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Total No. of Pages : 02

Total No. of Questions : 07

**BCA (2011 & Onward) (Sem.-3)**  
**DIGITAL CIRCUITS & LOGIC DESIGN**  
**Subject Code : BSBC-303**  
**Paper ID : [B0230]**

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. **SECTION-A** is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **SIX** questions carrying **TEN** marks each and students has to attempt any **FOUR** questions.

**SECTION-A**

**1. Write briefly :**

- a) Convert the following number to decimal :
  - i.  $(1001001.011)_2$
  - ii.  $(12121)_3$
- b) What do you mean by weighted code? Give example.
- c) Briefly discuss NAND gate and NOR gate.
- d) Compare Multiplexer and Demultiplexer.
- e) Give the significance of Priority encoder.
- f) Simplify the Boolean function :
$$F = x'yz + x'yz' + xy'z' + xy'z$$
- g) What is universal shift register?
- h) Discuss the applications of Flip-Flops.
- i) Discuss the design of Synchronous counters.
- j) Write short note on R-S Flip-flop.

## SECTION-B

2. Discuss in detail :
  - a) Full Adder.
  - b) Parallel Binary Adder.
3. Explain the working of Master slave J-K flip-flop in detail.
4. Write short notes on :
  - a) Up-down Counters.
  - b) MOD-N Counters.
5. Define a Demultiplexer. Show how to convert a decoder into a Demultiplexer.
6. Discuss various types of Logic Gates. Also discuss their applications.
7. Write short notes on :
  - a) Race Condition.
  - b) K-Maps.