	OPERATING SYSTEMS
Course Code	CS403PC
Programme	B. Tech
Year & Semester	II year II Semester
Branch & Section	CSE-A
Regulation	R18
Course Faculty	Mrs. T.RAMYA PRIYA, Assistant Professor

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

INSTITUTE VISION AND MISSION

Vision:

To become a premier institute of academic excellence by providing the world class education that transforms individuals into high intellectuals, by evolving them as empathetic and responsible citizens through continuous improvement.

Mission:


IM1: To offer outcome-based education and enhancement of technical and practical skills.

IM2: To continuous assess of teaching-learning process through institute-industry collaboration.

IM3: To be a center of excellence for innovative and emerging fields in technology development with state-of-art facilities to faculty and student's fraternity.

IM4: To create an enterprising environment to ensure culture, ethics and social responsibility among the stakeholders

B. Renu Kaur
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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DEPARTMENT VISION AND MISSION


Vision:

To become a prominent knowledge hub for learners, strive for educational excellence with innovative and industrial techniques so as to meet the global needs.

Mission:

- DM1 :** To provide ambience that enhances innovations, problem solving skills, leadership qualities, decision making, team-spirit and ethical responsibilities.
- DM2 :** To impart quality education with professional and personal ethics, so as to meet the challenging technological needs of the industry and society.
- DM3 :** To provide academic infrastructure and develop linkage with the world class organizations to strengthen industry-academia relationships for learners.
- DM4 :** To provide and strengthen new concepts of research in the thrust area of Computer Science and Engineering to reach the needs of Government and Society.

B. Renuka Kaul
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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

PROGRAM EDUCATIONAL OBJECTIVES

- PEO1:** To develop trained graduates with strong academic and technical skills of modern computer science and engineering.
- PEO2:** To promote trained graduates with leadership qualities and the ability to solve real time problems using current techniques and tools in interdisciplinary environment.
- PEO3:** To motivate the graduates towards lifelong learning through continuing education and professional development.

PROGRAM SPECIFIC OUTCOMES

- PSO1 :** **Professional Skills:** To implement computer programs of varying complexity in the areas related to Web Design, Cloud Computing, Network Security and Artificial Intelligence.
- PSO2:** **Problem-Solving Skills:** To develop quality products using open ended programming environment.

B. Rakha Kaur
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PROGRAMME OUTCOMES (POs)

- PO1: Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- PO2: Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3: Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- PO4: Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- PO5: Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
- PO6: The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- PO7: Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8: Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9: Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10: Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- PO11: Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- PO12: Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B. Tech in COMPUTER SCIENCE AND ENGINEERING
II YEAR COURSE STRUCTURE AND SYLLABUS (R18)****Applicable From 2022-23 Admitted Batch****II YEAR I SEMESTER**

S. No.	Course Code	Course Title	L	T	P	Credits
1	CS301ES	Analog and Digital Electronics	3	0	0	3
2	CS302PC	Data Structures	3	1	0	4
3	MA303BS	Computer Oriented Statistical Methods	3	1	0	4
4	CS304PC	Computer Organization and Architecture	3	0	0	3
5	CS305PC	Object Oriented Programming using C++	2	0	0	2
6	CS306ES	Analog and Digital Electronics Lab	0	0	2	1
7	CS307PC	Data Structures Lab	0	0	3	1.5
8	CS308PC	IT Workshop Lab	0	0	3	1.5
9	CS309PC	C++ Programming Lab	0	0	2	1
10	*MC309	Gender Sensitization Lab	0	0	2	0
		Total Credits	14	2	12	21

II YEAR II SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1	CS401PC	Discrete Mathematics	3	0	0	3
2	SM402MS	Business Economics & Financial Analysis	3	0	0	3
3	CS403PC	Operating Systems	3	0	0	3
4	CS404PC	Database Management Systems	3	1	0	4
5	CS405PC	Java Programming	3	1	0	4
6	CS406PC	Operating Systems Lab	0	0	3	1.5
7	CS407PC	Database Management Systems Lab	0	0	3	1.5
8	CS408PC	Java Programming Lab	0	0	2	1
9	*MC409	Constitution of India	3	0	0	0
		Total Credits	18	2	8	21

***MC - Environmental Science – Should be Registered by Lateral Entry Students Only.**

Note: Industrial Oriented Mini Project/ Summer Internship is to be carried out during the summer vacation between 6th and 7th semesters. Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

Prerequisites:

- A course on “Computer Programming and Data Structures”.
- A course on “Computer Organization and Architecture”.
- **Course Objectives:** Provide an introduction to operating system concepts (i.e., processes, threads, scheduling, synchronization, deadlocks, memory management, file and I/O subsystems and protection) Introduce the issues to be considered in the design and development of operating system
- Introduce basic UNIX commands, system call interface for process management, inter process Communication and I/O in UNIX.

Course Outcomes: Will be able to control access to a computer and the files that may be shared.

- Demonstrate the knowledge of the components of computer and their respective roles in Computing. Ability to recognize and resolve user problems with standard operating environments.
- Gain practical knowledge of how programming languages, operating systems, and Architectures interact and how to use each effectively.

UNIT - I Operating System - Introduction, Structures - Simple Batch, Multi programmed, Time-shared, Personal Computer, Parallel, Distributed Systems, Real-Time Systems, System components, Operating System services, System Calls

UNIT - II Process and CPU Scheduling - Process concepts and scheduling, Operations on processes, Cooperating Processes, Threads, and Interposes Communication, Scheduling Criteria, Scheduling Algorithms, Multiple -Processor Scheduling. System call interface for process management-fork, exit, wait, waitpid, exec

UNIT - III Deadlocks - System Model, Deadlocks Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, and Recovery from Deadlock Process Management and Synchronization - The Critical Section Problem, Synchronization Hardware, Semaphores, and Classical Problems of Synchronization, Critical Regions, Monitors Inter process Communication Mechanisms: IPC between processes on a single computer system, IPC between processes on different systems, using pipes, FIFOs, message queues, shared memory.

UNIT - IV Memory Management and Virtual Memory - Logical versus Physical Address Space, Swapping, Contiguous Allocation, Paging, Segmentation, Segmentation with Paging, Demand Paging, Page Replacement, Page Replacement Algorithms.

UNIT - V File System Interface and Operations -Access methods, Directory Structure, Protection, File System Structure, Allocation methods, Free-space Management. Usage of open, creates, read, write, close, lseek, stat, ioctl system calls.

TEXT BOOKS:

1. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley
2. Advanced programming in the UNIX environment, W.R. Stevens, Pearson education.

REFERENCE BOOKS:

1. Operating Systems – Internals and Design Principles Stallings, Fifth Edition–2005, Pearson Education/PHI
2. Operating System a Design Approach- Crowley, TMH.
3. Modern Operating Systems, Andrew S. Tanenbaum 2nd edition, Pearson/PHI
4. UNIX programming environment, Kernighan and Pike, PHI/ Pearson Education
5. UNIX Internals -The New Frontiers, U. Vahalia, Pearson Educa



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Khalsa Ibrahimpatnam, Sheriguda (V), Ibrahimpatnam (M), Ranga Reddy Dist., Telangana – 501 510

Website: <https://siiet.ac.in/>

CO-PO Mapping Justification

C223.1 Describe operating system goals and functions(Knowledge)

	Justification
PO1	Get the knowledge about operating system and importance of OS and functionalities of operating system
PO3	Get knowledge about operating system services and system programs development
PO4	Design issues of operating system and implementation
PSO1	Apply the gained knowledge in developing the operating system design. (Level 2)

C223.2 Get the knowledge of process, various CPU scheduling algorithms and synchronization (Application)

	Justification
PO2	Analyze the process synchronization problems
PO3	Develop the various CPU scheduling algorithms and its implementation
PO5	To implement scheduling algorithms we use different tools

C223.3 Explain memory management and several page replacement algorithms. (Comprehension)

	Justification
PO1	Gain the Knowledge of paging, structure of page table and contiguous and noncontiguous memory allocation methods
PO2	Understand the process management and virtual memory in operating systems
PO3	Students get the knowledge of paging and Develop the different page replacement algorithms
PSO2	Discover the importance of the memory management and virtual memory.

C223.4 Classify storage management and file system implementation(Analysis)

	Justification
PO2	Analyze the disk scheduling and various types of disk scheduling algorithms and their problems
PO3	Develop different file system allocation methods and file system implementation
PO5	To implement system calls for file operations open(),write(),read().close(),seek().
PO12	Understand the file system management and mass storage structure

C223.5 Analyze the methods for handling deadlocks. (Analysis)

	Justification
PO2	Understand the importance of deadlocks and recovery from deadlocks
PO3	Develop different techniques for deadlock avoidance and deadlock protection
PO4	To solve the deadlock problems by using bankers algorithms

PSO2	Understand the deadlocks concept and their issues
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C223.6 Express the various system protection methods(Comprehension)

	Justification
PO3	Describe the system protection and its techniques
PO4	State the advantages of protection goals and principles
PO5	Know the importance of access matrix implementation

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

ACADEMIC CALENDAR 2022-23

B. Tech./B.Pharm. II YEAR I & II SEMESTERS

I SEM

S. No	Description	Duration	
		From	To
1	Commencement of I Semester classwork	28.11.2022	
2	1 st Spell of Instructions	28.11.2022	21.01.2023 (8 Weeks)
3	First Mid Term Examinations	23.01.2023	30.01.2023 (1 Week)
4	Submission of First Mid Term Exam Marks to the University on or before	04.02.2023	
5	2 nd Spell of Instructions	31.01.2023	29.03.2023 (8 Weeks)
6	Second Mid Term Examinations	31.03.2023	08.04.2023 (1 Week)
7	Preparation Holidays and Practical Examinations	10.04.2023	15.04.2023 (1 Week)
8	Submission of Second Mid Term Exam Marks to the University on or before	15.04.2023	
9	End Semester Examinations	17.04.2023	29.04.2023 (2 Weeks)

Note: No. of Working / Instructional Days: 93

II SEM

S. No	Description	Duration	
		From	To
1	Commencement of II Semester classwork	01.05.2023	
2	1 st Spell of Instructions (including Summer Vacation)	01.05.2023	08.07.2023 (10 Weeks)
3	Summer Vacation	15.05.2023	27.05.2023 (2 Weeks)
4	First Mid Term Examinations	10.07.2023	15.07.2023 (1 Week)
5	Submission of First Mid Term Exam Marks to the University on or before	22.07.2023	
6	2 nd Spell of Instructions	18.07.2023	11.09.2023 (8 Weeks)
7	Second Mid Term Examinations	12.09.2023	16.09.2023 (1 Week)
8	Preparation Holidays and Practical Examinations	19.09.2023	23.09.2023 (1 Week)
9	Submission of Second Mid Term Exam Marks to the University on or before	23.09.2023	
10	End Semester Examinations	25.09.2023	07.10.2023 (2 Weeks)

Note: No. of Working / Instructional Days: 92


 REGISTRAR



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TIME TABLE FOR A.Y 2022-23

Class: II-B. Tech CSE -A

Semester: II

LH. NO: A-301

W.E.F:1-05-2023

Period/ Day	1	2	3	4	1:00- 1:30	5	6	7
	9:40-10:30	10:30-11:20	11:20-12:10	12:10-1:00		1:30-2:20	2:20-3:10	3:10-4:00
Monday	DM	JAVALAB(BATCH-I) / DBMS LAB(BATCH-II)			LUN CH	COI	JAVA	DBMS
Tuesday	OS	DBMS/JAVA(T)	LIB	DBMS		COI	CO-C/SS/DAA	
Wednesday	JAVA	OS	DBMS	BEFA		DBMS LAB(BATCH-I) /OS LAB (BATCH-II)		
Thursday	DM	COUN	BEFA	DM		OS	DBMS	BEFA
Friday	COI	INT	OS	JAVA/DBMS(T)		JAVA	BEFA	SPORTS
Saturday	DBMS	DM	JAVA	OS		OS LAB (BATCH-I) / JAVALAB(BATCH-II)		

SubjectCode	Subject Name	Name of the Faculty	Subject Code	Subject Name	Name of the Faculty
CS401PC	Discrete Mathematics	Dr.E.Naga Ratnam	CS405PC	Java Programming	Mrs B.S .Swapna Shanti
SM402MS	Business Economics & Financial Analysis	Mr.U P Bharadwaja	CS406PC	Operating Systems Lab	Mrs T.Ramya Priya/ Mrs P.Sowjanya/ Mr.Veera kishore K
CS403PC	Operating Systems	Mrs T.Ramya Priya	CS407PC Lab	Database Management Systems	Mrs D. Rajeswari/ V. Divya/ Mr A Vijay Kumar
CS404PC	Database Management Systems	Mrs D. Rajeswari	CS408PC	Java Programming Lab	Mrs B.S .Swapna Shanti/ Mrs.R.Padma/ Mrs R Ganga
	CO-C/SS/DAA	Mrs B.S .Swapna Shanti	MC409	Constitution of India	Mrs K Laxmi Shilpa
Sports	Sports	Mr.P Sreeramulu	LIB	Library	Mrs T.Ramya Priya
Internet	Internet	Mr D Nagaraju	COUN	Counselling	Mrs T.Ramya Priya
Class In-Charge : Mrs D. Rajeswari		Mentor 1 : Mrs D. Rajeswari		Mentor 2: Mrs B.S .Swapna Shanti	

Class In-Charge

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Course Title	OPERATING SYSTEMS
Course Code	CS403PC
Programme	B. Tech
Year & Semester	II Year II Semester
Regulation	R18
Course Faculty	T. RAMYA PRIYA , ASSISTANT PROFESSOR, CSE

LESSON PLAN

S.NO	Unit	TOPIC	Number of Sessions Planned	Teaching method/Aids	REFERENCE
1.	1	Overview-Introduction-Operating system objectives	1	Black Board	T2,
2.		User view, System view	1	Black Board	T2
3.		Operating system definition	1	Black Board	T1, R1
4.		Computer System Organization	1	Black Board	T2
5.		Types of system calls	1	Black Board	T1, R1
6.		Computer System Architecture	1	Black Board	T2
7.		OS Structure, OS Operations	1	Black Board	T1
8.		Process Management, Memory Management	1	Black Board	T1& R2
9.		Storage Management, Protection and Security, Computing Environments	1	Black Board	T2
10.		Operating System Design and Implementation	1	PPT	T1, R1
11.		Operating System services, User and OS Interface	1	Black Board	T1
12.		System Calls, Types of System Calls	1	Black Board	T1
13.		System Programs, Operating System Design and Implementation	1	Black Board	T1
14.	2	Process and CPU Scheduling – Process concepts-The Process	1	Black Board	T1 & R2
15.		OS structure, OS functionalities	1	Black Board	T1, R1
16.		Process State, Process Control Block	1	Black Board	T1 & R2
17.		Threads, Process Scheduling-Scheduling Queues, Schedulers	1	Black Board	T1 & R2
18.		Context Switch, Operations on Processes	1	Black Board	T1 & R1

19.		System calls-fork(), exec(), wait(), exit()	1	Black Board	T1 & R2
20.		Inter process communication, scheduling algorithms	1	PPT	T1
21.		Inter process communication-ordinary pipes and named pipes in Unix	1	Black Board	T1
22.		Process Scheduling-Basic concepts, Scheduling Criteria	1	Black Board	T1
23.		Scheduling algorithms	3	Black Board	T1
24.		Multiple Processor Scheduling, Real-Time Scheduling	1	Black Board	T1
25.		Critical section problems	1	PPT	T2
26.		Thread scheduling, Linux scheduling and Windows scheduling	1	Black Board	T1
27.		Process Synchronization, Background, The Critical Section Problem	1	Black Board	T1
28.		Peterson's solution, Synchronization Hardware	1	Black Board	T1
29.		Semaphores	1	Black Board	T1
30.		Classic Problems of Synchronization	1	PPT	T1
31.		Classic Problems of Synchronization	1	Black Board	T1
32.		Monitors, Synchronization in Linux and Windows.	1	Black Board	T1
33.	3	Memory Management and Virtual Memory	1	Black Board	T1
34.		Memory Management Strategies-Background, Swapping	1	Black Board	T2
35.		Methods for handling deadlocks		Black Board	T1
36.		Deadlock Characterization, Methods for Handling Deadlocks	1	Black Board	T2
37.		Deadlock Prevention, Deadlock Detection	1	Black Board	T2
38.		Deadlock Avoidance and Recovery from Deadlock	1	Black Board	T1
39.		Protection – System Protection, Goals of Protection, Principles of Protection, Domain of Protection	1	Black Board	T2
40.		Page Replacement Algorithms	1	Black Board	T2
41.		Page Replacement, Page Replacement Algorithms	1	Black Board	T1
42.		Allocation of Frames,	1	Black Board	T1

		Thrashing			
43.		Virtual memory in Windows, Storage Management-File System- Concept of a File	1	Black Board	T1
44.	4	System calls for file operations – open(), read (), write (), close (), seek (), unlink (), Access methods	1	Black Board	T1
45.		File structure implementation	1	Black Board	T1
46.		Directory and Disk Structure, File System Mounting	1	Black Board	T1
47.		File Sharing, Protection. File System Implementation – File System Structure	1	Black Board	T1
48.		Directory Implementation, Allocation methods.	1	Black Board	T1
49.		File System Implementation, , Free-space Management.	1	Black Board	T1,WR2
50.		Disk Scheduling algorithms	1	Black Board	T1
51.		Efficiency, and Performance, Mass Storage Structure – Overview of Mass Storage Structure	1	Black Board	T1
52.		Disk Structure, Disk Attachment, Disk Scheduling		Black Board	T1
53.		Disk Management, Swap space Management	1	PPT	T1& T2
54.		Deadlocks – System Model	1	Black Board	T2
55.		Implementation of Access Matrix	1	Black Board	T2
56.		Access Matrix, Implementation of Access Matrix, Access Control	1	Black Board	T1
57.		Revocation of Access Rights, Capability-Based Systems, Language-Based Protection	1	Black Board	T1

TEXT BOOKS:

T1. Operating System Concepts, Abraham Silberschatz, Peter B. Galvin, Greg Gagne, 9th Edition, Wiley, 2016 India Edition

T2. Operating Systems – Internals and Design Principles, W. Stallings, 7th Edition, Pearson.

REFERENCE BOOKS:

R1. Modern Operating Systems, Andrew S Tanenbaum, 3rd Edition, PHI

R2. Operating Systems: A concept-based Approach, 2nd Edition, D.M. Dhamd here, TMH.

R3. Principles of Operating Systems, B. L. Stuart, Cengage learning, India Edition. An Introduction to Operating Systems, P.C.P. Bhatt, PHI.

R4. Principles of Operating systems, Naresh Chauhan, Oxford University Press.



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Website: <https://siet.ac.in/>

WEB REFERENCE

S.No	Web Link
1	https://www.javatpoint.com/os-tutorial
2	https://www.geeksforgeeks.org/operating-systems/
3	https://www.tutorialspoint.com/operating_system/
4	https://codescracker.com/operating-system/



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LECTURE NOTES

UNIT-1 Link:

<https://drive.google.com/file/d/14dD7max12ouizmkPIFZCZZpnHil2xKC9/view?usp=sharing>

UNIT-2 Link:

<https://drive.google.com/file/d/1PYQdJKIxmQdKEeMDccGZE4vbeyTB567j/view?usp=sharing>

UNIT-3 Link:

<https://drive.google.com/file/d/10IB-Zm5DzNrPusDD8YmZPzGPYmeAW8eK/view?usp=sharing>

UNIT-4 Link:

<https://drive.google.com/file/d/1Q32CSAPc9WTBZs485IvOVrnbuH-MrEpt/view?usp=sharing>

UNIT-5:

<https://drive.google.com/file/d/14f-VWFcpqdVSOIE-JFJOQ32DhxGHj-qh/view?usp=sharing>



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List of Power point presentations

UNIT ONE TO FIVE LINK:

https://drive.google.com/file/d/10i8WYz_jf-Q8zHYpzMp_39PwaWc7iEq1/view?usp=sharing

CodeNo:154BR

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD B. Tech
II Year II Semester Examinations, April/May – 2023 OPERATING SYSTEMS
(Common to CSE, IT, CSBS, CSIT, ITE, CE(SE), CSE(CS), CSE(AI&ML),
CSE(DS), CSE(IOT), CSE(N))

Time: 3 Hours**Max. Marks: 75**

- Note:** i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART-A**(25Marks)**

- 1.a) Define the essential properties of parallel operating systems. [2]
- b) How does multi programming increase CPU utilization? [3]
- c) Write about wait command. [2]
- d) How does priority scheduling differ from round robin method? [3]
- e) What is a message queues? [2]
- f) Give an example of the situation describing deadlock. [3]
- g) Define segmentation. [2]
- h) What is the purpose of paging the page tables? [3]
- i) What is a file? [2]
- j) List down various file attributes. [3]

PART-B**(50Marks)**

- 2.a) In a multiprogramming and time-sharing environment, several users share the system simultaneously. This situation can result in various security problems. What are two such problems?
- b) Can we ensure the same degree of security in a time-shared machine as in a dedicated machine? Explain your answer. [5+5]

OR

- 3.a) Under what circumstances would a user be better off using a time sharing system rather than a PC or single-user workstation.
- b) Distinguish between the client-server and peer-to-peer models of distributed systems. [5+5]
- 4.a) Describe the differences among short-term, medium-term, and long-term scheduling.
 - b) Can a multithreaded solution using multiple user-level threads achieve better performance on a multiprocessor system than on a single-process or system? [5+5]

OR

5. a) Describe the actions taken by a thread library to context switch between user-level threads.
 - b) Why is it important for the scheduler to distinguish I/O-bound programs from CPU-bound programs? [5+5]

6. a) Demonstrate that monitors and semaphores are equivalent as they can be used to implement the same types of synchronization problems.

b) What is critical-section problem? Give a classic Peterson's solution to the critical-section problem. [5+5]

OR

7. Discuss the tradeoff between fairness and throughput of operations in the readers-writers problem. Propose a method for solving the readers-writers problem without causing starvation. [10]

8. Given five memory partitions of 100 KB, 500 KB, 200 KB, 300 KB, and 600 KB (in order), how would each of the first-fit, best-fit, and worst-fit algorithms place processes of 212 KB, 417 KB, 112 KB, and 426 KB (in order)? Which algorithm makes the most efficient use of memory? [10]

OR

9. Explain the concept of Least Recently Used memory page replacement method and how it is different from First In First Out(FIFO)page replacement method. [10]

10.a) What are the advantages of Contiguous allocation? What are the draw backs of contiguous allocation of disk space?

b) Explain the following commands: lseek, stat, ioctl. [4+6]

OR

11.Explain in detail about the common schemes for defining the logical structure of a directory. [10]

---ooOoo---

Code No: 154BR

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B. Tech II Year II Semester Examinations, November/December - 2020****OPERATING SYSTEMS**

(Common to CSE, IT)

Time: 2 hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

- - -

1. List out the types of operating system and explain batch OS and time sharing OS in brief. [15]
2. Explain about the system calls fork, exit, wait, waitpid and exec. [15]
3. What is Semaphore? Give the implementation of Bounded Buffer Producer Consumer Problem using Semaphore. [15]
4. Explain the swapping in memory management. [15]
- 5.a) Explain about the implementation of Access Matrix.
b) Explain about lseek() and stat() system calls. [7+8]
- 6.a) Explain about the distributed operating system in brief.
b) Explain the various system calls are used in OS. [7+8]
7. Consider the following set of processes, with the length of the CPU burst given in milliseconds:

Process	Burst Time	Priority
P1	27	5
P2	12	1
P3	37	2
P4	19	4
P5	10	3

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5 all at time 0. Draw the Gantt charts that illustrate the execution of these processes using the following scheduling algorithms: FCFS, SJF and Priority. Also determine the average waiting time and average turnaround time for each of the algorithms. [15]
- 8.a) Explain contiguous and linked file allocation methods.
b) Explain about domain protection mechanism in brief. [8+7]

---ooOoo---

Code No: 154BR**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B.Tech II Year II Semester Examinations, August/September - 2022****OPERATING SYSTEMS****(Common to CSE, IT, CSBS, CSIT, ITE, CSE(SE), CSE(CS), CSE(AIML), CSE(DS),
CSE(IOT), CSE(N))****Time: 3 hours****Max. Marks: 75****Answer any five questions
All questions carry equal marks**

- - -

- 1.a) Discuss the Functionalities of Operating Systems in detail.
- b) What is a System call? Discuss major System calls of Operating Systems. [8+7]
- 2.a) Distinguish between the client-server and peer-to-peer models of distributed systems.
- b) Discuss the various System components. [7+8]
3. List and explain the Scheduling Algorithms. [15]
- 4.a) Explain the terms fork, exit, wait, waitpid, exec.
- b) Consider 3 processes P1, P2 and P3, which require 5, 7 and 4 time units and arrive at times 0, 1 and 3. Draw the Gant chart, process completion sequence and average waiting time for.
 - i) Round-robin scheduling with CPU quantum of 2 time units.
 - ii) FCFS [7+8]
5. Consider the following page reference string: 1, 2, 3, 4, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2,3, 6 How many page faults would occur for the FIFO replacement algorithm for 3 frames. [15]
6. Discuss how LRU and FIFO page replacement algorithms can be implemented on the following reference string when the numbers of frames are 3. Also, calculate the number of page faults. 3, 2, 1, 0, 2, 2, 1, 7, 6, 7, 0, 1, 2, 0, 3, 0, 4, 1, 5, 4, 5, 6, 7, 6, 7, 2, 4, 2, 7, 3. [15]
7. Compare the main memory organization schemes of contiguous memory allocation, pure segmentation and pure paging with respect to the following issues:
 - a) External fragmentation.
 - b) Internal fragmentation.
 - c) Ability to share code across processes. [15]
8. List and explain the various methods for protection and access control. [15]

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Code No: 154BR**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B.Tech II Year II Semester Examinations, August/September - 2022****OPERATING SYSTEMS****(Common to CSE, IT, CSBS, CSIT, ITE, CSE(SE), CSE(CS), CSE(AIML), CSE(DS),
CSE(IOT), CSE(N))****Time: 3 hours****Max. Marks: 75****Answer any five questions
All questions carry equal marks**

- - -

- 1.a) Explain about time-sharing operating systems.
- b) Define real time system. Explain about real time operating system. [7+8]
- 2.a) Briefly explain about system calls. [9+6]
- b) Explain about the system components of OS.
- 3.a) Discuss about Process Control Block with a neat diagram. [7+8]
- b) Explain about shortest Job First Scheduling algorithm with an example.
- 4.a) Describe Round Robin scheduling algorithm with example. [8+7]
- b) Explain about fork and exit system calls with examples.
- 5.a) Discuss about resuming processes within a Monitor. [7+8]
- b) Explain about deadlock detection.
- 6.a) Describe IPC between processes on a single computer system. [7+8]
- b) Discuss about implementation of Semaphores.
- 7.a) Describe basic method of segmentation. [8+7]
- b) Explain about performance of demand paging.
8. Explain the following:
 - a) Virtual file systems
 - b) Indexed allocation. [8+7]

--ooOoo--

Sri Indu Institute of Engineering & Technology
 Sheriguda (V), Ibrahimpatnam (M), R.R. Dist-501 510
I - Mid Examinations, JULY-2023

Set - I

Year & Branch: II- B. tech (CSE-A, B, C)

Date: 11-07-2023

Subject: OPERATING SYSTEMS

Max. Marks: 10

Time: 60mins

Answer any **TWO** Questions. Each Question Carry Two Marks **5* 2 = 10 marks**

1. Define a System Call? Explain different types of System Calls? (Comprehension) (C223.1)

2. Define Operating System? Write about Operating System Services?
 (Comprehension) (C223.1)

3. Consider the following set of processors with the length of CPU burst time given in milliseconds.

Draw the Charts.

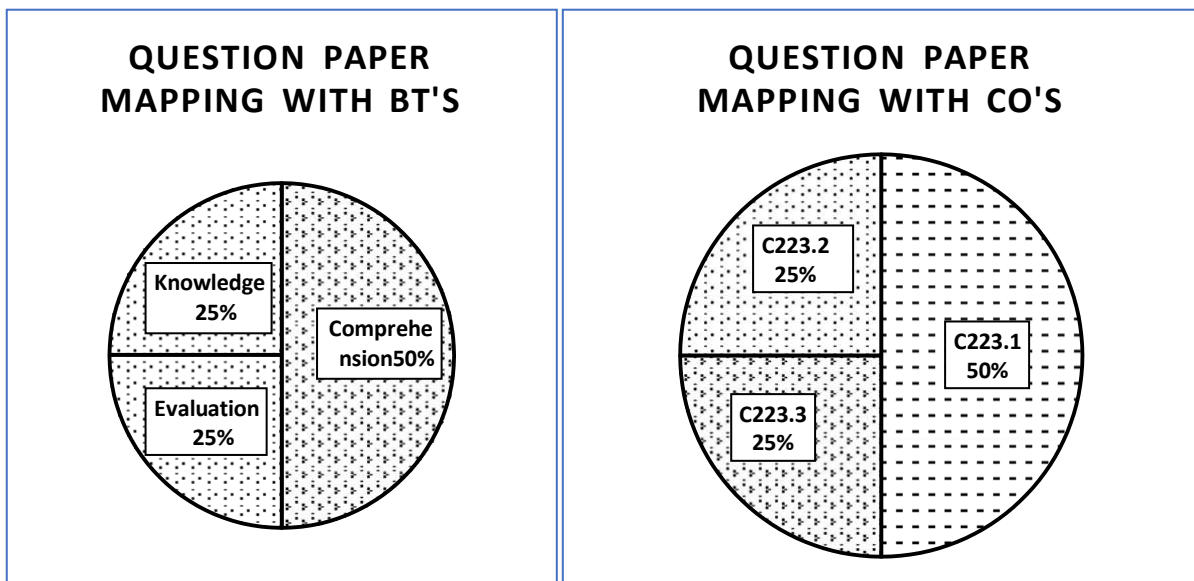
Process	P1	P2	P3	P4	P5
Burst time	4	3	6	5	2

Gnatt

Illustrating the execution of these processes using FCFS, SJFS and Round Robin (time slice=2). Calculate average turn around time, average waiting time in each case.

(Evaluation) (C223.2)

4. State and Explain the various fields of a Process Control Block? (Knowledge) (C223.3)



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I - Mid Examinations, JULY-2023

Set - II

Year & Branch: II-B. tech (CSE-A, B, C)

Date: 11-07-2023

Subject: OPERATING SYSTEMS

Max. Marks: 10

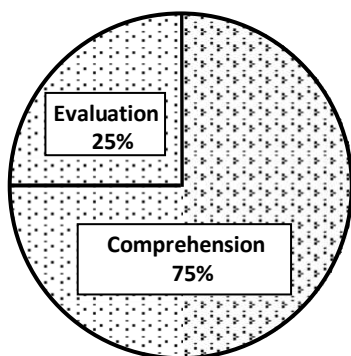
Time: 60mins

Answer any **TWO** Questions. Each Question Carry Two Marks

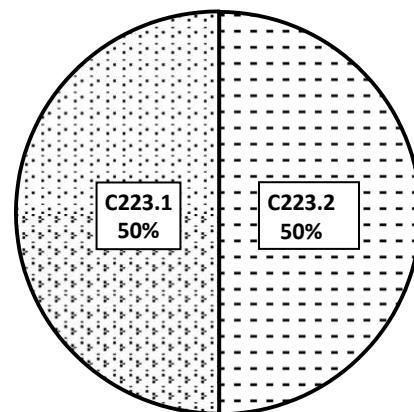
5* 2 = 10 marks

1. Explain operating system services and operating system structure? (C223.1) (Comprehension)
2. Define Operating System? Explain Types of Operating System? (Comprehension) (C223.1)
3. Explain the process states and lifecycle. (Evaluation) (C223.2)
4. A) Define scheduling criteria and scheduling algorithms. (C223.2) (Comprehension)
B) Explain critical section problems and semaphores. (C223.2) (Comprehension)

**QUESTION PAPER
MAPPING WITH BT'S**



**QUESTION PAPER
MAPPING WITH CO'S**



Sri Indu Institute of Engineering & Technology
Sheriguda (V), Ibrahimpatnam (M), R.R Dist-501 510
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
B.TECH. II YEAR I SEM I Mid Term Examinations, JULY-2023
OPERATING SYSTEMS
Objective Exam

Name: _____ Hall Ticket No

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Answer All Questions. All Questions Carry Equal Marks. Time: 20 Min. Marks: 10.

I Choose the correct alternative:

1. Which scheduling algorithm allocates the CPU first to the process that request the CPU first ()
A) FCFS B) SJF C) Priority D) Round robin
2. Time quantum is defined in ()
A) SJF B) FCFS C) Round robin D) Priority
3. Which one of the following cannot be scheduled by the kernel ()
A) Kernel level thread B) User level thread C) Process D) None
4. The initial program that is run when the computer is powered up is called ()
A) Program B) Process C) Thread D) Bootstrapping
5. IN the layered approach of OS ()
A) Bottom layer (0) is the user interface B) Highest layer(N) is the user interface
C)Bottom layer(N) is hardware D) Highest layer(N) is hardware
6. The systems which allows only one process execution at a time are called ()
A) Uniprogramming system B) Uniprocessing system
C)Unitasking system D) None
7. In UNIX, which system call creates the new process ()
A) fork B) create C) new D) None
8. A process can be terminated due to ()
A) Normal exit B) fatal error C) Killed by another process D) All the above
9. The address of the next instruction to be executed by the current process is provided by ()
A) CPU register B) Program counter C) Program stack D) Pipe
10. The context of a process in the PCB of a process does not contain ()
A) The value of the CPU register B) The process state
C)Memory management information D) Context switch time

II Fill in The Blanks

10*1/2=5

1. A program in execution is called -----.
2. A scheduler which selects processes from secondary storage device is called -----
3. In ----- several programs are kept in main memory at the same time.
4. The ----- memory is a technique that allows the execution of processes that may not be completely in memory.
5. The bootstrap program is stored in _____
6. To access the services of OS, the interface is provided by _____
7. The most optimal scheduling algorithm _____
8. _____ system call returns the process identifier of a terminated child.
9. The switching of CPU from one process to another process is _____.
10. The objective of multiprogramming is _____.

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II- Mid Examinations, SEP-2023

Set - I

Year & Branch: II- CSE(A,B,C)
 Subject: OPERATING SYSTEMS

Max. Marks: 10

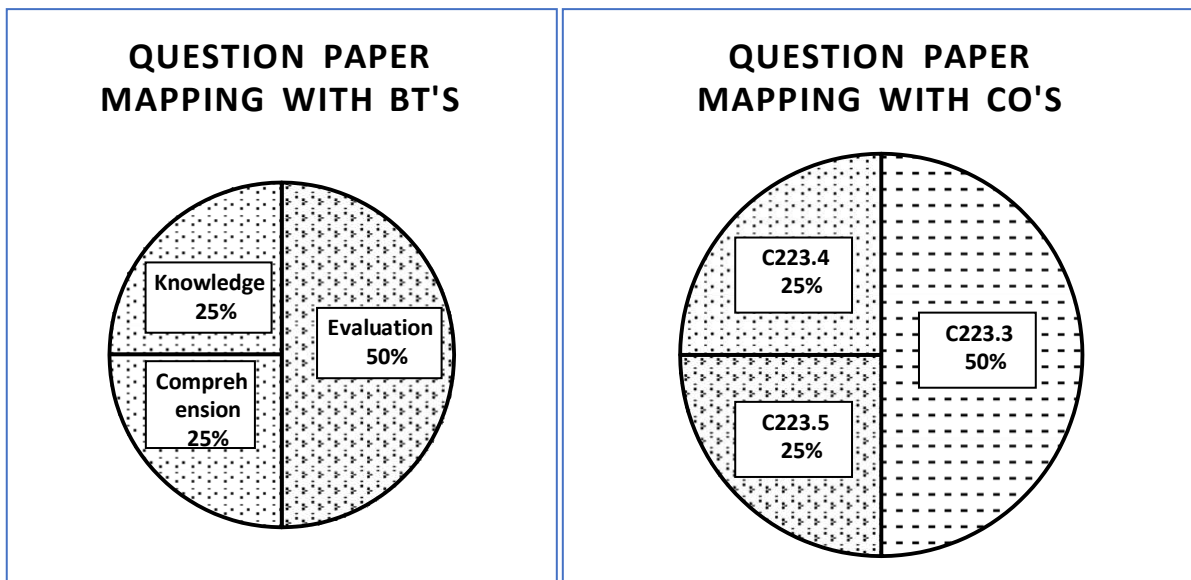
Date: 13-09-2023
 Time: 60mins

Answer any **TWO** Questions. All Question Carry Equal Marks 2*5=10 marks

1. (a) Define Thrashing? And explain the causes of thrashing. (Knowledge) (C223.3) (2M)
 (b) Explain optimal page replacement algorithm and find the no. of page faults for the following reference string. 7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1 (Comprehension) (C223.3) (3M)
2. What are the advantages of inter-process communication and also explain various implementations of inter-process communication? (Knowledge) (C223.4)
3. (a) Write short notes on free space management. (Knowledge) (C223.4) (1M)
 (b) Consider the following snapshot of a system and total number of instances of resource type A=10, B=5 and C=7. by applying bankers algorithm find need matrix and is the system in a safe state? (Evaluation) (C223.5) (4M)

PROCESS	ALLOCATION	MAX
	A B C	A B C
P0	0 1 0	7 5 3
P1	2 0 0	3 2 2
P2	3 0 2	9 0 2
P3	2 1 1	4 2 2
P4	0 0 2	5 3 3

4. Consider deadlock situation in dining philosopher's problem. Discuss how necessary conditions indeed hold in sitting and also how they are avoided? (Evaluation) (C223.3)



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II- Mid Examinations, SEP -2023

Set - II

Year & Branch: II- CSE (A, B, C)

Date: 13-09-2023

Subject: OPERATING SYSTEMS

Max. Marks: 10

Time: 60mins

Answer any **TWO** Questions. All Question Carry Equal Marks

2*5=10 marks

1. A disk drive has 200 cylinders, numbered 0 to 199. The drive is currently serving a request at cylinder 53. The queue of pending requests, in FIFO order, is 98, 183, 37, 122, 14, 124, 65, 67. Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests for each of the following disk-scheduling algorithms?

i) FCFS ii) SSTF.

(Knowledge) (C223.5) [5M]

2. What are the advantages of inter-process communication and also explain various implementations of inter-process communication?

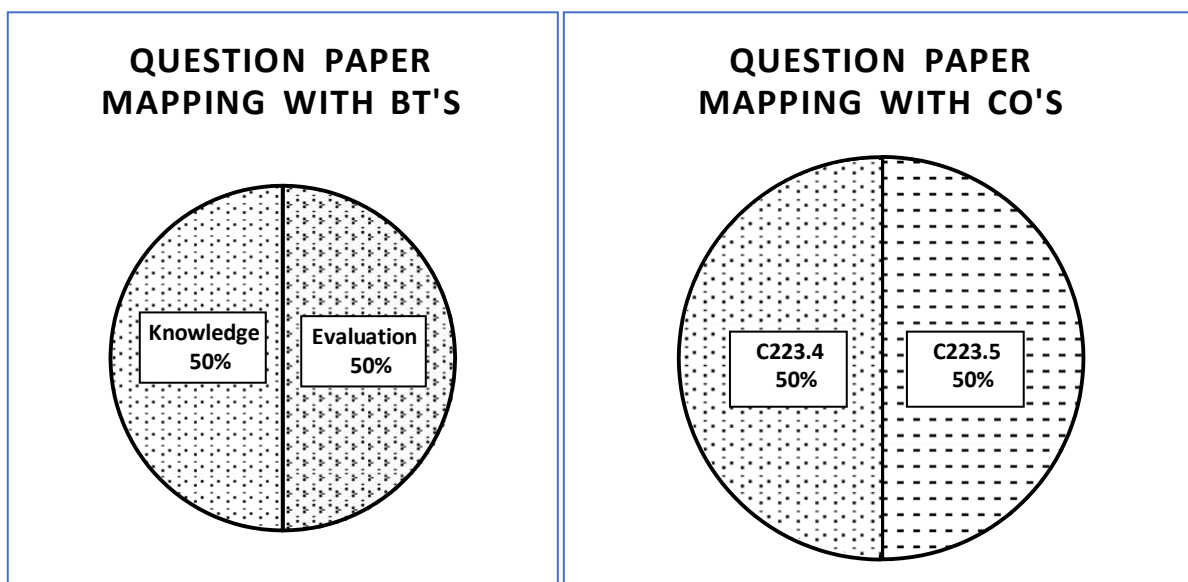
(Knowledge) (C223.4) [5M]

3. Given free memory partitions of 100 K, 500 K, 200 K, 300 K, and 600 K (in order), how would each of the First-fit, Best-fit, and Worst-fit algorithms place processes of 212 K, 417 K, 112 K, and 426 K (in order)?

(Evaluation) (C223.5) [5M]

4. Consider deadlock situation in dining philosopher's problem. Discuss how necessary conditions indeed hold in sitting and also how they are avoided?

(Evaluation) (C223.5) [5M]



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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
B.TECH. II YEAR II SEM., II Mid Term Examinations, SEP-2023
OPERATING SYSTEMS
Objective Exam

Name: _____ Hall Ticket No.

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Answer All Questions. All Questions Carry Equal Marks. Time: 20 Min. Marks: 10.

I Choose the correct alternative:

- 1) Banker's algorithm is used? []
a) To prevent deadlock b) To deadlock recover c) To solve the deadlock d) None of these.
- 2) Which of the following is a condition that causes deadlock? []
A) Mutual exclusion b) Hold and wait c) Circular wait d) No preemption e) All of these
- 3) Which of the following method is used to prevent threads or processes from accessing a single resource?
[]
a) PCB b) Semaphore c) Job Scheduler d) Non-Contiguous Memory Allocation
- 4) What will happen if a non-recursive mutex is locked more than once? []
a) Starvation b) Deadlock c) Aging d) Signaling
- 5) Which command creates a directory or subdirectory? []
a) Dir b) Md c) Mkdir d) Both b and c
- 6) Which command lists the contents of current directory of a disk. []
a) Dir b) Cd c) Copy d) Tree
- 7) Which of the following memory unit that processor can access more rapidly? []
a) Main Memory b) Virtual Memory c) Cache memory d) Read Only Memory
- 8) The first-fit, and the worst-fit algorithm can be used for []
a) linked allocation of memory b) indexed allocation of memory
c) contiguous allocation of memory d) all of the above

9. A system program that combines the separately compiled modules of a program into a form suitable for execution []
a) assembler b) linking loader c) cross compiler d) load and go

10. Fork is []
a) the dispatching of a task b) the creation of a new job
c) the creation of a new process d) increasing the priority of a task

II FILL IN THE BLANKS:

11. The chunks of a memory are known as -----.

12. Interrupt addresses are stored in----indexes-----.

13. Linux uses System Calls to request a specific-----.

14. The bounded buffer is also known as-----

15. The Dining Philosopher problem solution is -----.

16. _____ and _____ are the most common strategies used to select a free hole from the set of available holes.

17. There is no -----with linked allocation.

18. What are the operations that can be invoked on a condition variable- -----

19. A computer system has 6 tape drives, with 'n' processes competing for them. Each process may need 3 tape drives. The maximum value of 'n' for which the system is guaranteed to be deadlock free is-----

20. The -----swaps processes in and out of the memory.

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I- Mid Examinations, JULY-2023

Set - I

Year & Branch: III-CSE (A, B, C)

Date: 11-07-2023(FN)

Subject: OPERATING SYSTEMS

ANSWER KEY

Descriptive paper key link:

<https://drive.google.com/file/d/1iYrxBPFOAIMkNtNU2gSvo1FbTRh5hu1F/view?usp=sharing>

Objective/Quiz Key Paper

I. Multiple Choice Questions

1. A
2. D
3. B
4. D
5. C
6. A
7. A
8. D
9. B
10. D

II. Fill in the blanks

11. Process
12. Long-term scheduler
13. Multiprogramming and Multitasking
14. Virtual
15. Read only memory
16. System call
17. Shortest Job First
18. Wait ()
19. Context Switching
20. To keep the CPU busy as long as there are running processes

SriIndu Institute of Engineering & Technology
Sheriguda (V), Ibrahimpatnam (M), R.R Dist-501 510
II- Mid Examinations, SEP-2023

Set - I

Year & Branch: III-CSE (A, B, C)
Subject: OPERATING SYSTEMS

Date:13-09-2023(FN)

Answer Key

Descriptive paper key link:

<https://drive.google.com/file/d/1srXHffzGfkaII-oXTyrK9-RuvlZRFUmM/view?usp=sharing>

Objective/Quiz Key Paper

I. Multiple Choice Questions

1. C
2. E
3. B
4. B
5. C
6. A
7. C
8. C
9. B
10. C

III. Fill in the blanks

11. Page frame
12. Offset & segment address
13. kernel service
14. Producer-Consumer problem
15. Use a semaphore to represent a chopstick
16. First fit & best fit
17. External fragmentation
18. wait & signal
19. 4(Four)
20. Memory manager



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<https://siiet.ac.in/>

Assignment Questions-I

(Assignment Questions are mapped with CO's, BT)

- 1. Define operating system? and Explain computer system architecture (C223.1) (Comprehension)**
- 2. Explain operating system services and operating system structure? (C223.1) (Comprehension)**
- 3. What is process? And explain process states, PCB. (C223.2) (Knowledge)**
- 4. A) Define scheduling criteria and scheduling algorithms. (C223.2) (Comprehension)**
B) Explain critical section problems and semaphores. (C223.2) (Comprehension)
- 5. Explain paging and segmentation (C223.3) (Comprehension)**



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Assignment Questions-II

(Assignment Questions are mapped with CO's, BT)

1. Consider the following reference string 1 2 3 4 2 1 5 6 2 1 2 3 7 6 3 2 1 2 3 6. Find no of page faults by applying FIFO, LRU, Optimal page replacement algorithms **(C223.4) (Synthesis)**
2. what is are the causes of thrashing. **(C223.4) (Synthesis)**
- 3.Explain file system access methods. **(C223.4) (Application)**
4. Explain disk scheduling algorithms. **(C223.4) (Comprehension)**
- 5.Explain deadlock avoidance and deadlock detection by using banker's algorithm.
(C223.6) (Comprehension)



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Result Analysis:

Course Title	OPERATING SYSTEMS
Course Code	CS403PC
Programmer	B. Tech
Year & Semester	II year II-semester, A sec
Regulation	R18
Course Faculty	Mrs. T. RAMYA PRIYA Assistant Professor , CSE

Slow learners:

S No	Roll no	No of backlogs	Internal-I Status	Internal-II Status
1	21X31A0510	5	16	14
2	21X31A0512	4	17	14
3	21X31A0516	5	19	14
4	21X31A0531	3	19	19
5	21X31A0535	4	14	14
6	21X31A0539	5	19	14
7	21X31A0546	5	17	14
8	21X31A0508	2	18	18
9	21X31A0544	3	15	16

Advanced learners:

S No	Roll No	GATE MATERIAL
1	21X31A0506	FCFS Scheduling, SJF Scheduling
2	21X31A0523	Round Robin Scheduling.
3	21X31A0525	Operating systems, Structures-simple
4	21X31A0526	Batch, Process concept and scheduling
5	21X31A0534	Scheduling Algorithms, Scheduling criteria, Deadlocks,
6	21X31A0537	Process Management and Synchronization – The Critical
7	21X31A0540	Problem, Semaphores
8	21X31A0541	Inter process communication mechanism
9	21X31A0545	FIFO, Shared memory, Memory management and virtual memory.
10	21X31A0555	Swapping, Segmentation, Paging, Page replacement Algorithm
11	21X31A0557	File system interface & operations Access methods
12	21X31A0560	File system structure Directory structure, Allocation
13	22X35A0507	methods.
14	22X35A0508	Usage of open, create, read, write, close, lseek, stat, lseek system calls.



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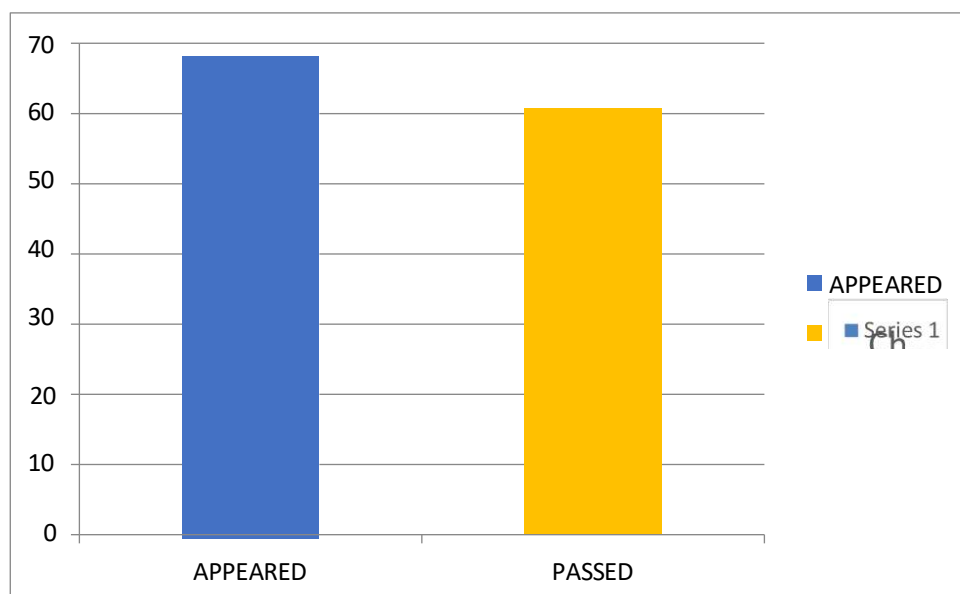
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BATCH CSE-II BTECH II- SEM CSE - A RESULT ANALYSIS

ACADAMIC YEAR	COURSE NAME	NUMBER OF STUDENTS		QUESTION PAPER SETTING		PASS%
		APPEARED	PASSED	INTERNAL	EXTERNAL	
2022-23	Operating Systems	69	61	COURSE FACULTY	EXTERNAL	87.14

Operating Systems (C223) Result Analysis





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Website: <https://siiet.ac.in/>

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

REMEDIAL CLASSES TIME TABLE

A.Y 2021-22

SEMESTER-II

BRANCH/ SEC	MON 4.00 PM- 5.00 PM	TUE 4.00 PM-5.00 PM	WED 4.00 PM- 5.00 PM	THUR 4.00 PM- 5.00 PM	FRI 4.00 PM- 5.00 PM
II CSE-A	DM	JAVA	DBMS	BEFA	OS
II CSE-B	BEFA	DBMS	DM	OS	JAVA
II CSE-C	DBMS	OS	BEFA	JAVA	DM
III CSE-A	CD	ML	DAA	STM	FIOT
III CSE-B	DAA	FIOT	CD	ML	STM
III CSE-C	ML	STM	FIOT	CD	DAA
IVCSE-A	OB	TQM	DS	-	-
IV CSE-B	DS	OB	TQM	-	-
IV CSE-C	TQM	DS	OB	-	-


HOD

Computer Science & Engg. Dept.
SRI INDU INSTITUTE OF ENGG & TECH.
Sheriguda(V), Ibrahimpatnam(M), R.R.Dist-501 510


PRINCIPAL

Sri Indu Institute of Engineering & Tech.
Sheriguda(VIII), Ibrahimpatnam
R.R. Dist Telangana -501 510

CO - 6																			
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CO Attainment based on Exam Questions:

CO - 1														100%	100%
CO - 2				82%										100%	100%
CO - 3	89%													100%	100%
CO - 4											88%				
CO - 5															
CO - 6															

CO	Subj	obj		Asgn	Overall		Level
CO-1		100%		100%	100%		3.00
CO-2	82%	100%		100%	94%		3.00
CO-3	89%	100%		100%	96%		3.00
CO-4	88%				88%		3.00
CO-5							
CO-6							

Attainment Level	
1	40%
2	50%
3	>60%

Attainment (Internal 1 Examination) = **3.00**

SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY



Department of Computer Science and Engineering
Course Outcome Attainment (Internal Examination-2)

Name of the faculty: **T.RAMYA PRIYA** Academic Year: **2022-23**
 Branch & Section: **CSE-A** Examination: **II Internal**
 Course Name: **OPERATING SYSTEMS** Year: **II** Semester: **II**

S.No	HT No.	Q1a	Q1b	Q1c	Q2a	Q2b	Q2c	Q3a	Q3b	Q3c	Q4a	Q4b	Q4c	Obj1	A1
		5			5			5			5			10	5
1	21X31A0501	2						3						10	5
2	21X31A0502	5									2			10	5
3	21X31A0503	5									4			10	5
4	21X31A0504	5									4			10	5
5	21X31A0505	3									4			10	5
6	21X31A0506	5									5			10	5
7	21X31A0507	5												10	5
8	21X31A0508	5									4			9	5
9	21X31A0509	5						3						9	5
10	21X31A0510							2						9	5
11	21X31A0511	4									4			8	5
12	21X31A0512	3												9	5
13	21X31A0513	5			4									10	5
14	21X31A0514	5			4									10	5
15	21X31A0515	5									4			10	5
16	21X31A0516				4									10	5
17	21X31A0517	5									3			10	5
18	21X31A0518	4						4						10	5
19	21X31A0519	5									3			10	5
20	21X31A0520	5									4			10	5
21	21X31A0521	3			4									10	5
22	21X31A0522	5			4									10	5
23	21X31A0523	5									4			8	5
24	21X31A0524	5									4			10	5
25	21X31A0525	3									4			9	5
26	21X31A0526	5			4									10	5
27	21X31A0527	5									4			10	5
28	21X31A0528	4									4			10	5
29	21X31A0529	5									4			10	5
30	21X31A0530	4			4									9	5
31	21X31A0531	3			2									10	5
32	21X31A0532	5									2			10	5

33	21X31A0533	5									4			10	5
34	21X31A0534	5									4			10	5
35	21X31A0535	3						4						7	5
36	21X31A0536				1						4			10	5
37	21X31A0537	4			4									9	5
38	21X31A0538	5			5									10	5
39	21X31A0539	3									1			10	5
40	21X31A0540	5									4			9	5
41	21X31A0541	5			4									9	5
42	21X31A0542	5			5									9	5
43	21X31A0543	5									2			9	5
44	21X31A0544										1			9	5
45	21X31A0545	5									5			10	5
46	21X31A0546	2												10	5
47	21X31A0547	4						3						7	5
48	21X31A0548	5						4						10	5
49	21X31A0549	5												10	5
50	21X31A0550	5												9	5
51	21X31A0552	4									4			9	5
52	21X31A0554	4									5			8	5
53	21X31A0555	3									2			10	5
54	21X31A0556	5									1			10	5
55	21X31A0557	5			5									10	5
56	21X31A0559	5						3						10	5
57	21X31A0560	5									5			10	5
58	21X31A0561	4									4			10	5
59	21X31A0562	5			4									10	5
60	21X31A0563	5			4									10	5
61	21X31A0564	3									3			10	5
62	21X31A0565	1									3			10	5
63	22X35A0501	4									4			10	5
64	22X35A0502	5						4						9	5
65	22X35A0503	4									3			9	5
66	22X35A0504	2									2			10	5
67	22X35A0505	4									4			9	5
68	22X35A0506	4									4			9	5
69	22X35A0507	3									4			9	5
70	22X35A0508	5						4						9	5
Target set by the faculty / HOD		3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	6.00	3.00
Number of students performed above the target		62	0	0	14	0	0	9	0	0	32	0	0	70	70

Number of students attempted	66	0	0	16	0	0	10	0	0	40	0	0	70	70
Percentage of students scored more than target	94%			88%			90%			80%			100%	100%

CO Mapping with Exam Questions:

CO - 1														
CO - 2														
CO - 3														
CO - 4	Y												Y	Y
CO - 5				Y			Y						Y	Y
CO - 6										Y			Y	Y

% Students Scored >Target %	94%			88%			90%			80%			100%	100%
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CO Attainment based on Exam Questions:

CO - 1														
CO - 2														
CO - 3														
CO - 4	94%												100%	100%
CO - 5				88%			90%						100%	100%
CO - 6										80%			100%	100%

CO	Subj	obj	Asgn	Overall	Level
CO-1					
CO-2					
CO-3					
CO-4	94%	100%	100%	98%	3.00
CO-5	89%	100%	100%	96%	3.00
CO-6	80%	100%	100%	93%	3.00

Attainment Level	
1	40%
2	50%
3	>60%

Attainment (Internal Examination-

2) =

3.00



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Khalsa Ibrahimpatnam, Sheriguda (V), Ibrahimpatnam (M), Ranga Reddy Dist., Telangana – 501 510 Website:

<https://siiet.ac.in/>

Name of the faculty: T. RAMYA PRIYA

Academic Year:

2022-23

Branch & Section: CSE- A

Year / Semester: II/II

Course Name: OPERATING SYSTEMS

S. No	Roll Number	Marks Secured
1	21X31A0501	27
2	21X31A0502	26
3	21X31A0503	32
4	21X31A0504	33
5	21X31A0505	27
6	21X31A0506	36
7	21X31A0507	26
8	21X31A0508	26
9	21X31A0509	26
10	21X31A0510	26
11	21X31A0511	32
12	21X31A0512	4
13	21X31A0513	35
14	21X31A0514	54
15	21X31A0515	36
16	21X31A0516	38
17	21X31A0517	38
18	21X31A0518	27
19	21X31A0519	47
20	21X31A0520	12
21	21X31A0521	28
22	21X31A0522	7
23	21X31A0523	51
24	21X31A0524	36
25	21X31A0525	41
26	21X31A0526	35
27	21X31A0527	35
28	21X31A0528	33
29	21X31A0529	36
30	21X31A0530	28
31	21X31A0531	12
32	21X31A0532	39
33	21X31A0533	48
34	21X31A0534	44
35	21X31A0535	-1

Max Marks 75

Class Average mark	31
Number of students performed above the target	34
Number of successful students	69

S. No	Roll Number	Marks Secured
36	21X31A0536	29
37	21X31A0537	30
38	21X31A0538	34
39	21X31A0539	29
40	21X31A0540	46
41	21X31A0541	40
42	21X31A0542	44
43	21X31A0543	26
44	21X31A0544	28
45	21X31A0545	35
46	21X31A0546	27
47	21X31A0547	35
48	21X31A0548	34
49	21X31A0549	30
50	21X31A0550	29
51	21X31A0552	9
52	21X31A0554	24
53	21X31A0555	46
54	21X31A0556	26
55	21X31A0557	27
56	21X31A0559	28
57	21X31A0560	26
58	21X31A0561	40
59	21X31A0562	34
60	21X31A0563	34
61	21X31A0564	43
62	21X31A0565	26
63	22X35A0501	10
64	22X35A0502	26
65	22X35A0503	42
66	22X35A0505	26
67	22X35A0506	29
68	22X35A0507	18
69	22X35A0508	32

Attainment Level	% students
1	60%
2	70%

Percentage of students scored more than target	49%
Attainment level	1

3	>80%
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<https://siiet.ac.in/>

Name of the faculty T. RAMYA PRIYA

Academic Year 2022-23

Branch & Section: CSE- A

Examination: I Internal

Course Name: OPERATING SYSTEMS

Year: II

Semester: I

Course Outcomes	1st Internal Exam	2nd Internal Exam	Internal Exam	University Exam	Attainment Level
CO1	3.00		3.00	1.00	1.50
CO2	3.00		3.00	1.00	1.50
CO3	3.00		3.00	1.00	1.50
CO4	3.00	3.00	3.00	1.00	1.50
CO5		3.00	3.00	1.00	1.50
CO6		3.00	3.00	1.00	1.50
Internal & University Attainment:			3.00	1.00	
Weightage			25%	75%	
CO Attainment for the course (Internal, University)			0.75	0.75	
CO Attainment for the course (Direct Method)			1.50		

Overall course attainment level

1.50



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Website: <https://siiet.ac.in/>

Name of Faculty: T. RAMYA PRIYA

Academic Year: 2022-23

Branch & Section: CSE- A

Year: II

Course Name: OPERATING SYSTEMS

Semester: II

CO-PO mapping

PO/PSO/ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C223.1	3	-	1	2	-	-	-	-	-	-	-	-	2	-
C223.2	-	2	3	-	1	-	-	-	-	-	-	-	-	-
C223.3	1	3	2	-	-	-	-	-	-	-	-	-	-	1
C223.4	-	1	3	-	2	-	-	-	-	-	-	-	-	-
C223.5	-	2	3	1	-	-	-	-	-	-	-	-	-	2
C223.6	-	-	3	1	2	-	-	-	-	-	-	-	-	-
C223	2	2	2.5	1.2	1.6	-	-	-	-	-	-	-	2	1.5

CO	Course Outcome Attainment
CO1	1.50
CO2	1.50
CO3	1.50
CO4	1.50
CO5	1.50
CO6	1.50
Overall course attainment level	1.50

PO-ATTAINMENT

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO Attainment	1.38	0.00	1.13	0.00	0.50	0.00	0.00	1.00	0.00	0.00	1.50	0.00

CO contribution to PO - 33%, 67%, 100% (Level 1/2/3)



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Website: <https://siet.ac.in/>

ASSIGNMENTS AND ATTENDANCE REGISTER

Assignment-1 Script link:

<https://drive.google.com/file/d/1G-SGNi7QDebbElfG12mOKWX23EWdvcUW/view?usp=sharing>

Assignment-2 Script link:

https://drive.google.com/file/d/1MSQYkmuLh_jDVodjluM1Snljtwau_Gn4/view?usp=sharing

Attendance Register Link:

https://drive.google.com/file/d/17baZrJxa3CwXO8kokF5fmW9A5_2XpkyS/view?usp=sharing