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Code No: 155SJ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, March - 2021
LINEAR AND DIGITAL IC APPLICATIONS
(Electronics and Instrumentation Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
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1.a) Draw the basic circuit diagram of an Op-amp differentiator and explain its operation and stability.
b) Mention the characteristics of an ideal Op-Amp. [10+5]

2.a) Explain the features of 723 voltage regulators with a neat diagram.
b) Draw non-converting op-amp circuit. And explain its working. [10+5]

3.a) Design a narrow bandpass filter with a centre frequency fc = lKHz, Q = 5, Af = 8. Change the centre frequency to 2KHz, keeping A_F and B_w constant.
b) Compare passive and active filters. [10+5]

4.a) Explain the operation of 555 IC with the help of functional diagram.
b) What do you mean by quantization error in an A/D converter? [10+5]

5. Explain the operation of dual slope ADC. [15]

6.a) With a neat sketch explain the operation of an n-bit Weighted Resistor DAC and obtain expression for its output.
b) What are the limitations of weighted resistor type D/A converter? [10+5]

7.a) Draw and explain the operation of priority encoder.
b) Design a full adder with minimum number of NAND gates. [8+7]

8.a) Draw the circuit diagram of a negative edge triggered J-K Flip-Flop with active high present and clear and explain its operation with the help of truth table.
b) Differentiate between ripple counter and synchronous counter? Design a 4-bit counter in both modes and estimate the propagation delay. [8+7]

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