Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER–III • EXAMINATION – SUMMER - 2018

Subject Code:3630003 Date:23/05/2018

Subject Name: Basic Computer Science-2(Applications of Operating Systems & Applications of System Software)

Time:02.30 pm to 05.00 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)**	Draw and Discuss the seven state process models.	**07**
	(b)	What is Process control Block (PCB)? List Elements of PCB.	**07**
Q.2	**(a)**	What is compaction? Discuss advantages and disadvantages of compaction.	**07**
	(b)	Explain the following services provided by OS. (a) Error detection and response (b) Accounting	**07**
		OR	
	(b)	Explain the terms:(1) Multiprocessing (2) Starvation (3) Critical Section	**07**
Q.3	**(a)**	**Answer the following questions.** **1.** What are the side effects if time quantum (q) is larger than the longest-running process in round- robin? How? **2.** Explain Resource Allocation Graph and its usage with example. **3**. Explain the term : Multitasking	**03** **03** **01**
	(b)	**Answer in Short.** 1. In general semaphore implementation if value of semaphore is -3 at certain stage, how many processes are waiting to be unblocked? 2. Explain the term “Mutual Exclusion”. 3. What is internal fragmentation? 4. How page size affects the performance of OS? 5. What is meant by busy waiting or spin waiting? 6. Explain throughput time w.r.t. process scheduling. **7.** State True or False : “The deadlock avoidance strategy does not predict deadlock with certainty”	**07**
		OR	
Q.3	**(a)**	How Internal Fragmentation and External Fragmentation take place in memory? Explain with suitable example and diagram.	**07**
	(b)	Explain Banker's algorithm with example.	**07**
Q.4	**(a)**	Write and explain an algorithm of 2-pass Assembler.	**07**
	(b)	Explain Classification of Grammars.	**07**
		OR	
Q.4	**(a)**	What is scanning? Draw a DFA for Identifying integers in C Language.	**07**
	(b)	What is forward reference in Assembly language? Which assembler passes deals with forward reference?	**07**
Q.5	**(a)**	List and explain advanced assembler directives.	**07**
	(b)	Explain terminal symbol, non terminal symbol and grammar.	**07**
		OR	
Q.5	**(a)**	Differentiate: Assembly language Vs Machine language.	**07**
	(b)	Write a short note of Code Optimization perform by Compiler applying optimizing transformation.	**07**

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