

SARDAR PATEL UNIVERSITY**BSc (IV Sem.) Examination****Saturday, 13th April 2013****11 am - 2 pm****US04CELE02 – Instrumentation & Digital Electronics****Total Marks: 70****Note:** Figures to the right indicate full marks.

Q.1 Multiple choice questions. [10]

- (1) _____ and _____ gates are used to construct comparator.
(a) AND and OR (b) XNOR and AND (c) NAND and XOR
- (2) The 74 series is _____ series.
(a) TTL (b) DTL (c) RTL
- (3) Flip-Flop can store _____ number.
(a) Binary (b) Octal (c) Hexadecimal
- (4) In D-Flip-Flop the value of D is transferred to the output only when clock is _____.
(a) High (b) Low (c) High & low
- (5) When the voltage goes from low state to high state is called _____ transition.
(a) Positive (b) Negative (c) Both (a) & (b)
- (6) The half adder can add _____ bits.
(a) 2 (b) 4 (c) 3
- (7) Three flip-flop up counter counts the states in _____ sequence.
(a) Upward (b) Downward (c) Both (a) & (b)
- (8) Decade counter has _____ states.
(a) 10 (b) 8 (c) 4
- (9) Three Stage Shift Counter consists of _____ Flip-Flops.
(a) 3 (b) 2 (c) 1
- (10) The Preset and Clear are _____ inputs.
(a) Synchronous (b) Asynchronous (c) Enable

Q.2 Answer **Any Ten** in brief. [20]

- (1) List the logic specifications.
- (2) Draw the logic diagram of comparator.
- (3) List the applications of XOR and XNOR gates.
- (4) Define Multivibrator.
- (5) Draw the logic symbol of Positive Edge and triggered and Negative Edge triggered D Flip-Flop including preset and clear.
- (6) What do you mean by Toggling?
- (7) Draw the logic diagram for Four Stage Shift Counter.
- (8) Draw the decoding gates and decoding waveforms for Mod-5 Serial Counter.
- (9) What are the advantages and disadvantages of ripple counter?
- (10) State the differences between Serial and Parallel Counter.
- (11) Draw the waveform for down counter using Four Flip-Flop.
- (12) Draw the logic diagram for $\overline{A}B + A\overline{B} =$

- Q.3
(a) Explain XOR and XNOR gates and their applications. [06]
(b) Explain TTL logic circuit briefly. [04]

OR

- Q.3
(a) Explain Half and Full Subtractor with necessary diagrams. [06]
(b) Explain logic specifications briefly. [04]

- Q.4
(a) Explain Schmitt trigger circuit in detail. [06]
(b) Explain RS Flip-Flop, Clock RS Flip-Flop and D Flip-Flop. [04]

OR

- Q.4
(a) Explain Astable Multivibrator in detail. [06]
(b) Explain Jk and Jk Master Slave Flip-Flop. [04]

- Q.5
(a) Explain Mod-5 combination counter. [06]
(b) Explain Mod-8 Asynchronous counter. [04]

OR

- Q.5
(a) Explain Mod-8 Synchronous counter. [06]
(b) Explain Mod-7 Asynchronous counter. [04]

- Q.6 Explain Decade Counter with decoding gates and decoding waveforms. [10]

OR

- Q.6 Explain Three Stage Shift Counter in detail with necessary diagram and waveforms.

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