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B.Sc. (With Credits)-Regular-Semester 2012 Sem III

B.Sc.23132 Electronics-II : Digital Electronics -I Paper- II

P. Pages : 4

Time : Three Hours   Max. Marks : 50

Notes :   1. All questions carry equal marks and are compulsory.
2. Draw a diagram wherever necessary.
3. Use of log table / calculator is allowed.

1.   Either :

a) What is a multiplexer ? Explain the concept of N:1 multiplexer with suitable block diagram.   **5**

b) Construct 8:1 multiplexer using 4:1 multiplexer. Draw its truth table.   **5**

OR

c) What is k-map ? Explain k-map for 2, 3 and 4 variables with examples.   **5**

d) Plot a k-map for the expression   **5**
   $f(A,B,C,D) = \sum m (0,2,3,4,8,9,10,11)$
   and simplify it in SOP form.

2. Either :

a) What is decoder ? Draw logic diagram   **5**
   of 2-line to 4-line decoder and explain
   its working with truth table.

b) Explain the working of decimal to BCD   **5**
   encoder with its truth table and logic
   diagram.

OR

c) Explain the construction and working of   **5**
   BCD to 7-segment decoder / driver.

d) What is full adder ? Draw its logic   **5**
   diagram. Give its truth table and
   Boolean equation.

3. Either :

a) Explain the construction and working of   **5**
   RS flipflop using NOR gates. Give its
   truth table.

b) State the drawback of clocked RSFF. Explain how the drawback can be overcome using D-flipflop. **5**

OR

c) Explain the importance of preset and clear inputs in flip flop. What do you mean by active high and active low preset and clear ? **5**

d) Explain construction and working of JKMS flipflop. **5**

4. Either :

a) Explain the construction and working of 4 bit ripple counter. Give its timing diagram. **5**

b) What is modulus of counter ? Explain its concept with suitable example. State the member of flipflops required for the construction of. **5**
   i) MOD-16
   ii) MOD-100 counter.

OR

c) Differentiate between synchronous and synchronous counter. **5**

d) Explain the construction and working of 3-bit ring counter. Give its timing diagrams. **5**

5. Either :

a) Design 1:8 Demux using 1:4 Demux. **10**

b) Draw circuit for 4bit 2's complement adder / subtractor.

c) Explain the working of T-FF.

d) Explain the working of 3-bit Jhonson counter with suitable timing diagrams.

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