SE-sem-IV - old - EXTC
ADIC

30/11/15

QP Code : 1377

Time:- 3 hrs. **Maximum Marks:- 100**

N. B.

1. *Question no. 1 is compulsory.*
2. *Answer ant four out of the remaining six questions.*
3. *Assumption made should be clearly stated.*
4. *Assume any suitable data wherever required but justify the same.*
5. *Figures to the right indicate marks.*
6. *Illustrate the answers with sketches wherever required.*
7. *Answer to the questions should be grouped and written together*
8. *Use Blue/Black ball ink pen to write answers. Use of pencil should be done only to draw sketches and graphs*

Q.1. a Explain logarithmic amplifier and derive the expression for the output voltage. **5**

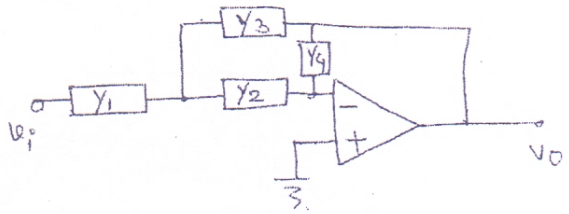
b. Draw the block diagram of a typical Op-amp and explain the function of each block **5**

c. With neat circuit explain how a resistor can be simulated using switch capacitors **5**

d. What are the differences between FPGAs and CPLDs. **5**

Q.2. a Explain the basic requirement of Instrumentation Amplifier and find output voltage expression for Instrumentation Amplifier using three Op-Amp. **10**

b. Derive an expression for the voltage transfer function. How will you realize an active RC Band Pass filter using this circuit. **10**



Q.3. a Design an astable multivibrator using IC 555 with output frequency 1 KHz with 60% duty cycle. Modify the circuit design to obtain 1 KHz output frequency with 40% duty cycle. **10**

b. With the help of block diagram explain the working of IC565. Explain the following terms with respect to a PLL : **10**

1. Lock Range 2. Capture range 3. Pull in time

Q.4.a Explain the operation of monostable multivibrator using IC555 with the help of waveforms. How can this circuit be used as frequency divider. **10**

b. Write a VHDL code for 8-bit shift-left / shift-right register with positive edge clock, serial in and parallel out. **10**

Q.5.a. Give three most important advantages of 3-op-amp Instrumentation amplifier. Design an instrumentation amplifier using 3-op-amp to vary the gain between 1 to 100. **10**

b. What are the performance parameters of DAC. Explain R-2R ladder type of DAC. **10**

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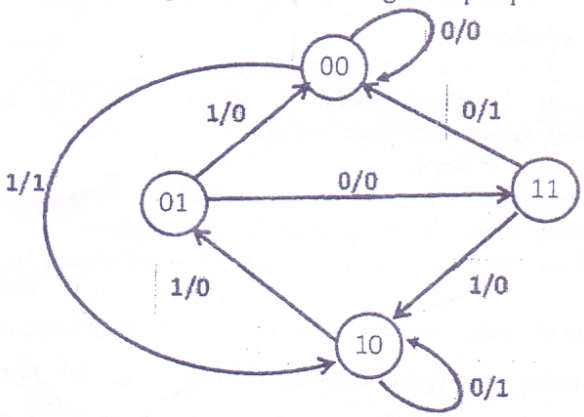
Q.6.a. Design a Moore machine for overlap sequence detector for the string" 1011". **10**

b. For the state diagram given, design a sequential circuit using D Flipflops **10**



Q.7. Write short notes on: **20**

a IC 8038 : Function Generator
b Non Inverting Schmitt Trigger
c Compare Static and Dynamic RAM
d Multiplier using transconductance method