Code No: R20A0504 R20 MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

II B.Tech I Semester Regular Examinations, February 2022

Operating Systems

(CSE,	CSE-A	I&N	ſL,	CSE	E-CS	, C	SE-	DS	&	CS	E-]	ΙΟΤ	&	II	')

Roll No	
---------	--

Time: 3 hours

Max. Marks: 70

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

*** SECTION-I

1 With a neat Diagram, Discuss the Architecture of LINUX Operating System? [14M] Recall its features?

OR

2 Define Operating System? Explain various operating System Services with clear [14M] examples?

SECTION-II

3 Discuss in detail about importance of Shells and how they contribute to execute [14M] commands? Write a sample shell script to find greatest among three numbers

OR

4 Consider the following set of processes, with the length of the CPU burst given in [14M] milliseconds:

Process	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	4
P4	1	5
P5	5	2

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5, all at time 0. Draw Gantt chart that illustrate the execution of these processes using the non preemptive priority (a smaller priority number implies a higher priority) scheduling algorithm. What is the turnaround time and waiting time of each process?

SECTION-III

5 How Semaphores and Monitors Solve the Synchronization problem. Illustrate [14M] them with clear examples.

OR

6 Consider the following snapshot of a system: Allocation Max Available

Allo	cation	WIAX	Available
	ABC D	A B C D	ABCD
Po	0012	0 0 1 2	1520
P1	$1\ 0\ 0\ 0$	1750	
p2	1354	2 3 5 6	
p3	0632	0 652	
p4	0014	0 6 5 6	

Apply Banker's Algorithm and determine whether the system is in safe state or not?

[14M]

SECTION-IV

7	Define Message Queues? Write the syntax for Creation, Sending and Receiving	[14M]
	information by using Message Queues? Discuss with clear examples?	
	OR	
8	Illustrate any three Page Replacement Algorithms with clear examples.	[14M]
	SECTION-V	
9	Discuss any five system calls for file I/O operations with programming examples	[14M]
	OR	
10	What is disk Management? Discuss the Following Disk scheduling Algorithms	[5M]
	with suitable examples:	[5 M]
	a)FCFS	[4M]
	b)SSTF	
	c)SCAN	

Code No: R18A0504 MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY (Autonomous Institution – UGC, Govt. of India)

II B.Tech I Semester Supplementary Examinations, July/August 2021 Operating Systems

(CSE & IT)

				(•)						_	
		Roll No												
Time:	3 hours											Ma	x. Marks	s: 70
			Ansy	wer A	nv I	Tive	Oues	tions	5					
		A	11 Oue	estion	s cai	ries	equa	1 ma	rks.					
		-	X		*:	**								
1	a.	Explain about the	comp	onent	s of	mod	ern c	omp	uter	syste	em?			[7 M]
	b.	What are three systems?	advan	tages	and	d on	e di	sadv	anta	ge o	of m	ultip	processor	[7M]
2	a.	Distinguish amo	ong f titaskii	follow ng Sy	ving stem	terr ns iii)	nino Mu	logie ltipro	es i) ocess	Mu or sy	ıltipr vsten	ogra ns.	mming	[7M]
	b.	Describe the action level threads.	ons tak	ken by	yak	terne	l to (conte	ext-s	witcl	h bet	wee	n kernel-	[7M]
3	Explain	n different types o	f CPU	Sche	dule	rs								
U	Enpiun	i Pr	eemnti	ve an	d no	n nre	emn	tive	sche	dulir	וס			[5M]
		ii. I/C) boun	d and		U bo	und				-8			[5M]
		iii Sc	hedule	er and	disr	o e e e e atch	er							[4M]
			11000010	i unu	unst.	/4:011	•							[]
4	Five ba same ti prioriti each o	atch jobs A, B, C me. They have es es are 3,5,2,1 and f the following s	, D an stimate l 4 res chedul	nd E a ed run specti ing a	arriv ming vely ilgor	e at g tim , wit ithm	a co es of h 5 i dete	mpu f 10, being ermir	ter c 6,2,4 g the ne th	enter and hig hig	r at a 8 m hest rnaro	almo inut prio ound	ost at the es. Their ority. For time of	[14M]
	each p	process and wait	ing tir	ne o	fea	ich p	oroce	ess.	Igno	re p	roce	ss s	witching	
	overhe	ad. Mention which	n algor	ithm	resul	lts in	min	imal	aver	age	waiti	ng ti	ime.	
		i) Round	l Robii	n						-		-		
		ii) Priorit	y sche	dulin	g									
		iii) First c	ome fi	rst se	rved	l								

iv) Shortest job first.

For case i) Assume that system is multiprocessing, and each job gets its fair share of the CPU. (time quantum 2 minutes0. For cases (ii), (iii) and (iv) assume that only one job runs at a time, until it finishes. All jobs are completely CPU bound.

Consider a swapping system in which memory consists of the following hole [14M] sizes in memory order: 12 KB, 4 KB, 24 KB, 15 KB, 9 KB, 7 KB, 10 KB, and 11 KB. Which hole is taken for successive segment requests of: (i) 14 KB (ii) 8 KB (iii) 5 KB for first fit, best fit, worst fit, and next fit approaches?

a. Describe the hardware implementation of a page table with translation [7M] Look-aside Buffer.

6

8

- b. What is virtual memory? Explain Suppose we have a demand paged memory. The page table is held in registers. it takes 8ms to service a page fault if an empty page is available or the replaced page is not modified, and 20ms if the replaced page is modified. memory access time is 100ns. Assume that the page to be replaced is modified 70% of the time. what is the maximum acceptable page fault rate for an effective access time of no more than 200ns?
- 7 Explain about the linear list and hash table data structures to implement a [14M] directory.
 - a. A system has 3 devices D1, D2 and D3 and 3 processes P1, P2, and P3. [7M]
 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.** Is disk scheduling, other than FCFS scheduling, useful in a single-user **[7M]** environment? Justify your answer.

Code No: R18A0504

(Autonomous Institution – UGC, Govt. of India)

II B.Tech I Semester Supplementary Examinations, Dec-21/Jan-22

Operating Systems

$(CSE \alpha \Pi)$										
Roll No										

Time: 3 hours

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

*** SECTION-I

1 What is an Operating System? Explain the types and services of operating system [14M] with examples.

OR

2 Define a Process. Explain the different states of a Process, Process State [14M] transitions, and Process Control Block (PCB) in detail with a neat sketch.

SECTION-II

3 Analyze which of the following algorithms could result in starvation: FCFS, SJF, and **[14M]** Priority. How to overcome the problem of starvation?

OR

4 Explain Dining Philosopher's Problem in detail. [14M]

SECTION-III

- 5 Write a detailed note on internal & external fragmentation and compaction. [14M] OR
- 6 Consider the following page reference strings:1,2,3,4,2,1,5,6,2,1,2,3,2,1,2,3,6 [14M] Identify how many number of page faults would occur for the LRU and Optimal Page replacement algorithm, assuming three frames. Remember that all frames are initially empty, so your first unique pages will cost one fault each.

SECTION-IV

7 Explain the different file access methods in detail.

OR

8 Write a detailed note on Device drivers and Device independent I/O software. [14M] Explain the use of directory organization of files. Explain in detail the implementation of Tree structured directory.

SECTION-V

9 What is a Deadlock? Explain Banker's algorithm to avoid a Deadlock. What are **[14M]** the problems in its implementation?

OR

10 Consider a disk queue with requests for I/O to blocks on cylinders 183, [14M] 37,122,14,124,65,67. If the disk head is start at 53, then find out the total head movement with respect to FCFS, SSTF, SCAN, C-SCAN and LOOK scheduling.

R18

Max. Marks: 70

[14M]

Code No: R18A0504 MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY (Autonomous Institution – UGC, Govt. of India) II B.Tech I Semester Supplementary Examinations, June 2022 Operating Systems

(CSE & 11)										
Roll No										

Time: 3 hours

Answer Any **Five** Questions All Questions carries equal marks.

- 1 Explain in detail the types of system calls provided by a typical operating system. [14M]
- 2 What do you mean by a Thread? Explain the various types of threads. Also, [14M] explain the concept of Multi-threading with its benefits in detail.
- 3 What are the main objectives of Process Scheduling? Write about different types of [14M] Schedulers and Scheduling Criteria. Give an example of Round Robin Scheduling Algorithm.
- 4 Differentiate how Inter process Communication happens through Semaphores and [14M] Message Passing.
- 5 What is meant by Paging? What are the principles for Page allocation? Explain the **[14M]** details of hardware support for paging? What are the advantages and disadvantages of paging?
- 6 Compare the performance of Page replacement algorithms: Not Recently Used [14M] (NRU) and Least Recently Used (LRU).
- 7 Explain the use of directory organization of files. Explain in detail the **[14M]** implementation of Tree structured directory.
- 8 What is a Deadlock? Explain the optimal techniques for Deadlock prevention and [14M] avoidance.



Max. Marks: 70



Code No: R18A0504 MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

II B.Tech I Semester Supplementary Examinations, November 2022 Operating Systems

(CSE & IT)

Roll No											

Max. Marks: 70 Time: 3 hours **Note:** This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Ouestion from each SECTION and each Ouestion carries 14 marks. *** **SECTION-I** Briefly discuss about Case study on UNIX and WINDOWS Operating 1 A [7M] System. B Describe Various states, Benefits of threads, Types of threads and Concept of [7M] Multithreads. OR 2 State and explain operating system services that provide functions which are A [7M] helpful to the user. B Explain with a neat example how system calls used. [**7**M] **SECTION-II** Explain Peterson's solution for critical section problem. 3 A [7M] B Explain the solution for the Dining Philosophers problem using semaphore. [7M] OR 4 Explain Scheduling algorithms in operating system. A [7M] Explain how you can implement a monitor using semaphores. B [7M] **SECTION-III** 5 Briefly discuss about Optimal, First in First Out (FIFO), Second Chance A [7M] (SC) and Not recently used (NRU). What is demand paging. B [7M] OR 6 Write in brief on the Fixed partitioning and dynamic partitioning memory A [**8M**] management techniques B Write short note on paging. [6M] SECTION-IV 7 Explain the three allocation methods in file system implementation. A [7M] B State and explain four approaches to free space management. [7M] OR Write a short note on Goals of Interrupt handlers, Device drivers and Device 8 A [7M] independent I/O software. Explain about I/O devices, Device controllers and Direct memory access B [7M] Principles of I/O

SECTION-V

9	\boldsymbol{A}	Briefly explain about deadlock prevention methods with examples of each.	[7M]
	B	Explain FCFS and SSTF disk scheduling algorithm.	[7M]
		OR	
10	A	Explain about deadlock avoidance.	[7M]
	B	Explain SCAN and C-SCAN disk scheduling algorithm.	[7M]

R17 Code No: **R17A0513** MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY (Autonomous Institution – UGC, Govt. of India) **III B.Tech I Semester Supplementary Examinations, July/August 2021 Operating Systems** (CSE & IT) Roll No Time: 3 hours Max. Marks: 70 Answer Any Five Questions All Questions carries equal marks. *** State and Explain Various types of Computer Systems. 1 [14M] What is OS? Describe the different types of Operating Systems with the examples. 2 [14M] **3** Define Scheduling? Explain any Two CPU Scheduling Algorithms with Examples. [14M] 4 Explain in detail about Inter Process Communication with examples. [14M] **5** 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. [14M] Assume there are three frames. Apply LRU replacement algorithm to the reference string above and find out how many page faults are produced. Illustrate the LRU page replacement algorithm in detail and also two feasible implementation of the LRU algorithm. Explain Optimal Page Replacement Algorithm with Example. [14M] 6 7 Explain any four File access methods for information in a file with neat diagrams. [14M] 8 Define Deadlock? State and explain four conditions that are necessary for deadlocks [14M] to occur with neat example.

Code No: **R17A0513** MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Supplementary Examinations, Dec-21/Jan-22

Operating Systems (CSE & IT)

(CSE & II)											
Roll No											

Time: 3 hours

Note: This question paper Consists of 5 Sections. Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

**** SECTION-I

1	a. Explain about various process states with a neat diagramb. Discuss about system calls	[7M] [7M]
	OR	
2	With a neat sketch, describe the services that an operating system provides to	[14M]
	users, processes and other systems.	
	SECTION-II	
3	Illustrate Critical Section problem. Give the conditions that a solution to the	[14M]
	critical section problem must satisfy.	
	OR	
4	List and describe different types of schedulers.	[14M]
	SECTION-III	
5	Consider the following page reference string:	[14M]
	1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6. How many page faults would occur for the	
	optimal page replacement algorithm, assuming three frames and all frames are	
	initially empty.	
	OR	
6	What is paging? How it is different from segmentation? Also explain hardware support for paging.	[14M]
	SECTION-IV	
7	What do you mean by a file system? Summarize the various file access methods in	[14M]
	detail.	
	OR	
8	Explain in detail about disk scheduling algorithms with examples.	[14M]

SECTION-V

Write the various deadlock conditions? Explain in detail. Also write banker 9 [14M] algorithm.

OR

What are the goals of protection and explain Language-Based Protection. 10 [14M] ********

Max. Marks: 70

R17

Code No: R17A0513 MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY (Autonomous Institution – UGC, Govt. of India) III B.Tech I Semester Supplementary Examinations, June 2022 Operating Systems

(CSE & IT) Roll No

Time: 3 hours

Answer Any **Five** Questions All Questions carries equal marks. ***

- 1 State the various components of operating system structure and explain the simple [14M] and layered approach of operating system in detail.
- 2 Explain the actions taken by a thread library to context-switch between user level [14M] threads. Also, Briefly explain the inter-process communications.
- 3 Differentiate the following with examples:
 a) Process scheduling and thread scheduling
 b) Optimal and LRU Page replacement algorithm
- 4 Does preemptive scheduling give same performance as non-preemptive scheduling [14M] algorithm? Compare their performance by assuming at least 5 processes arrived at different time intervals.
- 5 Demonstrate about Dining Philosophers problem? Discuss the solution to Dining [14M] philosopher's problem using monitors.

6	Write a short notes on:i) Demand Paging.ii) Segmentation.	[7M] [7M]
7	Explain various file access methods with suitable examples.	[14M]
8	Explain the Resource-Allocation-Graph algorithm for deadlock avoidance.	[14M]

Max. Marks: 70

Code No: R15A0513

Time: 3 hours

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Regular Examinations, November 2017

Operating Systems

(CSE)										
Roll No										

Note: This question paper contains two parts A and B. Part A is compulsory which carriers 25 marks and Answer all questions. Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART – A

- 1. (a)List the services provided by the operating system.[2]
 - (b) What are multiprocessor systems? Give its advantages. [3]
 - (c) What is Semaphore [2]
 - (d) List the fields of PCB [3]
 - (e) What is Demand Paging? [2]
 - (f) What is page fault? [3]
 - (g) Explain file attributes [2]
 - (h) Explain various methods of accessing disk file [3]
 - (i) Give the necessary conditions for dead lock . [2]
 - (i) Explain the principles of protection. [3]
 - PART B

SECTION - I

2. (a)Explain the various types of system calls in detail.[5] (b)Explain Evolution of Operating Systems [5]

(\mathbf{OR})

- **3.** Explain different types of operating systems. [10] **SECTION – II**
- 4. (a)Explain types of schedulers. [5] (b)What is race condition explain. [5]

(OR)

5. (a)Solve dining philosophers problem using monitors [5] (b) Explain the Round robin algorithm with example.

SECTION – III

- 6. Explain various Page Replacement Algorithms with examples.[10] (OR)
- 7. Explain the structure and implementation of Page Table.[10]

Max. Marks: 75

(25 Marks)

(50 Marks)

<u>SECTION – IV</u>

8. (a)What is File System Mounting? Explain.[5] (b)Explain the layered File System Structure.[5] (OR)

9. Explain the various file allocation methods.[10]

$\underline{SECTION - V}$

- 10. How the deadlocks can be avoided? Explain with the help of bankers algorithm.[10] (OR)
- 11. How the access matrix helps in protection of a system? Explain with examples.[10]

Code No: R15A0513 MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester supplementary Examinations, May 2018

Operating Systems



Time: 3 hours

Note: This question paper contains two parts A and B

Part A is compulsory which carriers 25 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART – A

(25 Marks)

Max. Marks: 75

- 1. (a) What is a kernel.[2M]
 - (b) What is meant by Batch Systems? [3M]
 - (c) What is context switching [2M]
 - (d) What is mutual exclusion [3M]
 - (e) Give the two differences between physical and logical addresses.[2M]
 - (f) How does the system detects the thrashing? [3M]
 - (g) List the File attributes and files operations. [2M]

(h) Explain the performance characteristics of mass-storage devices.[3M]

- (i) What is deadlock ? [2M]
- (j) What are Goals of Protection? [3M]

PART – B

(50 Marks)

<u>SECTION – I</u>

2. (a) What are the differences between batch processing and Real time processing system.[5M]

(b)Explain the concept of virtual machine. [5M]

(**OR**)

3(a) Define microkernel? Explain its advantages. [5M](b) What are the goals of operating system ? Explain briefly. [5M]

<u>SECTION – II</u>

4. (a)What is Critical section explain. [5M](b)Explain the round robin algorithm with example. [5M]

(**OR**)

- 5.(a) Explain the Scheduling Criteria. [5M]
- (b)Find the average waiting time using FCFS and SJF, consider P1,P2,P3,P4 and 21,3,6,2 are burst times in(ms). [5M]

<u>SECTION – III</u>

- 6.(a) Explain briefly about demand paging. [5M]
- (b) Consider the following page reference string: 1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6, frame size 3.How many page faults would occur for the LRU replacement [5M]

(OR)

7. Explain various techniques for structuring of the page table. [10M]

.<u>SECTION – IV</u>

- 8. Explain the implementation of local file systems and directory structures. [10M] (OR)
- 9. (a) Explain the structure of disk, with a neat Diagram. [5M](b)Explain any three disk scheduling algorithms. [5M]

R15

<u>SECTION – V</u>

- 10. Define dead lock. Explain the methods to recover from a dead lock. [10M] (OR)
- 11. (a) Explain about Cambridge CAP system.[5M](b)How does the programming language Java support protection? Explain [5M]



Code No: R15A0513 MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Regular/supplementary Examinations, November 2018 Operating Systems

(CSE&IT)

Roll No											
---------	--	--	--	--	--	--	--	--	--	--	--

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B Part A is compulsory which carriers 25 marks and Answer all questions. Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, from each SECTION and each Question carries 10 marks. Choosing ONE Question

PART-A (25 Marks)

1). a b	Define Operating System. List out the objectives of an operating system. Define system calls. Explain the main purpose of an operating system	[2M] [3M]
с	What is semaphore?	[2M]
d	Describe different process states.	[3M]
e	Write the difference between internal and external fragmentation	[2M]
f	Write the first ,best fit memory allocation techniques	[3 M]
g	Define boot block. How it initiated from disk	[2M]
h	What are the various attributes that are associated with an opened file	[3 M]
i	Describe the Safe, unsafe, and deadlock state spaces	[2M]
j	List the goals and principles of protection	[3 M]
	PART-B (50 MARKS)	
	<u>SECTION-I</u>	
2	Discuss about the evolution of operating system	[10M]
	OR	
3	Explain the purpose of system calls and discuss the system calls related to process	[10M]
	control and communication in brief	
	<u>SECTION-II</u>	
4	Discuss any five process scheduling algorithms with examples	[10M]
	OR	
5	a) Write the solution to Dining Philosophers problem using Monitors	[5M]
	b) Explain the Round Robin scheduling algorithm with a suitable example	[5M]
	SECTION-III	
6	Given page reference string: 1,2,3,2,1,5,2,1,6,2,5,6,3,1,3,6,1,2,4,3. Compare the number	[10M]
	of page faults for LRU, FIFO and Optimal page replacement algorithm	-
	OR	

Discuss about paging with neat diagram 7(a)

[5M]

			SECTION-	IV									
8	a)Explain the th	hree allocation	methods in file	e system implementation. Illustrate	[5M]								
	with proper diag	gram											
	b)How to organ	nize the mass st	orage? Explain		[5M]								
	OR												
9	Discuss various	disk schedulin	ng algorithm with	h examples.	[10M]								
			SECTION-	·V									
10	Consider the tabl	le given below fo	or a system, find t	he need matrix and the safety sequence,	[10M]								
	using Banker's a	lgorithm.											
	Resource – 3 typ	es											
	A - (10 instances)	s)											
	B - (5 instances)												
	C - (7 instances)												
	Process	Allocation	Maximum	Available									
		АВС	ABC	АВС									
	p0	0 1 0	7 5 3	3 3 2									
	p1	2 0 0	3 2 2										
	p2	3 0 2	9 0 2										
	p3	2 1 1	2 2 2										
	p4	0 0 2	4 3 3										
	*		OR										
11	a)Discuss about A	Access Matrix			[5 M]								
	b)Write a note or	n domain of prot	ection		[5M]								
	*	1			[]								

Explain the various structure of page table

(b)

Page 2 of 2

[5M]

Code No: R15A0513 MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY (Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Supplementary Examinations, July/August 2021

Operating Systems (CSE&IT)

					· · ·			- /					-			
		Rol	l No													
Time:	3 hours											М	ov l	Mark	c. 75	
1 11110.	J HOUIS		Å	Ansu	ver A	nv F	live (Dues	tions			IVI	ал. 1	VIAIN	.5. 75	
			All	Oue	stion	s car	ries of	equal	l mai	ks.						
						**	**	-1								
1	In a mult system si Discuss th	iprogram multaneo nese probl	ming an usly. Th lems?	d tir is sit	ne s tuatio	harir on c	ng en an re	nviro esult	nme in	nt se vario	evera us s	l us ecur	ers ity j	share proble	the ems.	[15M]
2	Explain various operating System Generations? [[15M]				
3	a. W	hat are	various	iss	ues	to	be	cons	idere	ed i	n N	Ault	iple-	Proce	essor	[7 M]
	scl	heduling?)										1			
	b. Ex	plain abc	out variou	is sta	tes o	of pro	ocess	with	nea	t diag	gram	l.				[8M]
4	What are	various o	operation	s per	form	ned c	on a	proc	ess?	Exp	lain	each	one	e in d	etail	[15M]
	considerin	ng operati	ng syster	ns ex	kamp	oles?		P	• • • •						••••	[]
5	Illustrate t	he follow	ving Dage	Ren	Jacor	ment	مامد	rithr	ne w	ith c	lear	evan	nnlei	2		[15M]
5	FIFO (b)	Optimal	ing I age	Rep	nace	mem	aigo	11111	115 W		icai	слап	npies	5.		
6	A 1 /	-			<i>.</i>		•.1			1.			00	м		[1]]
6	Analyze t Managem	ent	pt of Se	gme	ntati	on w	vith j	pagn	ng ai	nd it	s us	e in	US	Men	nory	[15M]
7	Classify d	ifferent t	vpes of fi	les a	nd li	st the	eir ex	tens	ions.							[15M]
	,															
8	Consider	the follow	ving snap	shot	of a	syste	em:									[15M]
	Allocatio	n N	Лах		Avai	lable	•									
	AI	 3C D	ABC	D	 A B	C D	-									
	Po 00	012	$0 \ 0 \ 1 \ 2$		152	20										
	P1 1	000	$1 \ 7 \ 5 \ 0$													
	p2 1	354	2 3 5 6													
	p3 0	632	0 6 5 2													
	p4 _0	014	0 6 5 6				-									
	Apply Ba not?	nker's A	lgorithm	and	dete	rmin	e wł	nethe	r the	e sys	tem	is ir	ı saf	e stat	te or	
						***:	***									

[10M]

R15

Code No: R15A0513 MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY (Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Supplementary Examinations, Dec-21/Jan-22

Operating Systems

(USEAII)										
Roll No										

Time: 3 hours

Note: This question paper contains two parts A and B

Part A is compulsory which carriers 25 marks and Answer all questions. Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question From each SECTION and each Question carries 10 marks.

PART-A (25 Marks) 1). a Give any two differences between Parallel and Distributed Systems. [2M] List Various OS Objectives. b [**3M**] с Differentiate Micro and Macro Kernel. [2M] Write any two classical problems of synchronization [**3M**] d How to calculate the performance of Demand Paging. e [2M] A system with a 32-bit logical address space, if the page size is 4KB, then the f [**3M**] page table may consists of how many entries? List the operations of a Directory. [2M] g h Differentiate Constant Linear Velocity and Constant Angular Velocity in disks. [**3M**] Explain thread scheduling i [2M] Recall the Principles of Protection i [**3M**] PART-B (50 MARKS) **SECTION-I** 2 What are the main functions of operating system? Explain OS Structure. [10M] OR

3 Compare the Batch, Multi programmed and time shared.

SECTION-II

4 Consider the following set of processes, with the length of the CPU burst given in **[10M]** milliseconds:

Process	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	4
P4	1	5
P5	5	2

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5, all at time 0. Draw Gantt chart that illustrate the execution of these processes using the

Max. Marks: 75

non preemptive priority (a smaller priority number implies a higher priority) scheduling algorithm. What is the turnaround time and waiting time of each process?

OR

5	Write and explain Producer-Consumer classical synchronization problem.	[10M]
	SECTION-III	
6	Illustrate the following Page Replacement algorithms with clear examples. (a) FIFO (b) Optimal	[10M]
	OR	
7	Sketch the structure of page table. What is the purpose of paging the page tables	[10M]
	SECTION-IV	
8	What is a file? What are the different operations that can be performed on a file?	[10M]
	OR	
9	Discuss the Following Disk scheduling Algorithms with suitable examples: a)FCFS b)SSTF	[10M]
	SECTION-V	
10	Illustrate the Principles of Protection.	[10M]
	OR	
11	How resource allocation graph is useful in Deadlock detection? Explain? ******	[10M]



Code No: R15A0513 MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY (Autonomous Institution – UGC, Govt. of India) III B.Tech I Semester Supplementary Examinations, June 2022 Operating Systems

				(C	SE)							
		Roll No										
Time:	3 hours	Al	Answer I Questic	Any I	F ive Q	uestio qual r	ons nark	Max s.	x. Ma	rks:	75	
1	Explain va	arious operating S	System C	lenera	** itions?	,						[15M]
2	Define a F sketch.	Process. Describe	Process	State	transit	tion d	iagra	am wit	h a n	eat		[15M]
3	Describe 1	necessary condition	ons for d	eadlo	ck occ	urren	ce.					[15M]
4	What are considerin	various operation ng operating syste	ns perfor oms exan	med on ples?	on a p	proces	s? E	xplair	each	n one	in detail	[15M]
5	Briefly e techniques	xplain about di s.	fferent	Contig	guous	alloo	catio	n me	mory	ma	nagement	[15M]
6	Explain P	Page Replacement	t algorith	ims w	ith cle	ar exa	ampl	es.				[15M]
7	Explain in	ı detail about disk	schedul	ing al	gorith	ms w	ith e	xampl	es			[15M]
8	Explain th	e Deadlock Avoi	dance ar	nd Dea ***	adlock ****	Prev	entic	on.				[15M]

R15

Code No: R15A0513 MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY (Autonomous Institution – UGC, Govt. of India) III B.Tech I Semester Supplementary Examinations, November 2022



(852)											
Roll No											

Time: 3 hours

Max. Marks:

75

Note: This question paper contains two parts A and B Part A is compulsory which carriers 25 marks and Answer all questions. Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE

Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART-A (25 Marks)

1). a	List some examples for OS?	[2M]
b	What's the main purpose of an OS? What are the different types of OS?	[3M]
с	What is a Scheduling Algorithm? Name different types of scheduling	[2M]
	algorithms.	
d	Explain about Context Switching?	[3 M]
e	What is virtual memory?	[2M]
f	What is Contiguous Memory Allocation in Operating Systems?	[3 M]
g	What are the various File Operations?	[2M]
h	Demonstrate on Disk Scheduling concept.	[3 M]
i	What is a Capability-based System?	[2M]
j	What is a deadlock in OS? What are the necessary conditions for a	[3 M]
	deadlock?	
	PART-B (50 MARKS)	
	<u>SECTION-I</u>	
2	Define a system call and Write a system call sequence to copy one file to	[10M]
	another file.	
	OR	
3	What are the important issues involved in the design and implementation	[10M]
	of operating systems?	

SECTION-II

- 4 What is the role of PCB? Illustrate various attributes of PCB. [10M] OR
- 5 Describe the Process synchronization in detail. [10M]

SECTION-III

6 Analyze any three page-replacement algorithms with their merits and **[10M]** demerits.

OR

7 "Swapping increases degree of multiprogramming in a system"- Justify. [10M]

8	<u>SECTION-IV</u> Elaborate the overview of mass-storage structure. OR	[10M]
9	Elaborate in detail about various file allocation methods with their merits and demerits.	
	(i) Contiguous allocation	[4M]
	(ii) Linked allocation	[3 M]
	(iii) Index allocation	[3 M]
	SECTION-V	
10	State banker's algorithm for deadlock avoidance.	[10M]
	OR	
11	Explain the following concepts in terms of OS	
	i) Protection	[4M]
	ii) Goals of protection	[3 M]
	iii) Principles of protection	[3 M]
