

3. (a) Explain about all pass filter and derive expression for phase shift. 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 the principle of oscillator. Explain Wein-bridge oscillator with a neat sketch. 5
- (b) Design the Wien bridge oscillator for a frequency of oscillation $f_o = 965$ Hz. 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 $r_{bb} = 200$ ohm. 5
6. Explain about Phase Locked Loop with any one application in detail with neat sketches and waveforms. 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 Astable operation with waveforms. Provide a neat sketch for this. 7
- (b) In a IC555 Astable operation, $R_A = 2.2$ Kohm, $R_B = 3.9$ Kohm and $C = 0.1$ microF. Determine the positive pulse width t_c , negative pulse width t_d and free-running frequency f_o . 3

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CPEC 5306/CPEN 5305

Sixth Semester Examination – 2008

ADVANCED ELECTRONICS CIRCUIT

Full Marks – 70

Time : 3 Hours

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

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

1. Answer the following questions : 2 × 10
- (a) What is VCO ? Give any two applications that require a VCO ?
- (b) What are Pass band and Stop bands for a filter ?
- (c) Name any four methods for generating a time-base waveform.

- (d) Give any two applications of Astable Multivibrator.
- (e) Which multivibrator is used for Digital Operations ?
- (f) Draw the circuit for self-biased transistor binary.
- (g) Differentiate between symmetrical and Un-symmetrical triggering.
- (h) What is Notch-out frequency ?
- (i) Define sweep-speed error. Give an Expression.
- (j) Draw the characteristic waveform of UJT.
2. (a) Explain Voltage controlled oscillator with a neat sketch of circuit and output wave forms. 5
- (b) For the all-pass filter determine the phase shift between the input and output at $f = 2 \text{ KHz}$. To obtain a positive phase shift, what modifications are necessary in the circuit ? 5

P.T.O.

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