Bachelor of Science (S.Y. B.Sc.) Third Semester

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

P. Pages : 1 **GUG/W/18/1263**

Time : Three Hours * 0 9 7 6 * Max. Marks : 50

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Notes : 1. All questions are compulsory and carry equal marks.
2. Draw neat and well labelled diagram wherever necessary.

**1.** Either

a) Explain SOP and POS form with suitable example.
Minimize the four variable logic function using K-map. **6+4**
$f(A, B, C, D) = \Sigma m(1,3,7,11,15) + d(0,2,5)$

**OR**

b) Draw the logic diagram of 1:4 MUX using logic gate and explain its working with truth table.
Obtain 8:1 MUX using 4:1 MUX and explain it with truth table. **5+5**

**2.** Either

a) Explain the concept of decoder. Draw the block diagram of BCD to seven segment decoder using IC 7447 and explain it with truth table. **3+7**

**OR**

b) Explain half adder and full adder with logic diagram and truth table. What is 4 bit binary adder? Draw 4 bit binary adder diagram using IC 7483. **7+3**

**3.** Either

a) What is flip flop? Draw R-S flip flop using NAND gate and explain its working.
Explain the working of DFF with suitable diagram. State any two applications of it. **5+5**

**OR**

b) Draw the logic diagram of JKFF and explain its working with truth table.
What is race around condition? How can it be removed? **6+4**

**4.** Either

a) Explain the construction and working of 4 bit ripple counter. Draw its timing diagrams.
Differentiate between synchronous and asynchronous counter. **6+4**

**OR**

b) What is modulus of a counter? Explain the construction and working of MOD 5 counter.
Explain the working of 4 bit ring counter with timing diagram. **6+4**

**5.** a) Draw logic diagram of 1:4 DEMUX using logic gate and explain it.
b) Explain the concept of encoder.
c) Explain the function of preset and clear inputs of FF.
d) Explain Johnson counter. **2½x4**

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