

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA– SEMESTER –III EXAMINATION –Summer-2019

Subject Code:3630003

Date: 20-05-2019

Subject Name: Basic Computer Science-2

Time:02.30 pm to 5.00 pm

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a)** Define the following terms. **07**
1. Operating System
 2. Interrupt
 3. Multitasking
 4. Starvation
 5. Critical Section
 6. Multi processing
 7. Thrashing
- (b)** Do as directed:
1. Differentiate between “asleep in memory” and “Sleep, Swapped” in Unix Process State Diagram. **02**
 2. What is Resource Allocation Graph? Explain its usage. **02**
 3. Define Semaphore. Explain Binary and Counting Semaphore. **03**
- Q.2 (a)** What is PCB? What is the role of PCB? Explain all attributes of PCB. **07**
- (b)** What are the services provided by Operating System? Explain each in brief. **07**
- OR**
- (b)** What is Internal and External Fragmentation? Explain it with example and diagram. **07**
- Q.3 (a)** Assume you have the following jobs to execute with one processor, with the jobs arriving in the order listed here: **07**

Process	Burst Time
0	80
1	20
2	10
3	20
4	50

- a. Suppose a system uses FCFS scheduling .Create a Gantt chart illustrating the execution of these processes?
 - b. What is the turnaround time for process 3?
 - c. What is the average wait time for the processes?
- (b)** Write a short note on Deadlock. **07**
- OR**
- Q.3 (a)** Total No of pages for the process are 7 and total number of frames allocated to this process are 4 (using Fixed frame allocation). **07**
- The page address stream formed by executing the program is as follows:
(1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6)
- Judge which page replacement algorithm among OPT, LRU and FIFO works better. Provide your justification for the same.

- (b) Define Translation Lookaside Buffer. Explain the working of TLB with flowchart. **07**
- Q.4** (a) 1. What are Application Domain, PL Domain and Execution Domain? **03**
2. Difference between Scanning and Parsing **04**
(b) Explain an algorithm of 2-Pass Assembler Algorithm. **07**
- OR**
- Q.4** (a) What is language Processor? What are the types of Language Processor? Explain the role of Language Processor. **07**
(b) What is forward reference in Assembly language? Which assembler passes deals with forward reference? **07**
- Q.5** (a) Write a detail note on- The back end of a toy compiler with an appropriate example. **07**
(b) Write a note on Program Interpretation. **07**
- OR**
- Q.5** (a) Explain Code Optimization in detail. **07**
(b) Define IR and IC. List various Assembly statements. Explain Declarative statements in detail. **07**
