Code No: **R31042** **R10** **Set No. 1**

**III B.Tech I Semester Supplementary Examinations, October/November -2017**

# DIGITAL IC APPLICATIONS

**(Common to Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Bio Medical Engineering, Electronics and Computer Engineering)**

**Time: 3 hours** **Max. Marks: 75**

**Answer any FIVE Questions**
**All Questions carry equal marks**

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| 1 | a) | List out different logic families of CMOS logic and explain each one in detail. | [7M] |
| | b) | Draw the circuit diagram of NAND gate by using CMOS logic and explain its operation along with truth table. | [8M] |
| 2 | a) | Draw and Explain the concept of CMOS/TTL interfacing along with one example. | [8M] |
| | b) | List out the difference between TTL, DTL ECL and CMOS logic family with one example. | [7M] |
| 3 | a) | Design a BCD to Binary Code Converters and explain its operations. | [8M] |
| | b) | Define multiplexer and implement the 32X1 MUX using 4X1 MUXs relevant digital IC. | [7M] |
| 4 | a) | Draw the circuit diagram of Floating-Point Encoder with relevant digital IC and explain its operation. | [8M] |
| | b) | What is ALU and explain its operation along with circuit diagram in detail? | [7M] |
| 5 | a) | Design a Mod-10 Counter using Digital IC and explain its operation along with output wave forms. | [8M] |
| | b) | What is Race around condition and how to avoid it? Convert JK flip flop to T flip flop with circuit diagram? | [7M] |
| 6 | a) | Draw the circuit diagram of Johnson Counter and explain its operation in detail. | [8M] |
| | b) | Explain the operation of SIPO shift register with the help of timing diagram. | [7M] |
| 7 | a) | Design a PAL circuit diagram of a Boolean function $F(a,b,c,d)=\sum 0,1,2,4,6,8,10,12,14,15$ | [8M] |
| | b) | List out the comparisons of PLA and PAL with examples. | [7M] |
| 8 | a) | Draw the Internal structure of Dynamic RAM and explain its operation in detail. | [10M] |
| | b) | Explain the concept of SRAM along with circuit diagram. | [5M] |

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