Total No. of Printed Pages:1

SUBJECT CODE:- 302

FACULTY OF ENGINEERING AND TECHNOLOGY

B.E.(EC/ECT/E&C/IE) Examination Nov/Dec 2015

VLSI Design

(Revised)

[Time: Three Hours] **[Max. Marks: 80]**

"Please check whether you have got the right question paper."

N.B i) Question no .1 & question No. 6 are compulsory.
ii) Solve any two questions from Q. no. 2 to Q. no 5.
iii) Solve any two questions from Q. no 7 to Q .no 10.
iv) Figures to the right indicate full marks.
v) Assume suitable data if necessary.

Section A

Q.1 Attempt any two from the following 10
a) State and explain Moore's Law.
b) Compare verilog with VHDL.
c) What is testability? Explain the need of design for testability.
d) What is mean by synthesizable and non-synthesizable statements?

Q.2 a) Explain the various types of architecture modeling styles used in VHDL with example. 08
b) Explain different classes of data object in VHDL with example. 07

Q.3 a) Explain attributes and configuration in VHDL. 08
b) Write the VHDL code for 4 bit UP counter. 07

Q.4 a) Explain types of fault and fault coverage. 08
b) Explain TAP controller with state diagram. 07

Q.5 a) State the features of FPGA. Explain architecture of FPGA. 07
b) Write the VHDL code for 08
i) 1:8 DEMUX
ii) J-K flip-flop.

Section- B

Q.6 Attempt any two from the following 10
a) Explain the operation of N-MOS transistor.
b) Explain transmission gate with example.
c) Explain Body effect in CMOS.
d) Explain the terms noise margin and power delay product?

Q.7 a) What is CMOS inverter? Explain its DC transfer characteristics: 08
b) Design CMOS logic for $Y = \overline{(W + xv)(Z + U)}$ 07

Q.8 a) Explain CMOS logic families. 08
b) Explain pass transistor logic with example. 07

Q.9 a) Explain p-well CMOS fabrication process in detail. 08
b) Explain the layout – design rules in CMOS processing technology. 07

Q.10 a) Explain in detail static and dynamic power dissipation. What are the components which makes power dissipation in CMOS circuit. 08
b) Explain in detail analysis of CMOS inverter with parasitic. 07

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