FBQ1: Within the context of computer laboratory, the bistable element has ____ symmetrical nodes
Answer: *Two*

FBQ2: The action of clearing a Flip-Flop is also called ____.
Answer: *Resetting*

FBQ3: The most important memory element is the ____.
Answer: *flip-flop*

FBQ4: _____ systems can operate either asynchronously or synchronously.
Answer: *Digital*

FBQ5: In ____ systems, the outputs of logic circuits can change state any time one or more of the inputs change.
Answer: *Asynchronous*

FBQ6: ____ is edge-triggered.
Answer: *flip-flop*

FBQ7: At every active edge of the clock, the ___ flip-flop will load in a new value.
Answer: *D*

FBQ8: If the two inputs J and K of a J-K flip-flop are tied together it is referred to as a ____ flip-flop.
Answer: *T*

FBQ9: The T in the T flip-flop stands for ____.
Answer: *Toggle*

FBQ10: ____ counter is the simplest counter.
Answer: *modulo-n*

FBQ11: In ___ counter, the sequence starts with a string of 0 bits followed by one 1-bit
Answer: *Ring*

FBQ12: In ____ counter, sequence is coded so that any two consecutive values must differ in only one bit.
Answer: *gray-code*

FBQ13: In ___ counter, the range is from 0 to 2n – 1 and back to 0
Answer: *n-bit binary*

FBQ14: In ____ counter, the sequence is always from 0 to 9.
Answer: *BCD*

FBQ15: Modified adder that only adds one operand with the carry-in is called a ____ adder.
Answer: *Half*

FBQ16: The ____ number of a counter is always equal to the number of states which the counter goes through in each complete cycle before it recycles back to its starting state
Answer: *MOD*

FBQ17: An n-bit binary counter has discrete states from 0 to _____.
Answer: *2n-1*

FBQ18: In _____ circuits, the output signals are fed back to the input side.
Answer: *Sequential*

FBQ19: Latches and Flip-flops are the building blocks of ____ circuits.
Answer: *Sequential*

FBQ20: Asynchronous counters are counter circuits made from cascaded ____ flip-flops where each clock input receives its pulses from the output of the previous flip-flop.
Answer: *J-K*

FBQ21: To construct an accurate digital clock, a very highly controlled basic clock _____ is required.
Answer: *Frequency*

FBQ22: A parallel down-counter can be made to count down by using the ____ outputs of flip-flops to feed the various logic gates.
Answer: *Inverted*

FBQ23: _____ flip-flops are required for a counter that has to count as many as one thousand items.
Answer: *10*

FBQ24: An n-bit binary counter repeats the counting sequence for every ____ clock pulses.
Answer: *2n*

FBQ25: A _____ is NOT level-sensitive.
Answer: *Flip-flop*

FBQ26: The ___ adder adds two operands plus the carry
Answer: *Full*

FBQ27: The _____ signal is generally a rectangular pulse train or squarewave.
Answer: *Clock*

FBQ28: A CLEAR input can also be called ____ input
Answer: *RESET*

FBQ29: In _____ systems, the exact times at which any output can change states is determined by a signal commonly called the clock.
Answer: *Synchronous*

FBQ30: A ____ flip-flop is a very good option to use in counter design and in sequential circuits design where switching an operation is required
Answer: *T*

FBQ31: For battery-operated digital watches the basic frequency can be obtained from a quartz-crystal _____.
Answer: *Oscillator*

FBQ32: A sum term that contains all the variables used in the function is a _____.
Answer: *Maxterm*

FBQ33: A string of 4 bits will result in …… different combinations.
Answer: *16*

FBQ34: The term …….refers to a rectangle of adjacent 1-minterms
Answer: *Subcube*

FBQ35: A _____ term is a term with variable(s) ORed together
Answer: *Sum*

Multiple Choice Questions (MCQs):
MCQ1: The dual of the logic expression (x • y'+ z) • (x + 1) is _____
Answer: (x + y'• z) + (x • 0)

MCQ2: Digital clocks operated from the AC power line can use the _____ Hz power frequency as the basic clock frequency
Answer: 50

MCQ3: In a _____ counter, all the Flip-flops will change states simultaneously
Answer: parallel

MCQ4: In _____ counter, the propagation delays of the flip-flops do NOT add together to produce the overall delay
Answer: asynchronous

MCQ5: The total _____ time of a synchronous counter is the time it takes one flip-flop to toggle plus the time for the new logic levels to propagate through a single AND gate to reach the J, K inputs
Answer: delay

MCQ6: _____ counters can operate at a much higher input frequency than _____ counters with the same number of flip-flops
Answer: synchronous, asynchronous respectively

MCQ7: Ability to operate at higher frequencies is the major advantage of _____ counters.
Answer: asynchronous

MCQ8: A Boolean function is said to be in a _____ form if a sum-of-products expression or a product-of-sums expression has at least one term that is NOT a minterm or a maxterms respectively
Answer: standard

MCQ9: By reducing the _____ size, we will improve on speed and power consumption.
Answer: gate

MCQ10: The K-map is a _____-dimensional array of squares, each of which represents one minterm in the Boolean function
Answer: 1

MCQ11: The K-map for an n-variable function is an array with ___ squares.
Answer: 2

MCQ12: _____ are the basic memory elements for storing information.
Answer: Latches and sequential circuits

MCQ13: Which of the following flip-flops cannot result in more complex design when used in building counter circuit?
Answer: D

MCQ14: The _____ counter is the simplest to build.
Answer: ripple

MCQ15: The problems encountered with _____ counters are caused by the accumulated Flip-flop propagation delays.
Answer: asynchronous

MCQ16: (x • y)' = x' + y' is ……. theorem in Boolean algebra.
Answer: DeMorgan's

MCQ17: A _____ changes state only at the active edge of its enable signal
Answer: flip-flop

MCQ18: The simplest way to add extra inputs to the circuit of the bistable element is to replace the inverters with _____ gates.
Answer: NAND

MCQ19: Basically, there are _____ main types of flip-flops.
Answer: three

MCQ20: _____ are used more often than _____.
Answer: flip-flops, latches respectively

MCQ21: In order to change the state for the bistable element, there is need to add _____ inputs to the circuit.
Answer: internal

MCQ22: When we replace the inverters in bistable element with another gates we get the _____.
Answer: S-R latch

MCQ23: Which of the following is NOT a type of counter?
Answer: Binary Up

MCQ24: x • x + y) = x is ……. theorem in Boolean algebra.
Answer: associative

MCQ25: 100100111112 is _____ in octal.
Answer: 44738

MCQ26: Any Boolean function that is expressed as a sum of minterms is said to be in it’s _____ form.
Answer: Productterm

MCQ27: _____ is the simplest memory circuit.
Answer: Inverter

MCQ28: The _____ counter is simple and straightforward in operation and construction and usually requires minimum amount of hardware.
Answer: Asynchronous

MCQ29: Which of the following statements is NOT true?
Answer: Octal numbers only use the digits from 0 to 8

MCQ30: Two switches connected in series give rise to the logical ……. Operator.
Answer: NOT

MCQ31: A binary switch has ……. connections
Answer: One

MCQ32: The largest …… is known as a prime implicant.
Answer: Subrect

MCQ33: If two switches are connected in parallel, then _____ switch(es) need to be on in order for the output F to be a 1
Answer: three

MCQ34: The_____ is sensitive to its inputs all the time.
Answer: S-R flip-flop

MCQ35: A Karnaugh Map (K-map) is just a _____ representation of a logic function’s truth table.
Answer: Visual