

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. **03**
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**

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

OR

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|------------|------------|---|-----------|
| 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 |
