

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER– III EXAMINATION – WINTER 2018

Subject Code: 2630004

Date: 07-01-2019

Subject Name: Operating Systems

Time: 10.30 am to 1.00 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) Fill in the following blanks:

- i. _____ interrupt is generated at the end of a time slice. **01**
- ii. _____ is a faster memory lies between CPU and Main memory. **01**
- iii. Principal objective provided by Batch Multiprogramming is _____. **01**
- iv. A _____ resource is one that can be created and destroyed. **01**
- v. Thread is also known as _____. **01**
- vi. A _____ is a situation in which a runnable process is overlooked indefinitely by the scheduler; although it is able to proceed, it is never chosen. **01**
- vii. _____ placement algorithm begins to scan memory from the location of last placement and chooses the next available block that is large enough. **01**

(b) State whether the following statements are TRUE / FALSE :

- i. An inverted page table structure is an alternative approach to the use of one or multiple-level page tables. **01**
- ii. Short term scheduler is invoked when I/O interrupt occurs in the system. **01**
- iii. Gang scheduling is a set of related threads scheduled to run on a set of processors at the same time, on a one-to-one basis. **01**
- iv. RAID level 1 requires $N + 1$ data disks. **01**
- v. Logical I/O module of File System Software Architecture deals with file records. **01**
- vi. In sequential file organization key field is the first field in the record and is used to uniquely identify the record. **01**
- vii. API is a set of functions and call programs that allows clients and servers to intercommunicate. **01**

Q.2 (a) Do as directed :

- i. What is kernel? **01**
- ii. State memory management requirements. **01**
- iii. What is thrashing? **01**
- iv. List five categories of parallelism that differ in the degree of granularity. **01**
- v. What is FAT? **02**
- vi. Draw the timing diagram of a disk I/O transfer.

- (b)**
- i. Explain Distributed Message Passing. **06**
 - ii. What do you mean by 'Appending' access right? **01**

OR

	(b)	i.	Explain RPC.	06
		ii.	What do you mean by 'Changing protection' access right?	01
Q.3	(a)		Explain Seven-state process model.	07
	(b)		Explain Buddy System.	07
OR				
Q.3	(a)		Explain types of Threads.	07
	(b)		Explain Cleaning policy and Load Control policy of OS for Virtual Memory.	07
Q.4	(a)		Explain Binary Semaphore.	07
	(b)		Explain SSTF and SCAN disk scheduling policies with suitable example.	07
OR				
Q.4	(a)		Discuss Bounded-Buffer Producer / Consumer problem and its appropriate solution.	07
	(b)		Explain file organization.	07
Q.5	(a)		Explain working of Banker's algorithm.	07
	(b)		Explain Round-Robin policy. Why Virtual Round-Robin policy is needed?	07
OR				
Q.5	(a)		Explain Deadlock detection algorithm with suitable example.	07
	(b)		Explain Thread scheduling.	07
