

# **DKM COLLEGE FOR WOMEN (AUTONOMOUS),VELLORE-1.**

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

## **QUESTION BANK: DIGITAL LOGIC & MICROPROCESSOR**

### **UNIT I: BINARY SYSTEMS            SECTION-A            2 MARKS**

1. What is number system?
2. Define Radix.
3. What are the types of number systems?
4. What is meant by number base conversion?
5. What is decimal number system?
6. What is octal number system?
7. What is binary number system?
8. What is hexa decimal number system?
9. Define Compliment.
10. What are binary codes.

### **SECTION-B            5 MARKS**

1. Write short notes on digital computers?
2. Write about binary number systems with examples.
3. Convert  $(1101011.101)_2$  to decimal.
4. Convert  $(107.6875)_{10}$  to binary.
5. Convert  $(45.6)_8$  to decimal.
6. Convert  $(153)_{10}$  to octal.
7. Convert  $(0.5)_{10}$  to hexa decimal.
8. Explain about r's complement.
9. Explain alphanumeric codes.
10. Explain about Integrated Circuits?

### **SECTION-C            10 MARKS**

1. Explain in detail about digital computers and digital systems.
2. Explain about Binary Codes in detail.

3. Give and explain about Complements and its types in detail.
4. Explain about Binary Logic with diagram & truth tables.
5. Explain in detail about number base conversion in detail.

## **UNIT II: BOOLEAN ALGEBRA & LOGIC GATES**

### **SECTION-A            2 MARKS**

1. Define Boolean Algebra.
2. Define Register.
3. What is Logic Gate.
4. What is a Binary Operator?
5. Define Closure.
6. Define Identity Element.
7. What is Venn diagram.
8. State De Morgan's Theorem.
9. Define Max term & Min term.
10. What is an inverter?

### **SECTION-B            5 MARKS**

1. Write the basic definitions of Boolean Algebra?
2. Explain about the Axiomatic definition of Boolean algebra.
3. Give short notes on two-valued Boolean algebra.
4. Explain about Boolean Functions.
5. Explain about Standard Form.
6. Give the Boolean expressions for the functions.
7. Explain in detail about the Inverter Circuit.

### **SECTION-C            10 MARKS**

1. Explain in detail about digital logic gates with truth tables.
2. Explain the basic theorems of Boolean algebra.

3. Explain about the canonical and standard forms.
4. Explain the Max terms and Min terms in standard forms.

### **UNIT III: SIMPLIFICATIONS OF BOOLEAN FUNCTIONS**

#### **SECTION-A            2 MARKS**

1. What is Karnaugh map?
2. Define two-valued map.
3. What is three-valued map.
4. What is meant by product?
5. What is NAND Gate.
6. What is NOR Gate.
7. What is AND- OR -Invert Circuits?
8. What is Wired AND?
9. What is TTL?
10. What is meant by map simplification.

#### **SECTION-B            5 MARKS**

1. Explain about the map method.
2. Simplify the Boolean function:  
$$F = x'yz + x'yz' + xy'z + xy'z'$$
3. Explain about three variable map.
4. Explain about product of sum simplification.
5. Explain about don't care conditions.
6. Implement the function with NOR Gates:  
$$F(X,Y,Z) = \sum(0,6)$$
7. Explain about non degenerate forms.

**SECTION-C****10 MARKS**

1. Implement the following function with NAND Gates:

$$F(X,Y,Z) = \sum(0,6)$$

2. Explain about NAND implementation in detail.
3. Explain about NOR implementation in detail.
4. Simplify the Boolean Functions

$$F(w,x,y,z) = \sum(1,3,7,11,15)$$

5. Explain about the product of sum simplification.

**UNIT IV: COMBINATIONAL LOGIC****SECTION-A****2 MARKS**

1. What is an adder?
2. Define half adder.
3. What is a subtractor?
4. What is meant by encoder?
5. What is decoder.
6. What is Code conversion.
7. What is multiplexer?
8. What is demultiplexer?
9. What is ROM?
10. What are the types of ROM.

**SECTION-B****5 MARKS**

1. Write the basic functions of half adder?
2. Explain about the full adder.
3. Give short notes on half subtractor.
4. Explain about full subtractor.
5. Explain about encoders.
6. Explain about decoders.

**SECTION-C                      10 MARKS**

1. Explain in detail about the implementation of a full subtractor.
2. Explain about the Code conversion.
3. Explain about the combinational logic implementation.
4. Explain the implementation of a full adder with a decoder.
5. Explain about multiplexer in detail.
6. Explain about the function of a demultiplexer with diagram.
7. Explain about ROM and its types in detail.
8. Explain about the types of Flip Flops in detail.
9. Explain about Binary Counters with diagrams.
10. Explain in detail about shift register.

**UNIT V: MICROPROCESSOR 8085**

**2 MARKS**

1. What are assembly languages?
2. Define a multiplexer.
3. What is a microprocessor.
4. What is 8085?
5. What is 8086?
6. What is an interrupt.

**SECTION-B                      5 MARKS**

1. Write about assembly languages.
2. Explain about interrupts.
3. Give short notes on the microprocessors.

**SECTION-C                      10 MARKS**

1. Explain in detail about the history of microprocessors.
2. Explain the architecture of 8085 microprocessor.
3. Explain about the 8086 microprocessor and its operations.

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DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

**DIGITAL LOGIC & MICROPROCESSOR**

**MODEL QUESTION PAPER**

**SECTION-A            2 MARKS**

1. What is a Computer?
2. What are Logic Gates?
3. What is Boolean Algebra?
4. What is a complement?
5. What is a k map.
6. What are encoders?
7. What is an adder?
8. What are Flip Flops?
9. Define Microprocessors.
10. What are assembly languages?

**SECTION-B            5 MARKS**

1. Subtract using 72532 – 3250 using 10s Complement.
2. Explain about the digital computer system with diagram.
3. Explain about the Axiomatic definition of Boolean algebra.
4. Explain about digital logic.
5. Give and explain about two & three variable maps.
6. Explain about Binary Counters with diagrams.
7. Explain about the Shift register.
8. Explain in detail about the history of microprocessors.

**SECTION-C            10 MARKS**

1. a. Explain about the logic gates with diagrams & truth tables.  
i.        AND ii. OR iii. NOT

(OR)

- b. Explain about the basic theorems and properties of Boolean algebra

2. a. Explain the four variable map with product of sums simplifications.

(OR)

b. Write and explain about the following with neat diagram.

i. adder ii. Subtrator

3. a. Explain about Registers and its types in detail.

(OR)

b. Explain the architecture of 8085 microprocessor.