

S.E. Sem. III [INFT]
Analog and Digital Circuits
Prelim Question Paper

Time : 3 Hrs.]

[Marks : 80

- N.B.:** (1) Question No.1 is compulsory
(2) Solve any three out of remaining questions.
(3) Assume suitable data wherever required.
(4) Draw appropriate waveforms wherever required.
1. (a) Explain need of biasing. [5]
(b) Explain working of astable multivibrator using IC-555. [5]
(c) Implement Ex-OR gate using NAND gates. [5]
(d) Compare combinational and sequential circuits. [5]
2. (a) Explain working of liquid crystal display. [10]
(b) Define CMRR and slew rate. What are typical values of slew rate and CMRR for op-amp IC 741. [10]
3. (a) Explain different biasing circuits for BJT briefly. [10]
(b) Explain differential amplifier and elaborate any one method to improve CMRR. [10]
4. (a) Design binary to gray code converter. [10]
(b) Reduce the expression using Quine Mc-Clusky method : [10]
 $f(A,B,C,D) = \sum m(4,5,8,9,11,12,13,15)$
5. (a) Explain race around condition and how it can be avoided in a master slave JK Flip-Flop. [10]
(b) Design 4-bit synchronous counter using JK Flip-Flops. [10]
6. (a) Explain features of VHDL. [6]
(b) Implement 16:1 MUX using 4:1 MUX. [6]
(c) Write VHDL code for De-mux. [8]

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