

3. (a) Draw frequency response curves for high-pass filter and derive expression for cut-off frequency. 5
- (b) Design a high-pass filter at a cut-off frequency of 1 KHz with a pass band gain of 2. 5
4. (a) Explain with a neat sketch the operating principle of Schmitt Trigger circuit. 5
- (b) Explain in detail any two applications of Schmitt Trigger circuit with necessary circuit diagrams and waveforms if necessary. 5
5. (a) Explain with a neat sketch the operation principle of Emitter-coupled monostable multi with waveforms. 5
- (b) For a emitter-coupled monostable multi circuit with parameters :
 $V_{CC} = 18V$, $R_{C1} = 6K$, $R_{C2} = 5K$, $R_e = 4K$,
 $R = 100K$. Calculate the voltage levels at $t = 0+$ only. Assume germanium transistors $h_{FE} = 50$ and $r_{bb} = 200 \text{ ohm}$. 5
6. Explain in detail with circuit diagrams and equations the Shunt compensation of a transistor stage in a cascade with identical poles. 10
7. (a) Explain Principle and characteristics of Tunnel diode with neat sketch. 6
- (b) Explain in detail with a neat sketch the Astable circuit using Tunnel diode. 4
8. (a) Explain the IC555 Timer Monostable operation with waveforms. Provide a neat sketch for this. 7
- (b) In a IC555 monostable operation, $R_A = 10K\Omega$, the output pulse width $t_p = 10 \text{ ms}$. Determine the Value of C. 3

Sixth Semester Examination – 2008

ADVANCED ELECTRONICS CIRCUITS

Full Marks – 70

Time : 3 Hours

*Answer Question No. 1 which is compulsor,
and any **five** from the rest.*

*The figures in the right-hand margin
indicate marks.*



1. Answer the following questions : 2 × 10
- (a) What are the two requirements for oscillation ?
 - (b) What are Pass band and Stop bands for a filter ?
 - (c) Define Notch-out frequency.
 - (d) Give any two applications of Astable Multivibrator.

- (e) Draw the output waveform for Collector-coupled monostable multi.
 - (f) Define Transition time of commutating capacitors.
 - (g) Define Transient response and Steady state response.
 - (h) Draw the Characteristic waveform of UJT.
 - (i) Define sweep-speed error. Give an expression.
 - (j) Name any four methods for generating a time-base waveform.
- (a) Explain Voltage controlled oscillator with a neat sketch of circuit and output waveforms. 5
- (b) For a typical connection diagram of VCO with parameters : 5
 $+V=12V$, $R_2=1.5 \text{ Kohm}$, $R_1 = R_3 = 10 \text{ Kohm}$ and $c_1= 0.001 \text{ microF}$
- (i) Determine the nominal frequency of the output waveforms.
 - (ii) Compute the modulation in the output frequencies if V_c is varied between 9.5V and 11.5V.