TE – Sem V
CBCGS
Biomed

**Duration 3 hours**

**Marks 80**

N.B.:
(1) Question number 1 is compulsory.
(2) Attempt any three questions from the remaining five questions.
(3) Figures to the right indicate full marks.
(4) Draw suitable graphs/diagrams wherever necessary.

**Q.1 Solve any four questions out of five questions.**
a. Explain astable multivibrator for 50% duty cycle. [05]
b. Explain working of VCO. [05]
c. Explain different types of analog switches. [05]
d. Explain working of opto-couplers in detail. [05]
e. Explain working of Power MOSFET, its structure and characteristics. [05]

Q.2 a. Explain the functional block diagram of IC 8038. [10]
Q2. b. Design instrumentation amplifier using AD620 for gain 800 and explain its applications. [10]

Q3. a. Design a regulator using IC 723 to meet following specifications [10]
$V_0 = 6V$, $I_0 = 100mA$, $V_{in} = 15 \pm 20 \%$ V
$I_{SC} = 150mA$ and $V_{sense} = 0.7$ V.
Q3. b. Explain two transistor model of SCR. [10]

Q.4. a. Design a band pass filter for $f_L = 800Hz$ and $f_H = 2KHz$. [08]
Q4. b. Draw and explain the functional block diagram of PLL in detail. Explain lock range, capture range and pull in time. Explain applications of PLL. [12]

Q.5 a. Explain low pass KRC filter and derive the equation for Q. [12]
Q5. b. Draw and explain generalized impedance converter (GIC). [08]

Q.6. Write short notes on any four of the following: [20]
a. Frequency to Voltage converter
b. DIAC and TRIAC
c. UJT as a relaxation oscillator
d. Missing pulse detector
e. Stepper motor

******************

58988

Page 1 of 1

EDA6E072CE5629FD81848DD540FF92C8