

**R15**

Code No: 125EB

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, May - 2018

**LINEAR AND DIGITAL IC APPLICATIONS**

(Common to ECE, ETM)

Time: 3 hours

Max. Marks: 75

**Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART - A**

(25 Marks)

- 1.a) List the AC characteristics of op-amp. [2]
- b) What are the different features of IC 723? [3]
- c) What is the significance of VCO in PLL? [2]
- d) Compare active and passive filters. [3]
- e) What are the applications of ADC? [2]
- f) An 8 bit D/A converter has a resolution of 8mV/bit. Find the analog output voltage for the input 10111010. [3]
- g) Which IC is used as BCD code converter? [2]
- h) How to drive CMOS gate to TTL gate? [3]
- i) How to convert JK flip-flop to D flip flop? [2]
- j) List different types of memories. [3]

**PART - B**

(50 Marks)

- 2.a) Explain the working of Non-Inverting amplifier and derive the equation of its Gain. [6+4]
  - b) How op-amp is used as a differentiator? Explain. [6+4]
- OR**
- 3.a) Explain the working of a Schmitt trigger with neat circuit diagram. [5+5]
  - b) How op-amp is used for comparator? Explain its working. [5+5]
- 4.a) Design an active high pass filter with cutoff frequency of 4KHz.
  - b) How to generate a sawtooth wave form? Explain the working of such a circuit with neat circuit diagram. [5+5]
- OR**
- 5.a) Draw the functional block diagram of 565IC and explain its working. [5+5]
  - b) Explain the working of an Astable multivibrator using IC555 with circuit diagram. [5+5]
6. Explain the working of R-2R ladder DAC with neat circuit diagram and write its limitations. [10]
- OR**
7. Explain the working of dual slope ADC with neat circuit diagram and compare its performance with other ADC. [10]

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8. Design a driving circuit for LED and which 74XX series IC is used for it. [10]

OR

9. Design a Priority encoder circuit and which 74XX series IC is used for it. [10]

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10. Design a synchronous counter using 74XX ICs and explain its working with neat timing waveforms. [10]

OR

11. Design a decode counter using Jk-Flip-Flops. [10]

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