

Total No. of Questions : 8]

SEAT No :

P 3043

[5154]-611

[Total No. of Pages :2

**B.E.(Electronics & Telecommunication)
VLSI DESIGN & TECHNOLOGY
(2012 Pattern) (End Semester) (404181)**

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Assume suitable data, if necessary.

Q1) a) Explain the following: **[10]**

- | | |
|---------------|---------------|
| i) Constants | ii) Variables |
| iii) Signals | iv) Functions |
| v) Procedures | |

b) Write VHDL code for half adder by structural and behavioral modelling technique. **[10]**

OR

Q2) a) Describe the PLD design flow. **[10]**

b) Write the VHDL programming for D flip-flop and its test bench. **[10]**

Q3) a) Derive the static and dynamic power dissipations in CMOS. **[7]**

b) Explain the following terms. **[4]**

- | | |
|-----------------|----------------|
| i) Clock jitter | ii) Clock skew |
|-----------------|----------------|

c) Draw and explain CMOS transfer characteristics. **[7]**

OR

Q4) a) Define Scaling and explain any one type of scaling. **[6]**

b) Explain the following: **[4]**

- | | |
|------------------------------|-----------------|
| i) Channel Length Modulation | ii) Body effect |
|------------------------------|-----------------|

c) Explain the working of a transmission gate and Implement a circuit of 2:1 multiplexer using transmission gate. **[8]**

P.T.O.

- Q5)** a) Draw and explain active load inverter in detail. [8]
b) Explain current sink and current source and their characterization with their areas of improvement. [8]

OR

- Q6)** a) Draw and explain CMOS operational amplifier with voltage gain and output resistance. [8]
b) Draw the schematic of CMOS differential amplifier and give the expressions for output resistance, CMRR & ICMR. [8]

- Q7)** a) Explain the fault models with examples. [8]
b) Explain the need of DFT with suitable example. [8]

OR

- Q8)** a) Draw the TAP controller state diagram and explain. [10]
b) Explain the following terms: [6]
i) Partial scan
ii) Full scan
iii) JTAG

