A

Course File Report

On

OPERATING SYSTEMS

Submitted by

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In the department of
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CMR ENGINEERING COLLEGE
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(2022-23)

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1. DEPARTMENT VISION & MISSION

VISION OF THE DEPARTMENT

To produce globally competent and industry-ready graduates in Computer Science & Engineering by imparting quality education with the know-how of cutting-edge technology and holistic personality.

MISSION OF THE DEPARTMENT

1. To offer high-quality education in Computer Science & Engineering in order to build core competence for the graduates by laying a solid foundation in Applied Mathematics and program framework with a focus on concept building.

2. The department promotes excellence in teaching, research, and collaborative activities to prepare graduates for a professional career or higher studies.

3. Creating an intellectual environment for developing logical skills and problem-solving strategies, thus developing, an able and proficient computer engineer to compete in the current global scenario.

2. Program Educational outcome (PEOs):

PEO 1: Excel in professional career and higher education by acquiring knowledge of mathematical computing and engineering principles.

PEO 2: To provide an intellectual environment for analyzing and designing computing systems for technical needs.

PEO 3: Exhibit professionalism to adapt current trends using lifelong learning with legal and ethical responsibilities.

PEO 4: To produce responsible graduates with effective communication skills and multidisciplinary practices to serve society and preserve the environment.

Program Outcomes (POs):

1. **Engineering knowledge:**Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. **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.

3. **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.

4. **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.

5. **Modern tool usage:**Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. **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.

7. **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.

8. **Ethics:**Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work:**Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. **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.

11. **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.

12. **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.

Program Specific Outcomes (PSOs):

PSO1: Professional Skills and Foundations of Software development: Ability to analyze, design and develop applications by adopting the dynamic nature of Software developments.

PSO2: **Applications of Computing and Research Ability:** Ability to use knowledge in cutting edge technologies in identifying research gaps and to render solutions with innovative ideas.

3.List of Cos (action verbs as per blooms)

COURSE NAME: OPERATING SYSTEMS **A.Y: 2022-23**

Course code: CS303PC **II/IV.B.Tech-1 Sem -CSE**

C301.1	The student will be able to **explain** and **remember** the operating systems concepts, types of operating systems, system class, etc.
C301.2	**Understand** and be able to **Explain** the CPU Scheduling algorithms and Process management.
C301.3	Will be able to **Understand** and **Remember** the Deadlock handling and processes synchronization, Semaphores, and Classical Problems of Synchronization.
C301.4	**Explain** and **Remember** the Memory management techniques and virtual memory such as Paging, Segmentation, Demand, Paging, and Page Replacement Algorithms.
C301.5	**Explain** file system interfaces and operations and **recall** the basic commands/ functions of Unix operating systems.

4.Syllabus copy and suggested or reference books

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

Interprocess 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, create, read, write, close, lseek, stat, ioctl system calls.

TEXT BOOKS:

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

REFERENCE BOOKS:

R1- Operating Systems – Internals and Design Principles Stallings, Fifth Edition–2005, Pearson Education/PHI

R2- Operating System A Design Approach- Crowley,TMH.

R3- Modern Operating Systems, Andrew S. Tanenbaum 2nd edition,Pearson/PHI

R4- UNIX programming environment, Kernighan and Pike, PHI/ PearsonEducation

R5- UNIX Internals -The New Frontiers, U. Vahalia, PearsonEducation.

5.Session plan/ lesson plan

S.NO	Topic (JNTU syllabus)	Sub-Topic	NO. OF LECTURES REQUIRED	Suggested Books	Teaching Methods
UNIT – I					
1	**Operating System - Introduction**	Introduction, Structures	**L1**	**T1**	**M1**
2		Simple Batch, Multi-programmed	**L2**	**T1**	**M2(PPT)**
3		Time-shared, Personal Computer	**L3**	**T1**	**M1**
4		Parallel, Distributed Systems,	**L4**	**T1**	**M2(PPT)**
5		Real-Time Systems	**L5**	**T1**	**M1**
6		System components	**L6**	**T1**	**M1**
7		Operating System services	**L7**	**T1**	**M1**
8		System Calls	**L8**	**T1**	**M1**
UNIT – II					
9	**Process and CPU Scheduling**	Process concepts and Scheduling	**L9**	**T1**	**M1**
10		Operations on processes	**L10**	**T1**	**M1**
11		Cooperating Processes	**L11**	**T1**	**M1**
12		Threads	**L12**	**T1**	**M1**
13		Interposes Communication	**113**	**T1**	**M1**
14		Scheduling Criteria	**L14**	**T1**	**M2(PPT)**
15		Scheduling Algorithms	**L15, L16, L17,L18,L19**	**T1**	**M2(PPT)**
16		Multiple -Processor Scheduling.	**L20, L21**	**T1**	**M1**
17		**UNIT-III**			
18		System Model, Deadlocks Characterization	**L22,L23**	**T1**	**M1**

19	**Deadlocks**	Methods for Handling Deadlocks	**L24**	**T1**	**M1**
20		Deadlock Prevention, Deadlock Avoidance	**L25, L26**	**T1**	**M2(PPT)**
21		Deadlock Detection, and Recovery from Deadlock	**L27,L28**	**T1**	**M2(PPT)**
22		The Critical Section Problem,	**L29**	**T1**	**M1**
23		Synchronization Hardware	**L30**	**T1**	**M1**
24		Semaphores, and Classical Problems of Synchronization	**L31,L32**	**T1**	**M1**
25		Critical Regions, Monitors	**L33,L34**	**T1**	**M1**
26		IPC between processes on a single computer system.	**L35**	**T1**	**M1**
27		IPC between processes on different systems, using pipes	**L36**	**T1**	**M2(PPT)**
28		FIFOs, message queues, shared memory.	**L37,L38**	**T1**	**M2(PPT)**
UNIT-IV					
29		Logical versus Physical Address Space, Swapping,	**L39, L40**	**T1**	**M1**
30		Contiguous Allocation Paging	**L41**	**T1**	**M1**
31	**Memory Management and Virtual Memory**	Segmentation, Segmentation with Paging	**L42,L43**	**T1**	**M1**
32		Demand Paging	**L44**	**T1**	**M1**
33		Page Replacement	**L45**	**T1**	**M1**
34		Page Replacement Algorithms	**L46,L47**	**T1**	**M1**
UNIT - V					
33	**File System Interface and Operations**	Access methods, Directory Structure	**L48**	**T1**	**M1**
34		Protection, File System Structure	**L49,L50**	**T1**	**M2(PPT)**
35		Allocation methods	**L51**	**T1**	**M2(PPT)**

36		Free-space Management	**L52**	**T1**	**M1**
37		Usage of open, create, read, write	**L53**	**T1**	**M1**
38		close, lseek, stat, ioctl system calls.	**L54**	**T1**	**M1**
Total			**54**		

Individual Time Table

	I	II	III	IV	V	VI	VII
MON							
TUE					OS-A		LIB/SPORTS
WED				OS-A	OS LAB BATCH 1		
THU	OS-A	OS LAB BATCH 2					
FRI		OS-A				JAVA LAB-II B	
SAT	OS-A						

6.Session execution log

S. no	Unit	Scheduled completed date	Completed date	Remarks
1	**I**	10-10-22	23-10-22	COMPLETED
2	**II**	25-10-22	19-11-22	COMPLETED
3	**III**	22-11-22	22-12-22	COMPLETED
4	**IV**	24-12-22	10-1-23	COMPLETED
5	**V**	11-1-23	25-1-23	COMPLETED

7.Lecture notes(Hand written)


UNIT-1.rar


UNIT-2.rar


UNIT-3 P-1.rar


UNIT-3 P-2 & 3.rar


UNIT-4.rar


UNIT-5.rar

8.Assignment Questions along with sample assignment

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ASSIGNMENT -1

ANSWER ALL THE QUESTIONS **SUBJECT NAME:OPERATING SYSTEMS**

TIME:I HOUR

1.Describe system calls and their type?[CO2]

2.Is it possible to have a deadlock involving only one process? Explain deadlock arise situations. [CO3]

3.What is the thread? Explain thread structure and types.[CO2]

4.Describes shared memory and message queues[CO2]

5.Consider the following 5 processes with the length of the cpu burst time given in milliseconds

Process	Burst time
P1	10
P2	29
P3	3
P4	7
P5	12

Consider the FCFS, SJF, RR(Quantum =10milli seconds) scheduling algorithm. Illustrate the scheduling using Gantt chart and caliculate the waiting time. Which algorithm will give minimum waiting time? (CO2)

ASSIGNMENT-II

SUBJECT :OPERATING SYSTEMS

Answer all the questions **5*1=5 Marks**

1. Explain in detail Bankers algorithm with an example? (CO3)

2. What is anIPC? Howto implement IPC mechanism using Message-queues? (CO3)

3. Discuss the procedure for page fault in demand paging. (CO4)

4. What is the need of Page Replacement? Consider the following reference string 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0,3,2, 1, 2, 0, 1, 7, 0, 1. Find the number of Page Faults with FIFO, Optimal Page replacement and LRU with four frames which are empty initially. Which algorithm gives the minimum number of page faults? (CO4)

5. What is File system and what are the various File access methods? Explain. (CO5)

9.Mid exam question papers along with sample answer scripts

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II-B.TECH-II-SEM-I MID EXAMINATIONS

Date:07/12/2022 **Time:10:00AMto11:30AM**

Subject:Operating Systems

Branch:CommontoCSE,IT,CSM,CSD,CSC

PART-A **5x2M=10M**

1. What are operating system services?(CO1)
2. Define Kernel and its structure? (CO1)
3. Draw the different states of a process? (CO2)
4. Classify the various IPC mechanisms? (CO2)
5. Determine causes a deadlock? (CO3)

PART-B **3x 5M=15 M**

6. Illustrate system calls and their types?(CO1)

or

7. Is it possible to have a deadlock involving only one process? Explain deadlock arise situations? (CO3)
8. What is a thread? Explain thread structure and types. (CO2)

or

A) Construct a short notes on the following
B) Distributed systems B)Batch operating systems(CO1)

9. Elaborate shared memory and message queues(CO2)

or

10. Build the following 5 processes with the length of the cpu burst time given in milliseconds(CO1)

Process	BurstTime
P1	10
P2	29
P3	3
P4	7
P5	12

ConsidertheFCFS,SJF,RR(Quantum=10milliseconds)scheduling algorithm. Illustrate the scheduling using Gantt chart and calculate the waiting time. Which algorithm will give minimum waiting time?

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II.B.TECH- I-SEM(R20)-II MID EXAMINATIONS-FEB-2023

Date:07/02/2023 **Subject: OSTime:10:00 TO 11:30 AM**

Branch:COMMON TO CSE,CSC,CSM,CSD & IT **Marks: 25 M**

Answer All Questions In Part-A& Part-B

PART-A **5x2=10**

1. Differentiate between semaphores and monitors? (CO3)
2. How to change the file access permissions? (CO5)
3. Discuss about page replacement? (CO4)
4. What is contiguous-memory allocation? (CO4)
5. What is Free space management? List out various types? (CO5)

PART-B **3X5=15**

6. Explain in detail Bankers algorithm with an example? (CO1)

(OR)

7. What is anIPC? Howto implement IPC mechanism using Message-queues?(CO1)

8. a) Discuss the procedure for page fault in demand paging. (CO1)
   b)Write a detailed note on Virtual Memory.(CO3)

(OR)

9. What is the need of Page Replacement? Consider the following reference string 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0,3,2, 1, 2, 0, 1, 7, 0, 1. Find the number of Page Faults with FIFO, Optimal Page replacement and LRU with four frames which are empty initially. Which algorithm gives the minimum number of page faults? (CO4)

10. What is File system and what are the various File access methods? Explain.(CO1)

(OR)

11. What is Directory Structure? What are various methods to implement it? (CO2)

10.Scheme of evaluation

Scheme of Evaluation(MID-1)

S.No	Theory	Marks	Total
1	Operating system services.	2	10
2	Kernel and its structure.	2	
3	Different states of a process.	2	
4	Various IPC mechanisms.	2	
5	Causes of deadlock.	2	
6	System calls and their types.	5	15
7	Deadlock arise situations.	5	
8	Thread structure and types	5	
9	Write the short notes on A)Distributed systems B)Batch operating systems.	5	
10	Shared memory and message queues	5	
11	Scheduling using Gantt chart and calculate the waiting time.	5	
	Total		25

Scheme of Evaluation(MID-2)

S.No	Theory	Marks	Total
1	Differentiate semaphores and monitors	2	10
2	Change the file access permissions	2	
3	Page replacement	2	
4	Contiguous-memory allocation	2	
5	Free space management, various types	2	
6	Bankers algorithm with an example		15
7	implement IPC mechanism using Message-queues	5	
8	a)procedure for page fault in demand paging	2.5	
	b)Note on Virtual Memory	2.5	
9	Which algorithm gives the minimum number of page faults FIFO,LRU,OPTIMAL	5	
10	File system and what are the various File access methods	5	
11	Directory Structure and various methods to implement		
Total			25

11.Mapping of COs with POs and PSOs

CO-PO MAPPING

COURSE CO-PO&PSO-MATRIX	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	-	-	-	-	-	-	-	-	-	-	2	1	1
CO2	3	2	2	2	1	-	-	-	-	-	-	1	1	1
CO3	2	2	3	2	1	-	-	-	-	-	-	1	1	
CO4	2	2	2	2	-	-	-	-	-	-	-	2	1	
CO5	2	1	2	-	2		-	-	-	-	-	1	1	
AVERAGE	2.2	1.75	2.25	2	1.3							1.4	1	1

12.COs,POs and PSOs:

Substantially (High): 3	Moderately (Good): 2	Low (Minimal): 1

CO 1: The student will be able to **explain** and **remember** the operating systems concepts, types of operating systems, system class, etc.
Correlated with PO-1 moderately: Because it contributes the knowledge on fundamentals of operating systems and their types which make students get engineering knowledge and student can remember the same. The correlation of CO1 to PO1 is good.
Correlated with PO-12 Moderately: Because it helps to learn for all technical changes in the computer operating systems**.** The correlation of CO1 to PO12 is good.
Correlation with PSO-1 Low: Operating systems basics helps to adapt profession skills and foundation of software development. The correlation of CO1 to PSO1 is Minimal.

CO2: Understand and be able to **Explain** the CPU Scheduling algorithms and Process management.
Correlated with PO1 highly: Because it provides CPU scheduling and Process managements this knowledge is required for all the computer science engineering students. So, correlation is high.
Correlated with PO2 moderately: contribution to provide solutions for Complex problems is little so, the correlation is moderate.
Correlated with PO3 moderately: It contributes to provide scope of identifying some solution to complex problems but not a complete. So, the correlation of CO2 is moderate.
Correlated with PO4 moderately: ability to design and conduct investigations on some case studies and low level applications. So, the correlation of CO2 is moderate.
Correlated with PO5 low: By using these techniques and skills advanced tools can be utilized. So, the correlation of CO2 is low.
Correlated with PO12 low: Scheduling algorithms and process management concepts will help slightly in professional career also. So, the correlation of CO2 is low.
Correlated with PSO1 low: for analyzing the job scheduling and developing minimal knowledge is required. So, the correlation of CO2 is low.
Correlated with PSO2 low: for application developments and understanding of cutting edge technologies slightly this concepts are going to be useful. So, the correlation of CO2 is low.

CO3: Will be able to **Understand** and **Remember** the Deadlock handling and process synchronization.
Correlated with PO1 moderately: contribution of this course outcome is good for providing the knowledge of deadlock handling and synchronization. The correlation is moderate.
Correlated with PO2 moderately: the CO3 contributes knowledge of analyzing the problems on prevention, deadlock avoidance, etc. So, the correlation of CO3 is Good.
Correlated with PO3 Strongly: Students get knowledge on process states and their structure like threads, synchronizations, etc. The correlation is very high.
Correlated with PO4 moderately: The correlation is moderate for providing knowledge like deadlock handling methods which helps to analyze and interpret the processes. So, the correlation of CO3 is Good.
Correlated with PO5 low: Students get knowledge on different techniques of the processes

and synchronization. The correlation is low.
Correlated with PO12 low: These concepts such as methods for handling deadlocks and semaphores, and classical problems slightly help to learn and understand the technologies. So, the correlation of CO3 is low.
Correlated with PSO1 low: Synchronization problems are helps to analyze, design, and develop applications minimal knowledge is required. So, the correlation of CO3 is low.

CO 4: Explain and **Remember** the Memory management techniques and virtual memory such as Paging, Segmentation, Demand, Paging, and Page Replacement Algorithms.
Correlated with PO1 moderately: Because it contributes the knowledge of memory management techniques and page replacement algorithms. So, the correlation of CO4 to PO1 is good.
Correlated with PO2 moderately: course outcome provides students to identify different page replacement algorithms and management. So, overall, the correlation of CO4 is good.
Correlated with PO3 moderately: It contributes knowledge on developing complex problems of memory management techniques such as paging, and replacement algorithms. So, overall, the correlation of CO4 is good.
Correlated with PO4 Moderately: Course outcomes provide research methods including the design of experiments, analysis, and interpretation of data. So, overall, the correlation of CO4 is good.
Correlated with PO12 Moderately: Memory management and virtual memory concepts are slightly useful for learning and applying technical applications. the correlation of CO4 is good.
Correlated with PSO1 low: Memory Management and Virtual Memory, Swapping, Contiguous Allocation, and Paging, are helping to analyze, design, and develop applications minimal knowledge is required. So, the correlation of CO4 is low.

CO 5: Explain file system interfaces and operations and **recall** the basic commands/ functions of Unix operating systems.
Correlated with PO1 moderately: Because it contributes the knowledge of file systems, functions, and Unix basic operations. So, the correlation of CO5 to PO1 is good.
Correlated with PO2 low: to identify system interfaces and operations of Unix operating system So, overall, the correlation of CO5 is minimal.
Correlated with PO3 moderately: It contributes knowledge on developing and designing

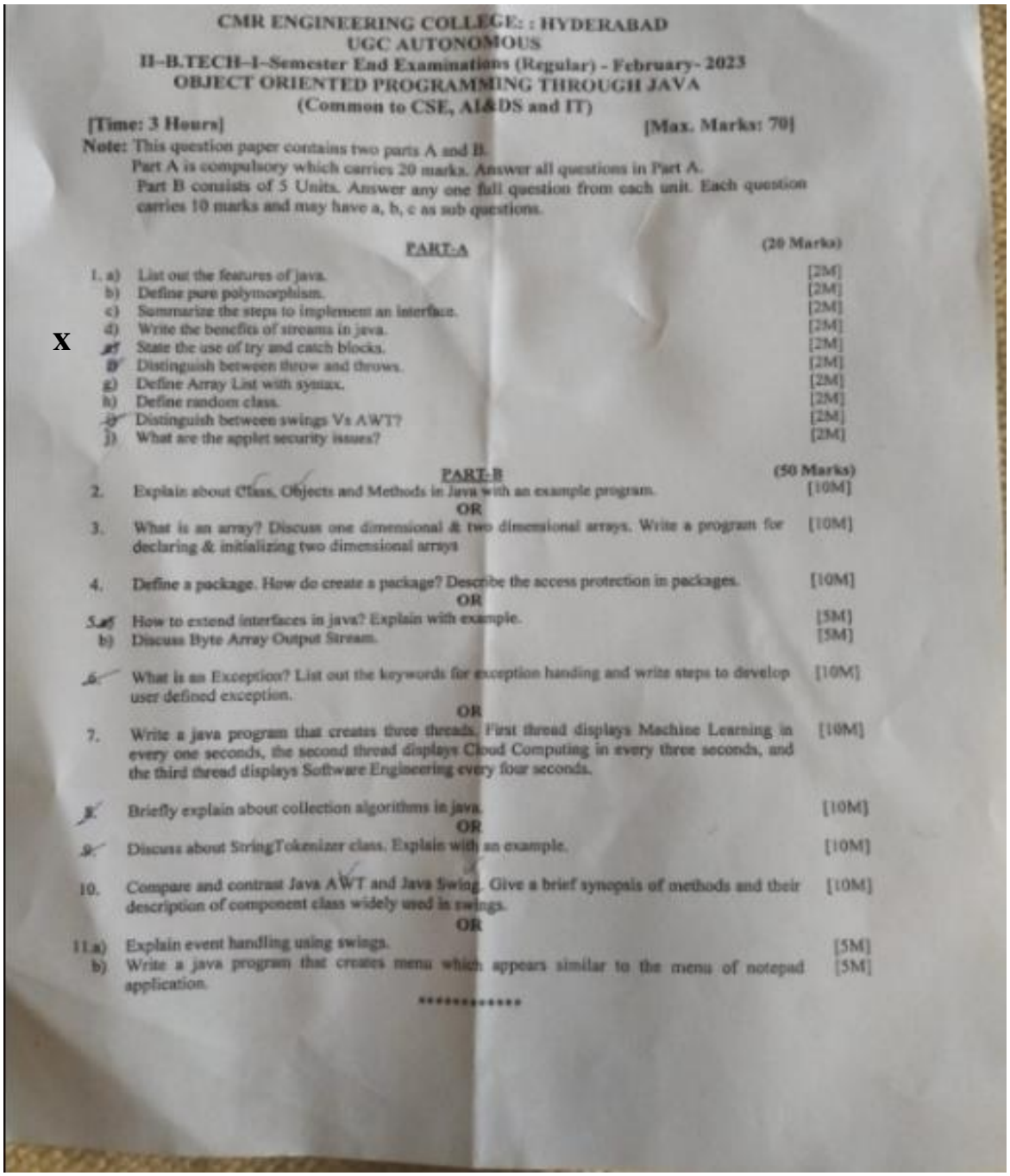
file systems/permissions or structures in the Unix environment. So, overall, the correlation of CO5 is good.
Correlated with PO5 low: Unix operating practice will help students to utilize other tools like Linux mint, Red hat, Ubuntu, etc. So, overall, the correlation of CO5 is minimal.
Correlated with PO12 low: File systems organizations/permissions and Unix command line environment knowledge will help to analyze and develop apps. the correlation of CO5 is low.
Correlated with PSO1 low: Minimal Unix basic utility knowledge is required for all computer science students to design and develop applications. So, the correlation of CO5 is low.

13.Attainment of COs with POs and PSOs

(Result not declared)

14.University question papers or question bank.

Autonomous question paper 2023



CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
II–B.TECH–I–Semester End Examinations (Regular) - February- 2023
OBJECT ORIENTED PROGRAMMING THROUGH JAVA
(Common to CSE, AI&DS and IT)

[Time: 3 Hours] [Max. Marks: 70]

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A (20 Marks)

1.	a)	List out the features of java.	[2M]
	b)	Define pure polymorphism.	[2M]
	c)	Summarize the steps to implement an interface.	[2M]
	d)	Write the benefits of streams in java.	[2M]
	e)	State the use of try and catch blocks.	[2M]
	f)	Distinguish between throw and throws.	[2M]
	g)	Define Array List with syntax.	[2M]
	h)	Define random class.	[2M]
	i)	Distinguish between swings Vs AWT?	[2M]
	j)	What are the applet security issues?	[2M]

PART-B (50 Marks)

2.		Explain about Class, Objects and Methods in Java with an example program.	[10M]
		OR	
3.		What is an array? Discuss one dimensional & two dimensional arrays. Write a program for declaring & initializing two dimensional arrays	[10M]
4.		Define a package. How do create a package? Describe the access protection in packages.	[10M]
		OR	
5.	a)	How to extend interfaces in java? Explain with example.	[5M]
	b)	Discuss Byte Array Output Stream.	[5M]
6.		What is an Exception? List out the keywords for exception handing and write steps to develop user defined exception.	[10M]
		OR	
7.		Write a java program that creates three threads. First thread displays Machine Learning in every one seconds, the second thread displays Cloud Computing in every three seconds, and the third thread displays Software Engineering every four seconds.	[10M]
8.		Briefly explain about collection algorithms in java.	[10M]
		OR	
9.		Discuss about StringTokenizer class. Explain with an example.	[10M]
10.		Compare and contrast Java AWT and Java Swing. Give a brief synopsis of methods and their description of component class widely used in swings.	[10M]
		OR	
11.	a)	Explain event handling using swings.	[5M]
	b)	Write a java program that creates menu which appears similar to the menu of notepad application.	[5M]

****

R18

Code No: 154BR

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY
HYDERABAD

B.Tech II Year II Semester Examinations, November/December - 2020OPERATING 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 ConsumerProblem 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:

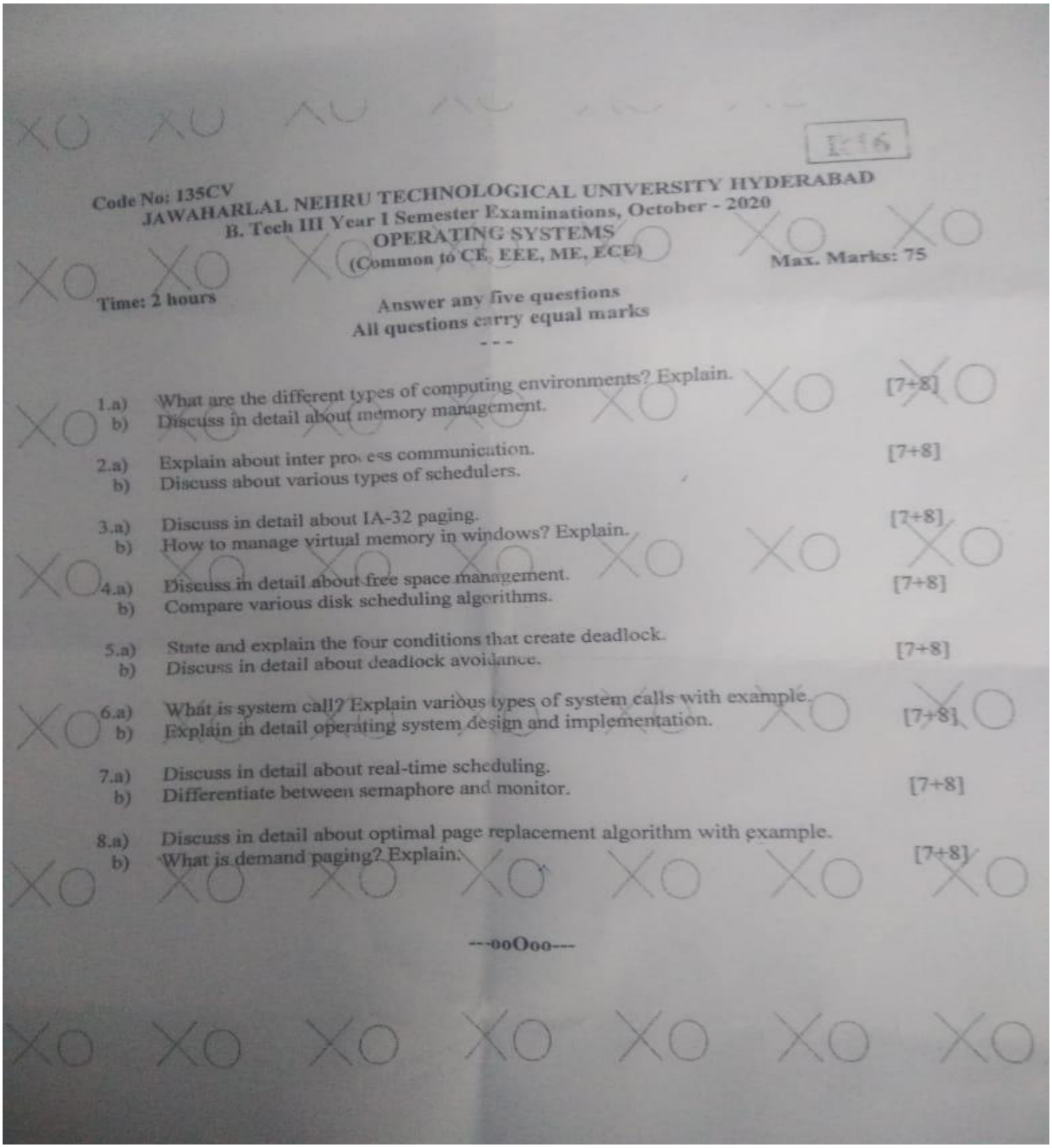
Process	Burst Time	Priority
P1	27	5
P2	12	1
P3	37	2
P4	19	4
P5	10	3

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: 135CV

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, October - 2020
OPERATING SYSTEMS
(Common to CE, EEE, ME, ECE)

Time: 2 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks

1.a)	What are the different types of computing environments? Explain.	[7+8]
b)	Discuss in detail about memory management.	
2.a)	Explain about inter process communication.	[7+8]
b)	Discuss about various types of schedulers.	
3.a)	Discuss in detail about IA-32 paging.	[7+8]
b)	How to manage virtual memory in windows? Explain.	
4.a)	Discuss in detail about free space management.	[7+8]
b)	Compare various disk scheduling algorithms.	
5.a)	State and explain the four conditions that create deadlock.	[7+8]
b)	Discuss in detail about deadlock avoidance.	
6.a)	What is system call? Explain various types of system calls with example.	[7+8]
b)	Explain in detail operating system design and implementation.	
7.a)	Discuss in detail about real-time scheduling.	[7+8]
b)	Differentiate between semaphore and monitor.	
8.a)	Discuss in detail about optimal page replacement algorithm with example.	[7+8]
b)	What is demand paging? Explain.	

---ooOoo---

R16

Code No: 134BU

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, April - 2018

OPERATING SYSTEMS

(Common to CSE, IT)

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

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A **(25 Marks)**

1.a) What are the different types of operating systems? [2]
b) How parameters can be passed to system calls? [3]
c) Define semaphores. [2]
d) What is the role of dispatcher? [3]
e) State the purpose of TLB. [2]
f) Distinguish between logical address and physical address. [3]
g) Define the following terms with respect to disk I/O – seek time and latency time. [2]
h) Distinguish between shared and exclusive lock. [3]
i) Define resource. List some resources that a process might need for its execution. [2]
j) Describe role-based access control. [3]

PART-B **(50 Marks)**

2.a) Explain briefly system calls with examples.
b) Explain different operations performed by the operating system. [5+5]

OR

3.a) State and explain various types of computer systems.
b) Explain if you run the same program twice, what section would be shared in the memory. [5+5]

4.a) Describe dining-philosopher problem? Device an algorithm to solve the problem using semaphores?
b) Define process. How many different states a process has? Explain when a process changes the state with a state diagram? [5+5]

OR

5.a) Explain the readers writers problem and its solution using the concept of semaphores.
b) Explain about Inter Process communication. [5+5]

6.a) Explain the following:
i) Paging
ii) Segmentation.
b) Explain why the "principle of locality" is crucial to the use of virtual memory? What is accomplished by page buffering? [5+5]

OR

7.a) Explain briefly the performance of demand paging with necessary examples.
b) Consider there are three page frames which are initially empty. If the page reference string is 1,2,3,4,2,1,5,3,2,4,6. The number of page faults using the optimal page replacement policy is? [5+5]

8.a) Explain the concept of file sharing. What are the criteria to be followed in systems which implement file sharing?
b) Compare the performance of write operations achieved by a RAID level 5 organization with that achieved by a RAID level 0 organizations? [5+5]

OR

9.a) Discuss the following terms
i) File system mounting
ii) Thrashing
b) What is the maximum file size supported by a file system with 16 direct blocks, single, double, triple indirection? The block size is 512 bytes. Disk block numbers can be stored in 4 bytes. [5+5]

10.a) Explain bankers algorithm for deadlock avoidance with an example.
b) Explain about domains of protection. [5+5]

OR

11.a) A system has 3 devices D1, D2 and D3 and 3 processes P1, P2 and P3. P1 is holding D1 and waiting for D3. P2 is holding D2 and waiting for D1. P3 is holding D3 and waiting for D2. Draw resource allocation graph and wait-for graph. Is the system in deadlock state or not? Explain.
b) State and explain the methods involved in recovery from deadlocks. [5+5]

15.Power point presentations


UNIT-2 PPTS.rar


UNIT-4 PPTSF.rar


UNIT-1 PPTS.rar


UNIT-5 PPTS.rar


UNIT-3 PART-1 PPTS.rar


UNIT-3 PART-2 PPTS.rar


UNIT-3 PART-3 PPTS.rar

16.Websites or URLs e- Resources

https://www.javatpoint.com/os-tutorial

https://www.guru99.com/os-tutorial.html

https://nptel.ac.in/courses/106/108/106108101/#

https://www.coursera.org/learn/os-power-user