Ref No . **EX/ET/T/416D/2017 (Old)**

B. E.T.C.E. 4th year 2nd Sem EXAM (old) -2017

(4th year 2nd Sem)

ELECTRONIC DESIGN AUTOMATION -- Elective -II

Time : Three Hours **Full Marks : 100**

Answer any five questions.

1.

a. What is delta delay in VHDL? How Transport and inertial delays are described? **4+6= 10**

b. Write a program of serial adder using structural model. Design the memory by using flip flop. **10**

2.

a. What is test bench? Write test bench program to verify AND gate . **2+10=12**

b. Write a program of n input OR gate? **8**

3.

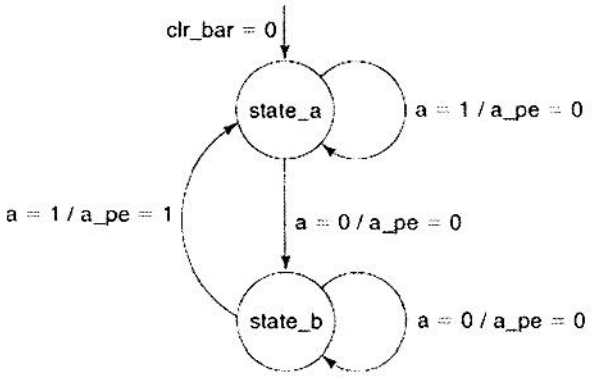
a. Design a 8:1 MUX using suitable MUX tree. Write the code using structural model. Use process for input sensitivity list **8**

b. What is the difference between signal and variable? Describe it with an example. **6**

c. Write a program of Single bit magnitude comparator by using NAND gate **6**

4.

a. Write the VHDL code of Mealy FSM state diagram for a positive edge detector. **10**



b. What is resolution function and explain it's operation by an example. What is the calling function type associated with resolution function in terms of VHDL code? **2+4+4=10**

[Turn over

5.

a. Explain the MOS small signal model and describe each terms. **10**

b. What is SPICE Level -1 what are the primary net-list parameters? **5**

c. Describe the operation of MOS capacitor and their behavior in different operational zone **5**

6.

a. What is the requirement of scaling? What is constant field scaling and constant voltage scaling? **3+4=7**

b. Describe the condition of Cox, Id(linear), Id(Sat) , power dissipation, power density, gate delay for both constant field and constant voltage scaling **8**

c. Find the drain current and transconductance for an NMOS transistor operating with $V_{GS} = 2.5$ V, $V_T = 1$ V, and $K' = 1$ mA/V^2. **5**

7.

a. What is design for manufacturability? What is different process variation and how it changes the device, circuit and system? **10**

b. What are the designable and noise parameters and how the distribution function of noise behaves? **6**

c. What is parametric yield and variability? **2**