B.E VIII ETRX - (Old)
Electronic Product Design (EPD)
Dec-2015

16/12/15

QP Code: 2694

(3 Hours) [Total Marks : 100

N.B. : (1) Question no 1 is **compulsory**
(2) Attempt **any four** question from remaining six question.
(3) Assume suitable data if required with justification.

1. Attempt the following 20
   (a) Define MTBF, MTTR, FR, Reliability.
   (b) Explain importance of Electronic Diary in product design.
   (c) Compare single sided and double sided PCB's.
   (d) Discuss different types of IC packages.

2. (a) Explain various phases of software design. 10
   (b) What are various types of Oscilloscope. Explain in brief digital phosphor Oscilloscope. 10

3. (a) Explain the following terms. 10
   (i) Grounding (ii) Shielding
   (b) Explain the Bathtub Curve for reliability indicating all its region. Also explain how failures are produced prior to shipment of the product. 10

4. (a) Explain the contents of standard PCB documents in electronic product. 10
   (b) What is ASM? Using ASM design lift controller. 10

5. (a) Explain various circuits used in SMPS for removing transients. 10
   (b) What are advantages and dis-advantages of DC analysis and AC analysis in product design. 10
   (c) Write a note on CPU simulator. 10

6. (a) What factors should be considered while designing high speed PCB 10
   (b) Explain
   (i) Signal Intergrity
   (ii) Oscilloscope probe.

7. (a) Why it is necessary to conduct following test on electronic product. 10
   (i) Radiated emission
   (ii) Conducted emission
   (iii) Conducted succeptibility
   (iv) Radiated Succeptibility
   (b) State various feature of logic analyzer and also explain the various triggering modes of it. 10

QP-Con. 11426-15.

ETRX - old.
Advanced VLSI
Dec - 2015

11/12/15

QP Code : 2613

(Revised Course)

Duration: 3hrs. Total marks: 100

NB:
Question No. 1 is compulsory,
Attempt any four out of remaining six questions,
Assume any suitable data whenever required and justify the same.

1. a) Explain Manchaster carry circuits (5)
   b) Explain how ESD (electro-static discharge) affect the MOSFET (5)
   c) Write Verilog code for 8 bit counter. (5)
   d) Draw and explain Carry save adder (5)

2. a) Determine intrinsic gate capacitance with t_{ox}=150A°, V_G=3.3V. ε=3.9X8.854x10^{-14}F/cm,.if W=4μm,L=2μm. (10)
   b) Implement following function using PLA (10)

$$X = ac + b\bar{c}$$
$$Y = \bar{a}bc + \bar{a}b\bar{c}$$
$$Z = ab + \bar{a}\bar{b}$$

3.a) Explain various technique of clock generation and clock stabilization. (10)
   b) Draw 4 X 4 pseudo-nMOS ROM array circuitry having stored following data 0011, 1010, 1100, 0101. Also list the no. of address pins, data pins and word lines (10)

4. a) What is the need of sizing routing conductors, how does it affects RC delay explain ? (10)
   b)Explain EEPROM using floating gate NMOSFET. (10)

5 a) Give and explain CLA Adder with generate and propagate term with their Verilog code. (10)
   b) Explain in detail the input protection circuit for CMOS, also explain output circuit with I/O circuit . (10)

6 a) Give and explain single phase clock system and explain its draw-back. (10)
   b) Give various important parameters affecting switching performance of CMOS circuit. Suggest method to improve it. (10)

7 Write short note (any 3) (20)
   a) Reliability issues in CMOS circuits.
   b) Low power design consideration
   c) Switch capacitor amplifier.
   d) H tree clock distribution.

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