QP Code: RN23BCA017 | Reg. No | | | | | | | | | | | AY 23

GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY, ODISHA, GUNUPUR
(GIET UNIVERSITY)
B.C.A (Third Semester) Regular Examinations, November – 2024
BCA23301 - Operating Systems
(BCA)

Time: 3hrs | Maximum: 60 Marks

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

		CO #	Blooms Level
Q.1.	Answer ***ALL*** questions		
a.	Write a short note on System Calls.	CO4	K1
b.	What is the advantages of threads compared to processes?	CO1	K1
c.	Explain the necessary conditions for a Deadlock in O.S.	CO2	K2
d.	Write a short note on Trashing.	CO3	K1
e.	List the various file attributes.	CO5	K1

PART – B **(10 x5=50 Marks)**

		Marks	CO #	Blooms Level
	Answer ***ALL*** questions			
2. a.	"Operating system is resource manager"-Justify this statement with suitable functionality of OS.	5	CO1	K1
b.	Discuss in details about the functions of operating system.	5	CO1	K1
	(OR)			
c.	Discuss different states of a process with a net diagram.	5	CO1	K1
d.	What are the differences between Batch processing system and Real Time Processing System?	5	CO1	K1
3.a.	What are the advantages of inter-process communication (IPC)? Explain its types.	5	CO2	K2
b.	Consider the following set of process. Calculate the average turnaround time and average waiting time for FCFS Scheduling.	5	CO2	K3

Process	Arrival Time	Burst Time
P1	1	3
P2	2	4
P3	1	2
P4	4	4

(OR)

c.	What is a critical section problem? Explain what are the solution to a critical section problem?	5	CO2	K1
d.	What is semaphore? Discuss product-consumer problem with semaphore.	5	CO2	K1
4.a.	Explain Banker's deadlock-avoidance algorithm with an illustration.	5	CO3	K2

b.	Discuss various methods for the prevention of deadlocks.	5	CO3	K2
	(OR)			
c.	Is it possible to have a deadlock involving only a single process? Explain.	5	CO3	K1
d.	Why is deadlock state more critical than starvation? Describe resource allocation graph with a deadlock.	5	CO3	K1
5.a.	Explain the difference between External fragmentation and Internal fragmentation. How to solve the fragmentation problem using paging?	5	CO4	K2
b.	What is the basic method of segmentation explain in detail.	5	CO4	K2
	(OR)			
c.	Calculate the page fault rate for Optimal page replacement algorithm. Consider the following reference string- 1,2,3,4,5,3,4,1,6,7,8,7,8,9,7,8,9,5,4,5,4,2 Assume that the memory size is 4 frame.	5	CO4	K3
d.	Explain the working of paging with an example.	5	CO4	K1
6.a.	What are the most common schemes for defining the logical structure of a directory?	5	CO5	K1
b.	Explain and compare FCFS, SSTF, C-SCAN and C-LOOK disk scheduling algorithms with examples.	5	CO5	K1
	(OR)			
c.	Explain different file allocation methods.	5	CO5	K1
d.	What is Directory? Briefly are the operations that can be performed on a Directory?	5	CO5	K2

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