SET A **Roll No:……**

Hi-Tech Institute of Engineering & Technology

DEPARTMENT OF MCA
(SEM- II) EVEN SEMESTER 2022-23

Subject Code: KCA-203 **Subject Name: OS**
Faculty Name: Aruna

Time: 90 Minutes ***Total Marks: 50***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION-A

1. Attempt all question in brief. **2x 10 = 20**

Q.No	Question	Marks	CO
a.	Describe all operating system services.	2	1
b.	Define user mode and kernel mode	2	2
c.	What is the O.S features required for multiprogramming	2	3
d.	Define Multiprogramming in operating system?	2	3
e.	Define Paging ?	2	4
f.	Describe the difference between symmetric and asymmetric multiprocessing?	2	1
g.	What are the advantages of layered structure over monolithic structure?	2	2
h.	What difference is between loosely coupled and tightly coupled system.	2	4
i.	What are differences between macro kernel and micro kernel?	2	5
J.	What is the difference between file and database?	2	5

SECTION-B

2. Attempt any FOUR of the following: **10 x 3 =30**

Q.No	Question	Marks	CO
a.	Define 1. Multithreaded System 2. Multiprocessor System 3. RAID.	10	1
b.	Explain the process state transition diagram used in multiprogramming environment. Describe the fields in a process control block (PCB).What is switching overhead?	10	2
c.	Explain the term CPU scheduling. Discuss the scheduling objectives in brief.	10	3
d.	Explain Dekker's solution and Peterson solution problem for achieving mutual exclusion.	10	4
e.	Define Deadlock and can deadlock avoided.	10	5

SECTION-C

3. Attempt any ONE part of the following:

Q.No	Question	Marks	CO
a.	Define Classification of Operating System and explain .	10	1
b.	Differentiate between Reentrant kernel ,Monolithic Kernel and Microkernel	10	1

4. Attempt any ONE part of the following: **10x1 = 10**

Q.No	Question	Marks	CO
a.	Write short note on: 1. Dining philosopher problem 2. System calls 3.Peterson's solution for achieving mutual exclusion 4. Semaphores	10	2

b.	Explain Banker's algorithm.What is its use? Explain using suitable example.	10	2

5. Attempt any ONE part of the following: 10x1 = 10

Q.No	Question	Marks	CO
a.	Consider the following page reference string. 1,2,3,4,5,3,4,1,6,7,8,7,8,9,7,8,9,5,4,5,4,2 How many page faults would occur for the following replacement algorithm, assuming four and six frames respectively? a. page replacement. b. FIFO page replacement	10	3
b.	Define Cache memory organization.	10	3

6. Attempt any ONE part of the following: 10x1 = 10

Q.No	Question	Marks	CO
a.	What is deadlock detection algorithm? Explain it with example.	10	4
b.	Explain page replacement algorithm with the help of example.	10	4

7. Attempt any ONE part of the following: 10x1 = 10

Q.No	Question	Marks	CO
a.	Define Disk Scheduling with the help of example.	10	5
b.	Explain system protection and Security.	10	5