

B.Sc. F.Y. (CBCS Pattern) Sem-II
USELT04 - Electronics Paper-II : Digital Integrated Circuit

P. Pages : 2

Time : Three Hours



GUG/W/22/11579

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.
 3. Use of calculator / log table is allowed.

Either:

1. a) Explain sop form. **5+5**
Convert the following logic equation into standard sop form
$$Y = (A + BC)(B + \bar{C}A)$$

Minimize the four – variable logic function using k – map.
$$f(A, B, C, D) = \pi M(4, 6, 10, 12, 13, 15)$$

OR

- b) Draw the logic diagram of half adder and explain its working with truth table. **4+2**
Differentiate between half adder and full adder. **+4**
Draw the logic diagram of 4:1 multiplexer and explain its working with truth table.

Either:

2. a) Explain the working of a stable multivibrator with suitable circuit diagram using IC 555. **6+4**
Explain the working of D – FF with suitable diagram and truth table.

OR

- b) Draw the logic diagram of JKMS Flipflop and explain its working with truth table. **6+4**
Explain the role of preset and clear inputs of flipflop.

3. Either:

- a) Explain the working of 4 bit asynchronous down counter with suitable timing diagram and truth table. What are the Draw backs of asynchronous counter? Explain. **7+3**

OR

- b) Draw the logic diagram of 3 bit synchronous counter and explain its working with timing diagram. **5+5**
Explain the working of ring counter with suitable logic and timing diagram.

Either:

4. a) Draw the logic diagram of 4 – bit 5150 shift register and explain its working with timing diagrams. **7+3**
State the application of shift register.

OR

- b) Draw the circuit diagram of R – 2R D – A converter and explain its working. **5+5**
Explain the working of successive approximation ADC with suitable diagram.

5. Attempt **any ten** of the followings.

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- i) Minimize the two variable logic function using k – map. $f(A, B) = \sum m(0, 2, 3)$
- ii) Draw the logic diagram of 1: 4 DEMUX.
- iii) What is decoder?
- iv) What is monostable multivibrator?
- v) What is sequential circuit?
- vi) What is Flip Flop?
- vii) What is counter?
- viii) State the application of counter.
- xi) State the advantages of synchronous counter.
- x) What is shift register?
- xi) Define accuracy of D – A converter.
- xii) Draw sample and Hold Circuit diagram.
