T2325 / T0510 ANALOG AND DIGITAL CIRCUITS DESIGN

*TE / Sem V / BM / CBSGS/ADCD
(KT)
MAY – 2017 (16)*

Q.P. Code : 564500

(3 Hours) [Total Marks : 80]

N.B.
1) Question No.1 is compulsory.
2) Attempt any 3 questions from remaining.
3) Assume suitable data wherever necessary.

1. a) Explain the working of Power MOSFET, its structure and characteristics. 05
   b) Draw a neat labelled functional diagram of IC 555 timer. 05
   c) What is linear voltage regulator and switching regulator? 05
   d) Explain generalised impedance convertors and state a few applications. 05

2. a) Explain low pass KRC filter and derive the equation for Q. 08
   b) Explain the regenerative action of SCR with the help of two transistor analogy. 04
   c) Design an Instrumentation Amplifier using AD620 for gain of 800 and list its applications and explain any one in detail. 08

3. a) Compare AC and DC motors. Explain different applications of both motors. 06
   b) Explain IC 723 with its functional diagram. Design a voltage regulator using IC 723 for the following specifications: 10
   Vo= 5 v, Io = 10 mA, Vin= 15+/- 20V, Isc= 150mA & Vsense = 0.7V.
   c) Design a Wide Band Pass filter for F_L= 500Hz and F_H= 2.5KHz. 04

4. a) Design a circuit using IC 555 timer to divide the input frequency by 3. 05
   b) Draw and explain the functional block diagram of PLL in detail. Explain Lock range, Capture range and pull in time related to PLL along with its applications. 10
   c) Explain DIAC and TRAIC and explain its characteristics. 05

5. a) Explain the construction and working of a stepper motor. 10
   b) Explain the functional block diagram of IC 8038 and list its applications. Explain any one application in detail. 10

6. Write short notes on any four:- 20
   a) FSK
   b) UJT relaxation Oscillator.
   c) Various types of switches.
   d) VCO.
   e) Capacitor filters.

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