

Code No: 135BX**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year I Semester Examinations, October - 2020****ANALOG AND DIGITAL IC APPLICATIONS****(Common to EEE, MIE)****Time: 2 hours****Max. Marks: 75**

Answer any five questions
All questions carry equal marks

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- 1.a) Design an Op-Amp integrator to integrate an input signal that varies in frequency from 10 Hz to about 1 KHz.
b) Design an instrumentation amplifier using op-amp. [8+7]
- 2.a) Explain current to voltage converter. Write its applications.
b) Draw the circuit of a V-I converter and derive an expression for the output current in terms of input voltage. [8+7]
3. With a neat circuit diagram explain the operation of Schmitt trigger. [15]
- 4.a) Draw and explain the output wave form of the ideal inverter circuit when the input is square wave.
b) Design an RC phase shift oscillator to generate 5 KHz sine wave with 20V peak to peak amplitude. Draw the designed circuit. Assume $h_{fe}=150$. [8+7]
- 5.a) Draw the block diagram of PLL and explain in detail.
b) What is the conversion time of a 10 bit successive approximation type ADC if its input clock is 5MHz. [8+7]
6. Explain the monostable operation of 555 timer and derive the expression for the period of a pulse generated by the timer. [15]
- 7.a) What is meant by Decoder? Explain 3-to-8 line decoder with diagram and truth table.
b) Draw the schematic of CMOS NOR gate and explain its operation with the help of the truth table. [8+7]
- 8.a) Realize a SR flip flop using NAND gates and explain its operation.
b) Using a JK flip flop, explain how a D flip flop can be obtained. [8+7]

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