

Code No: 155SN

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, February - 2022

LINEAR AND DIGITAL IC APPLICATIONS

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 75

Answer any five questions  
All questions carry equal marks

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- 1.a) Draw the circuit diagram of differentiator by using IC 741 and explain its operation.
- b) Write down the differences between a practical op-amp and an ideal op-amp. [8+7]
- 2.a) Design a second order low-pass Butterworth filter with a cut-off frequency of 12 KHz.
- b) Explain the pin diagram of 555 timer. [10+5]
- 3.a) Discuss with relevant circuits and waveforms the working of Monostable multivibrator using 555 timer.
- b) Draw the block diagram of op-amp and explain. [8+7]
- 4.a) Explain successive approximation type ADC with neat diagram and compare it with other types.
- b) List the advantages of R-2R ladder DAC compared to weighted resistor DAC. [10+5]
- 5.a) Explain the operation of 3-bit Binary weighted Resistor D/A converter. Derive the expression for output voltage.
- b) Construct a CMOS 4-input AND-OR-INVERT gate and explain its operation with function table. [8+7]
- 6.a) Discuss the factors to be considered for CMOS/TTL Interfacing.
- b) What are the different kinds of logic families and compare? [7+8]
- 7.a) Design a 4bit up counter and draw its logic diagram using corresponding IC.
- b) Draw the logic diagram of universal shift register and explain its operation. [8+7]
- 8.a) What are the different types of ROMs and compare their architectures.
- b) Convert J-K flipflop to D flip-flop with enable input. [10+5]

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