

2/06/2016

(3 Hours)

[Total Marks:80]

- NB: (1) Question no1. Is compulsory  
 (2) Attempt any 3 questions from remaining  
 (3) Assume suitable data wherever necessary

- 1 a. Explain Astable Multivibrator for 50% duty cycle. [20]  
 b. Explain working of VCO.  
 c. Explain advantages of active filters  
 d. Explain the working of opto-couplers in detail.  
 e. Explain regenerative action of SCR with the help of two transistor analogy.
- 2 a. Explain low pass KRC filter and derive the equation for Q [08]  
 b. Draw and explain the functional block diagram of PLL. Explain Lock range, Capture range and pull in time related to PLL along with its applications [12]
- 3 a. Design a voltage regulator using IC 723 to meet the following specifications:- [10]  
 $V_o = 9V, I_o = 100mA, V_{in} = 15 \pm 20V, I_{sc} = 150mA$  &  $V_{sense} = 0.7V$   
 b. Explain working and construction of a basic stepper motor. [10]
- 4 a. Explain the functional block diagram of IC8038 [06]  
 b. Explain frequency to voltage convertor [05]  
 c. Design a band pass filter for  $F_L = 800$  Hz and  $F_H = 2$  KHz [05]  
 d. Design a Monostable Multivibrator for  $T_{on} = 1$  ms [04]
- 5 a. Explain Load and Line regulation in voltage regulator [05]  
 b. Explain different applications of AC and DC motors [05]  
 c. Design an Instrumentation Amplifier using AD620 for gain of 800 and explain its applications. [10]
6. Write short notes on any four:- [20]  
 a) FSK  
 b) Servomechanism  
 c) Types of analog switches  
 d) UJT as relaxation oscillator  
 e) Missing pulse Detector