

Roll No. ....

Subject Code—4187

**M.C.A. (Second Year) EXAMINATION**

(5 Years Integrated Course)

(Main/Re-appear)

MCA-203

DIGITAL ELECTRONICS

*JULY 2010*

*Time : 3 Hours*

*Maximum Marks : 100*

**Note :** Attempt any *Five* questions. All questions carry equal marks.

1. (a) State and prove De-Morgan's laws. 10  
(b) Explain various logic gates used with the help of truth table. Give their IC numbers also. 10
2. (a) Convert :  
(101101.0101)<sub>2</sub> into decimal. 5  
(b) (59786.5125)<sub>10</sub> into binary. 5

- (c) Obtain Gray codes for BCD numbers. 5
- (d) What are error correction and detection codes ? What are *their applications* ? 5
3. (a) Design a full subtractor using logic gates. 10
- (b) Design a odd-even parity generator. 10
4. (a) Draw a JK flip-flop using R-S flip-flop. What is the race around condition ? 10
- (b) Draw a 8 : 1 multiplexer. What are its applications ? 10
5. What are various types of registers ? Explain. 20
6. Design a decade counter using JK flip-flops. 20
7. (a) Draw a CMOS inverter and explain its working. 10
- (b) Compare TTL logic family with DTL and CMOS. 10

8. Write short notes on the following :

(a) Tristate logic **10**

(b) Universal shift register. **10**