7. Illustrate the purpose of the follow ıd implement :

(a) Code Converter 8

(b) Master-Slave Flip-Flop 8

UNIT – IV

8. (a) What do you mean by conti shift registers? Design a 3-bit controlled register and illustrate its working. 8

(b) What is a BCD Counter ? Hov you design it ? Illustrate. 8

9. (a) What is dynamic RAM ? Ho different from Static RAM ? Under what ci ıtances each of these preferred and why ? Ex 8

(b) What is a ripple counter ? Hc different from synchronous counter ? Desi ripple counter and discuss its working. 8

Roll No. .....

67008

MCA 1st Semester (Current) CBCS Scheme w.e.f. Dec - 2016 Examination ~ November, 2017

DIGITAL DESIGN

Paper : MCA-103(C)

Time : Three Hours] *[Maximum Marks : 80*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all by selecting *one* question from each Unit and Q. No. 1 is *compulsory*.

1. (a) What are Self-Complementing Codes ? 8 × 2 = 16

(b) Why 2's complement is preferred in computers ?

(c) What are PLAs ?

(d) Differentiate between Edge-triggered and Level-triggered flip-flops.

(e) What are race-conditions ?

(f) What is a Johnson-Counter ?

(g) Differentiate between NM nd PMOS logic families.

(h) What is a Buffer Register ?

UNIT – I

2. (a) What are Error-Detecting Error-Correcting Codes ? Illustrate their us ess with suitable examples. 6

(b) Perform $(-25)_{10} \times (-15)_{10}$ Booth Coding representation and justify t ılt. 5

(c) Perform the following ıary arithmetic operations using 2's compl representation:

(i) $(35)_{10} + (-12)_{10}$

(ii) $(-15)_{10} + (-32)_{10}$ 5

3. (a) What are Cyclic codes ? I re these useful ? Illustrate. 6

(b) What is the minimum and num integer and floating-point number sto a 64-bit register assuming 1 bit as a sign-b its for exponent and rest of the bits for s ant? Provide its complete layout indic overflow and underflow regions. 6

(c) Perform the following : 4

(i) Convert $(128)_{10}$ into I 3 code

(ii) Convert (1110101110 Gray code.

UNIT – II

4. (a) What are Universal Gates ? How Universal gates are realized into basic gates ? Illustrate. 6

(b) What is Boolean Expression ? Simplify the following Boolean expression : 10

$F(a, b, c, d) = \Sigma m\,(1, 3, 4, 5, 9, 10, 11) + \Sigma d\,(6, 8)$

in canonical SOPs and POSs and implement one of these using basic gates.

5. (a) What do you mean by the following terms ? 6

(i) Noise Margin

(ii) Propagation delay

(iii) Fan-in and Fan-out

Illustrate their relevance.

(b) What is a Logic family ? What criteria make one logic family to differ from another ? Differentiate between TTL and CMOS Logic families. 10

UNIT – III

6. (a) What is Magnitude Comparator ? Design 2-bit Magnitude Comparator. 8

(b) What is combinational circuit ? Design a combinational circuit that receives 4-bit binary number as input and produces its 2's complement at its output. 8