B. Tech. Sem - III (Electronics) 2014 COURSE) (CBCS) : SUMMER - 2019

SUBJECT: DIGITAL LOGIC CIRCUITS

Day: Tuesday | S-2019-2568 | Time: 02.30 PM TO 05.30 PM
Date: 14/05/2019 | Max. Marks: 60

N.B.:

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Assume suitable data if **NECESSARY**.

Q.1 Simplify the following Boolean function using Quine Mc-cluskey Method. **(10)**
$f(A,B,C,D)= \Sigma m(1,2,3,5,9,12,14,15) + \Sigma d(4,8,11)$.

OR

a) Give a brief note on ASCII Code. **(06)**

b) Compare Canonical & Standard Form. **(04)**

Q.2 **a)** Implement the following Boolean Expression using an 8:1 multiplexer. **(06)**
$f(A,B,C,D)= \Sigma m(1,3,5,10,11,13,14) + d(0,2)$.

b) Implement the following logic function using the 8:1 multiplexer. **(04)**
$f(A,B,C)= \Pi M(0,1,3,5,7)$.

OR

Design and implement the following using basic gates: **(10)**

i) Half Adder

ii) Half Subtractor.

Q.3 **a)** Briefly describe Tristate Logic and its application. **(06)**

b) Describe the difference between current sinking & current sourcing in TTL logic. **(04)**

OR

Describe the following three output configurations of TTL: **(10)**

i) Open collector outputs

ii) Totempole Output

iii) Three state or tri-state output

P. T. O.

Q.4 Draw a neat diagram of J-K Flip Flop. Describe how race around condition is avoided using master slave J-K Flip Flop. **(10)**

OR

a) Compare the following: **(06)**

i) Synchronous Sequential Circuits & Asynchronous Sequential circuits.

ii) Moore & Mealy Circuit.

b) Describe state reduction & state assignments with the help of example. **(04)**

Q.5 What do you understand by a bi-directional shift register? Describe its operation with the help of neat diagram. **(10)**

OR

For the following sequence design a sequence generator using J-K Flip Flops. 1001001. **(10)**

Q.6 Design a binary to gray code converter and implement it using PLA. **(10)**

OR

a) What is ROM? What are the types of ROM? Compare between them. **(06)**

b) Differentiate between static & dynamic RAM. **(04)**

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