Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER–III • EXAMINATION – WINTER - 2016

Subject Code: 3630003 **Date:04/01/2017**

Subject Name: Basic Computer Science - II (SS/OS)

Time:10.30 AM TO 01.00 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)** Do as directed.

i) What is Deadlock? Discuss the necessary and sufficient conditions for a Deadlock to occur. **03**

ii) Explain General, Binary, Strong and Weak Semaphore. **04**

(b) Draw and Discuss the seven state process model. **07**

Q.2 **(a)** i) What is Process control Block (PCB)? List Elements of PCB. **03**

ii) Explain in brief Buddy system. **04**

(b) i) Please comment - Dynamic partitions are better than Fixed partitions. **04**

ii) What is compaction? Discuss advantages and disadvantages of compaction. **03**

OR

(b) Total No of pages for the process are 5 and total number of frames allocated to this process are 3 (using Fixed frame allocation). **07**

The page address stream formed by executing the program is as follows:

(2 3 2 1 5 2 4 5 3 2 5 2)

Apply any one from OPT, LRU and FIFO algorithm for above. Justify your selection.

Q.3 **(a)** Define Paging. Explain the logical to physical address translation mechanism in paging with example. **07**

(b) Given the following data, calculate Turnaround Time for each process and average Turnaround for all processes using FCFS and RR (q=4) algorithms **07**

Process	A	B	C	D	E
Arrival Time	0	2	4	6	8
Service Time	3	6	4	5	2

OR

Q.3 **(a)** What is Translation Lookaside Buffer? Explain the working of TLB with flowchart. **07**

(b) Given the following data, calculate Turnaround Time for each process and average Turnaround for all processes using SPN and HRRN algorithms **07**

Process	A	B	C	D	E
Arrival Time	0	2	4	6	8
Service Time	3	6	4	5	2

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**

OR

Q.4 **(a)** What is parsing without back tracking? List its requirement. **07**

(b) Write algorithm steps of pass 1 for the statements of DS, DC, MOVER, PRINT. **07**

Q.5	**(a)**	Explain static pointer and dynamic pointer.	**07**
	(b)	List and explain advanced assembler directives.	**07**

OR

Q.5	**(a)**	Explain any two code optimization methods.	**05**
	(b)	Explain terminal symbol, non terminal symbol and grammar.	**05**
	(c)	Explain types of dynamic memory allocation.	**04**

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