

**B.TECH. SEM -IV BIO MEDICAL 2014 COURSE (CBCS) :
WINTER - 2017**

SUBJECT: DIGITAL LOGIC CIRCUITS

Day: **Thursday**
Date: **23/11/2017**

Time: **02.30 PM TO 05.30 PM**
Max Marks. 60

W-2017-2105

N.B.

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume suitable data , if necessary.
- 4) Draw neat diagram **WHEREVER** necessary.

- Q.1 a)** Compare the following codes: **(06)**
i) Binary & Gray code
ii) Excess -3 & Gray code
iii) BCD & Gray code
- b)** Give a brief note on ASCII code: **(04)**

OR

- Q.1** Minimize the following expressions using K – map and realize the same **(10)**
using the basic gates
i) $Y = \sum m(1,2,9,10,11,14,15)$
ii) $Y = \sum m(1,5,6,7,11,12,13,15)$

- Q.2 a)** Design and implement a 1-bit magnitude comparator using suitable gates. **(06)**
b) Briefly describe the ALU. **(04)**

OR

- Q.2** Implement the following using a 1:8 Demultiplexer. **(10)**
i) Full adder
ii) Full Subtractor

- Q.3** Describe the following three types of output configurations. **(10)**
i) Open Collector output
ii) Totem pole output
iii) Three state or tristate output

OR

- Q.3** Describe the following term with respect to logic families & give their typical **(10)**
values for standard TTL, CMOS & ECL families.
i) Fan-out ii) Propagation Delay iii) Noise margin
iv) figure of merit v) Power Dissipation

- Q.4 a)** For the clocked JK flip flop write the state table, draw the state diagram and **(06)**
write the state equation.
- b)** Compare Synchronous & Asynchronous circuit. **(04)**

(P.T.O)

OR

- Q.4** Carry out the following flip flop conversions. **(10)**
- i) S-R to D
 - ii) D to S-R
 - iii) J-K to S-R

- Q.5** Draw the neat circuit diagram of 4 bit Ring counter & describe. Draw the relevant waveforms. **(10)**

OR

- Q.5 a)** State the different modes of shift registers. Give the applications of shift registers. **(06)**
- b)** Compare Register & Counter. **(04)**

- Q.6** What is the architectural difference between PROM, PLA and PAL? **(10)**

OR

- Q.6 a)** Describe the DRAM with the help of diagram. State the advantage & disadvantage of DRAM. **(06)**
- b)** Classify memories on the basis of principle of operation. **(04)**
