REV-01
BCA/02/07

2023/12

SET A

BACHELOR OF COMPUTER APPLICATION
FIRST SEMESTER
DIGITAL LOGIC & DESIGN
BCA-102 (IDMn)

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 1hr. 30 mins. **Full Marks: 35**

(Objective)

Time: 15 mins. **Marks: 10**

Choose the correct answer from the following: *1×10=10*

1. DEMUX is also called:
   a. Data distributor
   b. Data selector
   c. Data analyzer
   d. None

2. The 2's compliment of the number 10101101 is:
   a. 01010010
   b. 11010010
   c. 01010011
   d. 11101111

3. Which of the following is responsible for arithmetic and logic operations?
   a. ALU
   b. CPU
   c. Memory
   d. All of these

4. CPU consists of:
   a. ALU & Memory
   b. ALU & Control Unit
   c. Control Unit & Memory
   d. All of these

5. The hexadecimal form of the binary number 11111010 is:
   a. AF
   b. EA
   c. CD
   d. FA

6. The Base of Octal number system is:
   a. 6
   b. 15
   c. 16
   d. 8

7. How many NAND gates are required to construct an OR gate?
   a. 2
   b. 3
   c. 1
   d. 4

8. Which of the following is not a kind of system software?
   a. Unix
   b. Bios software
   c. Microsoft Windows
   d. Microsoft Word

9. The binary equivalent of decimal number $(5)_{10}$ is:
   a. 101
   b. 110
   c. 011
   d. 111

10. In 4:1 MUX, the number of select line is:

a. 3
b. 2
c. 1
d. 4

-- --- --

Descriptive

Time : 1 hr. 15 mins. **Marks : 25**

[Answer question no.1 & any two (2) from the rest]

1. What is Subtractor? Realize a half-Subtractor circuit with the help of truth table. 2+3=5

2. a) Explain the architecture of a computer with the help of block diagram. 5+5=10
   b) Design an Encoder circuit.

3. a) Find the binary equivalent of the decimal number $(20.275)_{10}$. 3+3+4=10
   b) Convert $(111011.011)_2$ into decimal.
   c) Subtract $(10)_{10}$ from $(15)_{10}$ using 1's complement method.

4. a) What do you mean by De-multiplexer? Design 1:4 DEMUX with the help of truth table. 5+5=10
   b) What is Universal gate? Construct an AND gate using NOR gate only.

5. Write short notes on the followings: 5+5=10
   a) Multiplexer
   b) Computer software

= = *** = =