Roll No. | | | | | | | | | | | | | Total No. of Pages : 01

Total No. of Questions : 08

M.Tech.(ECE)/(Full Time) (Sem.–1)

ELECTRONICS SYSTEM DESIGN

Subject Code : EC-502

Paper ID : [E0562]

Time : 3 Hrs. Max. Marks : 100

INSTRUCTION TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWENTY marks.**

1. Design a 4-bit BCD adder using two parallel adders. You can use any extra hardware if required. 20

2. a) Explain briefly the design steps required to design a synchronous sequential circuit. 8

   b) Design a 3-bit up-down counter with the asynchrounous set and reset inputs. 12

3. What is an MDS diagram? What is its importance in electronics system design? With at least two examples each, explain the conversion of signal flow graph into MDS diagram. 20

4. Implement the functions

   $f_1 = \sum m(0,2,5,7,9,11,13,15)$ and $f_2 = \sum m(2,6,8,12,14)$ on

   a) PLA 10

   b) ROM. Use minimum size for ROM and PLA. 10

5. Following the design steps required to design an asynchronous circuit, design a basic binary cell. 20

6. Discuss the use of multiplexers in system controllers and explain in detail the indirect addressed multiplexer configuration. 20

7. a) What do you mean by hazards? Explain their types with the help of examples. 10

   b) What are cycles and races? Explain with the help of examples. 10

8. Taking at least two examples, explain, how an excitation map can be plotted, read and reduced. 20