

ANALOG AND DIGITAL CIRCUITS

Q. P. Code: 26352

(3 Hours)

[Total Marks: 80]

N.B.: (1) Question No. 1 is **compulsory**.(2) Solve any **three** questions out of remaining **five**.(3) Figures to **right** indicate **full** marks.(4) Assume suitable **data** where **necessary**.

Q1. Solve any four

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- State ideal and Practical Characteristics of an Op-amp
- Explain Multiplexer and Demultiplexer.
- Convert following decimal number to Binary ,Octal, Hexadecimal and Gray code
 - (128)₁₀
 - (73)₁₀
- Explain working of LCD.
- Covert D flip flop to S-R flip flop.

Q2. a) Implement following using only one 8:1 Multiplexer and few gates.

$$F(A,B,C,D) = \sum m(0,1,3,4,5,8,9,10,12,15)$$

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b) Explain Fixed Biasing Circuit with its stability factor.

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Q3. a) Draw and Explain Instrumentation Amplifier using Op-amp.

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b) Draw circuit diagram and explain the operation of Monostable Multivibrator using IC555.

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Q4. a) Minimize the following four variable logic function using K-map and design by using basic gates

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$$f(A,B,C,D) = \sum m(0,1,2,3,4,7,8,9,11,15)$$

b) What are the different methods used to improve CMRR in Differential Amplifier.

Explain one in brief.

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Q5. a) Design a Mod 12 asynchronous counter using J-K-flip flop

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b) Design 4-bit binary to gray code conversion

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Q6 Write short notes on any four

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- Explain the working of a Non-inverting amplifier using Op-amp
- Explain working of a transistor.
- Write VHDL program for NAND gate.
- Explain working of Current Mirror Circuit.
- Explain block diagram of op-amp.
