

NB:

1. Question No. 1 is compulsory and solve any THREE questions from remaining questions
2. Assume suitable data if necessary
3. Draw clean and neat diagrams

Q.1 Attempt any four

Marks

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| a. Define the following OPAMP parameters.
1) C.M.R.R 2) Slew rate 3) Input offset current 4) Input bias current
5) Input resistance | 05 |
| b. What are active filters? State its advantages over passive filters. | 05 |
| c. List important specifications of ADC 0808. | 05 |
| d. Draw functional block diagram of IC741 . | 05 |
| e. Explain the basic block diagram of Phase Locked Loop PLL. | 05 |
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| Q.2. a. Design first order high pass filter using OPAMP at $f_0 = 1\text{KHZ}$ and with gain at 2. | 10 |
| b. Design a differentiator to differentiate input signal that varies in frequency from 10 Hz to about 1 kHz. | 10 |
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| Q.3. a Explain with necessary diagrams and waveforms the principle of operation of a Monostable multivibrator using OP-AMP. | 10 |
| b. Design an IC 555 astable multivibrator for an output frequency 1 kHz and a duty cycle of 60%. | 10 |
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| Q.4. a. Design Voltage regulator using IC723 for $V_0 = 10\text{V}$ and $I_L = 200\text{mA}$. | 10 |
| b. With neat circuit explain R/2R ladder digital to analog converter. | 10 |
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| Q.5. a Explain triangular wave generator using OPAMP. | 10 |
| b. Explain internal diagram of power amplifier LM 380. | 10 |
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| Q.6 Write notes on following (Any four) | |
| a) High frequency effect on operation of OPAMP | 05 |
| b) Sample and Hold circuit. | 05 |
| c) Voltage controlled Oscillator (VCO). | 05 |
| d) Instrumentation Amplifier | 05 |
| e) Peak detector circuit. | 05 |