

[Time: 3 Hours]

[Marks: 80]

Please check whether you have got the right question paper.

- N.B:
1. Question no. Is compulsory
 2. Attempt any 3 questions from remaining
 3. Assume suitable data wherever necessary
1.
 - a. Sketch the Power MOSFET structure, working and characteristics with neat labeled diagrams. **20**
 - b. Explain working of VCO.
 - c. Explain the different types of analog switches
 - d. Compare AC and DC motors. Give suitable examples for each.
 - e. Explain the generalized impedance convertors and give a few applications
 - f. Sketch block diagram of PLL.
 2.
 - a. Explain low pass KRC filter and derive the equation for Q **10**
 - b. Explain Lock range, Capture range and pull in time related to PLL **05**
 - c. Discuss the working of opto isolators and opto couplers. **05**
 3.
 - a. Design a voltage regulator using IC 723 to meet the following specifications:- **05**
 $V_o=6V$, $I_o=10mA$, $V_{in}=152 \pm 0V$, $I_{sc}=150mA$ & $V_{sense}=0.7V$
 - b. Draw the V/I characteristics of Diac & triac. Give a few applications for both **05**
 - c. Explain working and construction of a basic stepper motor. **10**
 4.
 - a. Explain the functional block diagram of IC8038 **05**
 - b. Explain frequency to voltage convertor **05**
 - c. Sketch the functional block diagram of IC555 timer. Design a circuit using IC 555 timer as a Bistable multivibrator **10**
 5.
 - a. Draw and explain the two transistor model of SCR **10**
 - b. Design an Instrumentation Amplifier using AD620 for gain of 650 and explain its applications **10**
 6. Write short notes on **20**
 - a. FSK
 - b. Servomechanism
 - c. UJT as relaxation oscillator
 - d. Frequency response of Butterworth, Chebyshev and Elliptical filters
