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

B.Sc.23132-Electronics Paper-II (Digital Electronics-I)

P. Pages : 1 **GUG/W/17/3337**

Time : Three Hours * 1 6 4 0 * Max. Marks : 50

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

1. **Either**

a) Reduce the expression $f = \sum m(0, 2, 3, 4, 5, 6)$ using k-map and draw the logic circuit. **7+**
Explain SOP form with suitable example. **3**

OR

b) Draw logic diagram for 4:1 multiplexer using logic gates and explain its truth table. **5+**
What is demultiplexer ? Explain the operation of 1:4 DEMUX with logic diagram using logic gate. **5**

2. **Either**

a) Draw the logic diagram of 1 of 10 decoder using logic gates and give its truth table. **5+**
What is Encoder ? Draw the block diagram of decimal to BCD encoder and give its truth table. **5**

OR

b) What is full adder ? Explain **3+**
Draw the logic diagram of 2's complement adder / subtractor (4 bit). Explain its working with suitable example. **7**

3. **Either**

a) Explain the working of JKFF with suitable diagram. **5+**
What is race around condition ? How it can be removed ? Explain. **5**

OR

b) Give the advantages of present and clear input of flip flop. **3+**
Explain the working of T flip flop with suitable logic diagram. **7**

4. **Either**

a) Explain the working of 4-bit ripple counter with truth table and timing diagram. **7+**
What is down counter ? Explain. **3**

OR

b) With the help of logic diagram and timing diagram, explain the working of 3-bit synchronous counter. **5+**
Explain the working of Johnson counter with suitable logic diagram. **5**

5. a) Reduce the expression $f = \overline{A}\,\overline{B} + \overline{A}B + AB$. **2½**

b) Draw the circuit diagram for common cathod type display using IC 7448. **2½**

c) Explain the working of RS flip flop. **2½**

d) Give the applications of counter. **2½**

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