

Total No. of Questions : 8]

SEAT No. :

**P3603**

[Total No. of Pages : 2

**[4959] - 1081**  
**BE (E & TC)**  
**VLSI Design & Technology (End - Sem)**  
**(2012 Pattern)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

**Instructions to the candidates:-**

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Use of electronic pocket calculator is allowed.*
- 3) *Assume suitable data, if necessary.*
- 4) *Answer any one questions out of Q.1 or Q.2, Q.3 or Q.4, Q5 or Q6, Q.7 or Q.8.*

- Q1)** a) What is meant by concurrent & sequential statements in VHDL? Explore in detail with two examples of each. [7]
- b) With the help of suitable schematics, compare PROM, PLA & PAL architectures. What is need of CPLD? [7]
- c) What is clock skew? Explain the solutions to it. [6]

OR

- Q2)** a) Write VHDL code for Mod - N counter. Write suitable test bench for it. [7]
- b) Explain PLD targeted design flow in detail. [7]
- c) What is supply & ground bounce? What are remedies to it? [6]

- Q3)** a) Draw ac equivalent ckt of MOSFET & explain various capacitances involved. [9]
- b) What is technology scaling? What are types? Explain each in detail. [9]

OR

- Q4)** a) With the help of mathematical analysis & suitable schematic, explain DC transfer characteristics of CMOS Inverter. [9]
- b) What are merits of transmission gate? Design 4 : 1 mux using transmission gates. [9]

**P.T.O.**

- Q5)** a) Draw the ckt diagram for push pull CMOS inverter as an amplifier & explain. Give the expressions for output voltage range, output resistance & bandwidth. [8]
- b) With the help of suitable schematic, explain cascode amplifier. What are its merits? Give the expressions for voltage gain and output resistance. [8]

OR

- Q6)** a) Explain current mirror in detail. Why is it needed? [8]
- b) Explain current sink & current source in detail. Give expressions for output voltage range & output resistance. [8]

- Q7)** a) What are the types of fault? Explain each in brief. [8]
- b) What is need of BIST? Explain typical BIST in detail. [8]

OR

- Q8)** a) With the help of block diagram, explain TAP controller in detail. [8]
- b) Explain boundary scan technique. [8]

