

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**MCA– SEMESTER I- EXAMINATION- WINTER-2022**

**Subject Code: 619406****Date: 24/02/2023****Subject Name: Basic Computer Concepts****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.**
- 4. Use of simple calculators and non-programmable scientific calculators are permitted.**

- Q.1** (a) (i) Explain implementation of different gates using NAND gates and NOR gates. **04**  
(ii) Discuss basic identities of Boolean algebra. **03**  
(b) (i) Discuss Operating system objectives and functions. **04**  
(ii) Discuss various user visible registers. **03**
- Q.2** (a) Explain instruction fetch and execution. **07**  
(b) Explain Paging. Also discuss logical and physical addresses. **07**
- OR**
- (b) Discuss transfer of control with multiple interrupts. **07**
- Q.3** (a) Explain PCI physical and Logical Architecture. **07**  
(b) Write short note on Translation lookaside buffer. **07**
- OR**
- Q.3** (a) Explain transfer of control via interrupts and Instruction cycle with interrupts. **07**  
(b) Explain Interrupt driven I/O. **07**
- Q.4** (a) Explain DMA. **07**  
(b) Discuss elements of Cache design. **07**
- OR**
- Q.4** (a) Discuss Interconnection structures for Memory, CPU and I/O module. **07**  
(b) Explain Cache memory principles. **07**
- Q.5** (a) Explain long term and short term scheduling. **07**  
(b) Discuss Direct and Associative mapping. **07**
- OR**
- Q.5** (a) Explain Programmed I/O. **07**  
(b) Explain Replacement Algorithm. Discuss LRU, LFU, FIFO. **07**

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