

B.Tech Sem – IV (2007 Course) (Electronics) : SUMMER - 2019
SUBJECT: DIGITAL ELECTRONICS AND LOGIC DESIGN

Day : Tuesday
Date : 28/05/2019

Time: 10.00 AM TO 01.00 PM
Max. Marks : 80

S-2019-3025

N. B. :

- 1) **Q. No. 1 and Q. No. 5 are COMPULSORY.** Out of remaining attempt **ANY TWO** questions from Section – I and Section – II.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answer to both the sections should be written in **SAME** Answer book.
- 4) Draw neat and labeled diagram **WHEREVER** necessary.
- 5) Assume suitable data, if necessary.

SECTION - I

- Q.1**
- a) Convert the following numbers: **(04)**
 - i) $(364)_8 = (?)_2$
 - ii) $(1011.01)_2 = (?)_{10}$
 - b) Give typical values of the following parameters for the TTL and CMOS logic families. **(05)**
 - i) Propagation delay ii) Noise Margin iii) Power dissipation
 - c) Define the following terms: **(05)**
 - i) Prime Implicant ii) Minterm iii) Maxterm i) SOP form V) POS form
- Q.2**
- a) Perform the following using 2's complement method: **(06)**
 - i) $(9)_{10} - (5)_{10}$
 - ii) $(4)_{10} - (9)_{10}$
 - b) Explain the following codes and state its applications: **(07)**
 - i) BCD code
 - ii) Gray code
- Q.3**
- a) State and prove 'De-Morgan's theorem'. **(06)**
 - b) Prove the following: **(07)**
 - i) $(A+B)(A+C) = A+BC$
 - ii) $A + \overline{A}B + AB = A+B$
- Q.4**
- a) Write a note on PLA **(06)**
 - b) Write short notes on: **(07)**
 - i) ROM, EPROM, EEPROM
 - ii) SRAM, DRAM, NVRAM

SECTION - II

- Q.5**
- a) What do you mean by a Decoder? Give its applications **(05)**
 - b) Give a brief note on Serial adder. **(05)**
 - c) State and explain the triggering methods used for flip-flops. **(04)**
- Q.6**
- a) Design and implement a 2-bit comparator using suitable gates. **(07)**
 - b) Draw and explain BCD adder circuit with a help of diagram. **(06)**
- Q.7**
- a) Design 2 to 4 line decoder using logic gates. **(07)**
 - b) Implement a full subtractor using demultiplexer. **(06)**
- Q.8**
- a) Draw and explain with waveforms 4-bit Johnson counter. **(06)**
 - b) What is Race around condition? How it is avoided? **(07)**

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