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SARDAR PATEL UNIVERSITY
B. Sc (4th Semester)
US04CELE-02
Instrumentation and Digital Electronics

27/4/2019
10:00 am to 1:00 pm
70 marks

Q.1 Multiple Choice Questions:

10

1. One can construct Binary to Gray convertor using
 - a) AND gate
 - b) OR gate
 - c) XOR gate
 - d) NAND gate

2. If propagation delay is low
 - a) The circuit is faster
 - b) The circuit is slow
 - c) The circuit is with medium speed
 - d) None of above

3. If all the components of Astable multivibrator are matched it will generate
 - a) Spikes
 - b) Ractangular wave
 - c) Square wave
 - d) Triangular wave

4. RC differentiation circuit is used to generate _____ from clock pulses
 - a) Spikes
 - b) Ractangular wave
 - c) Square wave
 - d) Triangular wave

5. Astable mutivibrator has
 - a) One stable state
 - b) Two stable state
 - c) No stable state
 - d) Three stable state

(1)

6. A counter is a circuit that counts
- Number of clock pulses that hit the Counter
 - Time period of Clock Pulse
 - One half the time period of clock pulse
 - None of above
7. The total number of natural counts through which a counter progresses is given by--- where n is total number of FFs
- 2^n
 - $2^n + 1$
 - $2^n - 1$
 - None of the above
8. Circuit is very complex in case of
- Serial Counter
 - Parallel Counter
 - Combinational Counter
 - None of the above
9. Binary decade counter counts
- 10 states
 - 2 states
 - 20 states
 - 5 states
10. BCD 2421 counter has
- 4 illegal states
 - 6 illegal states
 - 2 illegal states
 - No illegal states

Q. 2 Answer any Ten questions in short.

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- Define Noise immunity and Noise margin.
- Draw LSTTL NAND gate circuit.
- Define Propagation delay.
- What is advantage of D Flip Flop over RS Flip Flop.
- What is RC differentiation?
- What is the advantage of combinational counter?
- Draw circuit of 4-bit serial counter.
- What is the advantage and disadvantage of serial counter?

9. Draw combined circuit of Up/Down counter.
10. Draw decoding gate for states 2 and 8 of decade counter.
11. Draw circuit of shift counter using 3 FFs.
12. How many states are omitted in BCD 2421 counter? List them.

Q.3 Explain any two applications of XOR gate. 10

OR

Q.3 Explain in detail working of TTL NAND gate with neat diagram and logic specifications. 10

Q. 4 Describe working of Edge triggered D Flip Flop. 10

OR

Q.4 Explain in detail working of Schmitt Trigger circuit. 10

Q.5 Explain working of Mod 8 Serial counter. 10

OR

Q.5 Explain Mod 8 Parallel counter. 10

Q.6 Explain working 3 stage shift counter. 10

OR

Q.6 Explain working of UP/DOWN counter. 10

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