CBCS SCHEME

USN | | | | | | | | | | |

17MT35

Third Semester B.E. Degree Examination, June/July 2019
Analog and Digital Electronics

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Analyze the working of first order high pass filter and also evaluate the expression for gain. Design first order high pass filter at a cut off frequency of 1KHz with pass band gain of 2. And using frequency scaling technique convert 1KHz to 1.6 KHz. **(12 Marks)**

b. With the neat sketch explain the working principle of narrow band reject filter with necessary waveforms. **(08 Marks)**

OR

2 a. Analyze the working of ALL PASS filter with neat circuit and necessary waveform and also drive the expression for gain. Also find the phase angle if F = 1KHz, R = 1.59kΩ and C = 0.01μF. **(12 Marks)**

b. List the design steps for second order low pass filter. Also design a second order low pass filter at a high cut off frequency of 1KHz. **(08 Marks)**

Module-2

3 a. With a neat block diagram analyze the oscillator circuit and also derive the condition for oscillations. **(06 Marks)**

b. Analyze the working of a inverting comparator as a Schmitt trigger Also design a Schmitt triggers circuit with UTP = +3V and LTP = -3V. Draw its input output and hysteresis curve. **(14 Marks)**

OR

4 a. With a neat circuit explain working principle of RC phase shift oscillator with necessary equations. Also design a RC phase shift oscillator to have F_0 = 200Hz. **(12 Marks)**

b. Analyze the working of Non inverting comparator circuit with necessary waveforms. **(08 Marks)**

Module-3

5 a. Analyze the working of a 555 timer as monostable multivibrator with neat block diagram as well as circuit diagram. **(14 Marks)**

b. The monostable multivibrator is to be used as divide by 2 networks. The frequency of the input trigger signal is 2KHz. If the value of c = 0.01μF. what should be the value of resistance R. **(06 Marks)**

OR

6 a. Explain the operation of 555 timer as Astable multivibrator. **(12 Marks)**

b. Analyze the operation of Astable multivibrator as free running ramp generator. **(08 Marks)**

Module-4

7 a. Simplify the boolean fucntion F(W, X, Y, Z) = Σ(0, 1, 2, 4, 5, 6, 8, 9, 12, 13, 14) using i) SOP ii) POS form and also write the circuit. **(10 Marks)**

b. Design a full adder from two half adder. **(06 Marks)**
c. Design a 4*16 decoder circuit using 3*8 decoder. **(04 Marks)**

OR

8 a. Define MUX. Design 4 × 1 MUX using logic gates Also implement the function $F(a, b, c) = \Sigma(1, 3, 5, 6)$ using MUX. **(10 Marks)**
b. Design BCD to Decimal decoder circuit. **(10 Marks)**

Module-5

9 a. With neat circuit analyze the operation of clocked JK Flip Flop. Also derive the characteristic equation from truth table. **(10 Marks)**
b. Design a synchronous 3 bit binary upcounter using the excitation table. **(10 Marks)**

OR

10 a. Design BCD Ripple counter. **(10 Marks)**
b. With a neat circuit analyze the operation of clocked SR flip flop using NOR latch. Also derive the characteristic equation from truth table. **(10 Marks)**

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