

Roll No. ....

Total No. of Questions : 07]

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**BCA (Sem. – 2<sup>nd</sup>)**  
**DIGITAL CIRCUITS & LOGIC DESIGN**  
**SUBJECT CODE : BC – 205**  
**Paper ID : [B0209]**

Time : 03 Hours

Maximum Marks : 60

**Instruction to Candidates:**

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.

**Section – A**

**Q1)****(10 × 2 = 20)**

- a) What is binary adder?
- b) Draw the logic diagram for D-flip flop.
- c) What is parity? Explain.
- d) Define ASCII? What are its properties?
- e) What are non weighted codes?
- f) Draw circuit diagram of full subtractor.
- g) Explain the difference between SOP and POS.
- h) What is truth table? Explain with example.
- i) What is ring counter? Explain.
- j) Explain the difference between synchronous and asynchronous Sequential circuits.

**Section – B**

**(4 × 10 = 40)**

- Q2)** What is gate? Why NOR gate is called universal gate? Derive OR, AND, XOR from NOR gate.
- Q3)** What is multiplexer? What are its uses? Draw and explain multiplexer with 16 inputs.
- Q4)** What is race around condition? Explain how Master Slave flip solved the race around condition.
- Q5)** What is shift register? What are its types? Explain various applications of shift register.
- Q6)** Write notes on the following:-
  - a) Updown counters
  - b) T Flip flop
- Q7)** a) State and prove DeMorgan theorem.  
b) What are encoders? Explain.