

(1)

T.E - Biomed / IV / Rev / ADCD

Analog & Digital Circuits design 4/6/15

Q.P. Code : 3357

(17)

(3 Hours)

[ Total Marks : 80

- N.B. : (1) Questions No. 1 is compulsory  
(2) Attempt Any Three Questions from remaining.  
(3) Assume suitable data wherever necessary.

1. a) Differentiate between active filters and passive filters. 5  
b) Draw and explain circuit for missing pulse detector using IC 555. 5  
c) Explain block diagram of VCO. 5  
d) Draw and explain V-I characteristics of SCR. 5
2. a) Draw and explain functional block diagram of IC 555. 10  
b) Draw a circuit diagram for 2<sup>nd</sup> order butterworth LPF using OP-AMP. Derive expression for  $V_o-V_i$ , also plot frequency response. 10
3. a) Design Instrumentation amplifier using AD 620 for gain 800 and explain its applications. 10  
b) Draw and explain UJT as a relaxation oscillators. 10
4. a) Draw and explain two transistor model of SCR. 10  
b) Draw and explain functional block diagram of PLL. Also define lock range, capture range and pull in time related to PLL. 10
5. a) Design a regulator using IC 723 to meet following specifications. 10  
 $V_o = 6V, I_o = 100mA, V_{in} = 15 \pm 20\%$   
 $I_{sc} = 150mA$  &  $V_{sense} = 0.7V$   
b) Draw and explain stepper motor drive system. 10
6. Write short notes on (Any Four) 20
  - a) Frequency to voltage convertor
  - b) FSK Generate
  - c) Pulse width modulator using IC 555
  - d) Opto isolators
  - e) Explain servomechanism

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