SOLVED BY ADIL ALVI
CS302 CURRENT PAPERS FALL 2021

1) Explain ISTYPE statement to specifying active-high or active-low Registered Mode?
X PIN 22 ISTYPE 'reg.buffer;
Z PIN 20 ISTYPE 'reg.invert';
Figure 35.5b ISTYPE statement to specifying active-high or active-low Registered Mode Output

2) Names of volatile memory?
Volatile memory is computer memory that requires power to maintain the stored information. Most modern semiconductor volatile memory is either Static RAM or dynamic RAM.

3) Types of edge-triggered flip-flops?
Three different types of edge-triggered flip-flops are generally used in digital logic circuits.
S-R edge-triggered flip-flop
D edge-triggered flip-flop
J-k edge-triggered flip-flop
Each flip-flop has two variations, that is, it is either positive edge-triggered or negative edge Triggered.

4) What is Mod-n Counters?
The term Mod represents the Modulus of the counter which is the total number of unique states through which the counter will sequence through. A 3-bit Asynchronous counter can count up from 0 to 7 or count down from 7 to 0. The 3-bit counter has 8 different states represented by the 8 outputs 0 to 7.

5) Difference between SRAM and DRAM?
The architectural difference between the two is that DRAM uses transistors and capacitors in an array of repeating circuits (where each circuit is one bit), whereas SRAM uses several transistors in a circuit to form one bit.

6) Applications of shift register?
Shift register is used as Parallel to serial converter, which converts the parallel data into serial data.
Shift register is used as Serial to parallel converter, which converts the serial data into parallel data.

7) What is Memory Signals and Basic Operations on Memory?
Two basic operations are performed on memories, that is, reading of information from the memory and writing of data to the memory. To support the two read and write operations memories provide several signals

8) Two names of D/A converter?
Digital binary signals are converted into analogue signals using Digital to Analogue Converters. Generally two types of D/A Converters are used, the Binary-Weighted-Input D/A

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Converter and R/2R Ladder D/A Converter.

9) How many clock pulse required entered 4 bit data into parallel in parallel output register?
The register has parallel inputs and parallel outputs. Data is entered in parallel by applying a single clock pulse. Data is latched by the flip-flops on the clock transition and is available in parallel form at the flip-flop outputs.

10) What is FLASH Memory Operations?
FLASH Memory operations are classified into
• Programming Operation
• Read Operation
• Erase Operation

11) CS, OE and W stand for?
The read and write operations are controlled through the three signals W, CS and OE.
1) Chip Select (CS) signal analog. 2) Output Enable (OE) signal. 3) Write (W) signal analog.

12) How many flip-flop are required to make a mod-32 binary counter?
For a mod N counter, the number of flip-flops that are required is less than or equal to 2 to the power 'n', where n is a positive integer, i.e. $N \leq 2^n$.
Therefore, for a mod 32 counter, it can be calculated as:-
$32 = 2^5$, where n = 5
So, 5 flip-flops are required to make a mod-32 binary counter.

13) How many bit memory in 16k?
Transcribed image text: 3-1 the dimensions of a memory are 16K words by 32 bits.

14) How can calculate the frequency of an unknown signal?
The frequency of a particular event is accomplished by counting the number of times that event occurs within a specific time interval, then dividing the count by the length of the time interval.

15) Explain J-k flip flop of race condition?
Race Around Condition In JK Flip-flop – For J-K flip-flop, if J=K=1, and if clk=1 for a long period of time, then Q output will toggle as long as CLK is high, which makes the output of the flip-flop unstable or uncertain. This problem is called race around condition in J-K flip-flop.

16) Types of DRAM?
DRAM stand for Dynamic RAM. There are two main types of DRAM packaging: single inline memory module (SIMM) and dual inline memory module (DIMM).

17) Boolean expressions of latch SR1?
The Boolean expressions that set the latch SR1 is REQ1+FLOOR1.DIR +OPEN. $\overline{DIR}$.

18) What is Flash memory Row/Colum MOS?
The FLASH Memory array is arranged in the form of rows and columns. The row line is connected to the Control Gate of each MOS transistor which implements a single bit storage cell.

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19) Explain Sample and Hold Operation?
In electronics, a sample and hold (also known as sample and follow) circuit is an analog device that samples (captures, takes) the voltage of a continuously varying analog signal and holds (locks, freezes) its value at a constant level for a specified minimum period of time.

20) Difference between latches and flip flop?
Both latches and flip-flops are circuit elements whose output depends not only on the current inputs, but also on previous inputs and outputs. The difference between a latch and a flip-flop is that a latch does not have a clock signal, whereas a flip-flop always does.

21) Types of Analogue to Digital converters?
3 types of Analogue to Digital converters:
Flash Analogue-to Digital Converter
Dual-Slope Analogue to Digital Converter
Successive –approximation analogue to digital converter

22) What is d flip-flop latch gate operations?
The D flip-flop is an edge triggered device which transfers input data to Q on clock rising or falling edge. Data Latches are level sensitive devices such as the data latch and the transparent latch.

23) Name 2 RAM chip?
There are two main types of RAM: Dynamic RAM (DRAM) and Static RAM (SRAM). DRAM (pronounced DEE-RAM), is widely used as a computer's main memory.

24) Difference between state assignment and state reduction?
The process of eliminating the equivalent or redundant states from a state table/diagram is known as state reduction while State Assignment is a binary encoding used to represent. States of a sequential machine in its digital circuit. Implementation

25) Write I/O of Traffic signal?
The inputs are the NSSR: EWSR: LTIME:
The outputs are the nsgrn: nsyel: nsred:

26) Difference between Johnson and ring counter?
Like a ring counter a Johnson counter is a shift register fed back on its' self. It requires half the stages of a comparable ring counter for a given division ratio. The difference between a ring counter and a Johnson counter is which output of the last stage is fed back (Q or Q').

27) Write name of first and second floor?
The number of latches used to store the external inputs can be reduced to two if the REQ1, FLOOR1 and OPEN button outputs (pressed when elevator is on the first floor) are Stored on one latch and the REQ2, FLOOR2 and OPEN button outputs pressed when elevator Is on the second floor) are stored on the second latch.

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28) Advantages of DRAM?
Cheaper compared to SRAM.
It has a higher storage capacity. ...
It doesn't require to refresh the memory contents.

29) Types of error while converting analogue signal to digital?
1) Missing code 2) incorrect code 3) offset error

30) What are the flip-flop operating characteristics?
1) Propagation delay, 2) Set-up time, 3) Hold time, 4) maximum clock frequency, 5) Pulse width, 6) Power dissipation

31) Following table contains characteristics of different memory types in Column B and memory types are given in Column A. You have to fill Column C with Yes/No.

Column A	Column B	Column C
SRAM	One Transistor Cell	no
EEPROM	High Density	yes
ROM	In System Writ ability	no
DRAM	Non-Volatile	no

32) Types of classified counter?
Counters are generally classified as either synchronous or asynchronous. In synchronous counters, all flip-flops share a common clock and change state at the same time. In asynchronous counters, each flip-flop has a unique clock and the flip-flop states change at different times.

33) Write initial value of 12 cascaded counter?
The 12-bit cascaded counter is loaded with initial count value 1000 0000 0000.

34) Name 3 types of ROM?
ROM is further classified into 4 types- MROM, PROM, EPROM, and EEPROM.

35) What will be the behavior of an s-r latch when both of its set and reset states are activated simultaneously?
The SR flip-flop is said to be in an “invalid” condition (Meta-stable) if both the set and reset inputs are activated simultaneously.

36) Three types of DRAM?
1) Fast page mode DRAM, 2) Extended data output DRAM, 3) Synchronous DRAM

37) What are the application of shift register?
1) Serial-to-parallel converter
2) Keyboard encoder

38) Explain istype statement?

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The ISTYPE statement is used in the declaration part with the statements assigning PIN numbers to output variables.
X PIN 22 ISTYPE ‘reg’;
Y PIN 23 ISTYPE ‘com’;

Cs302 Diagrams

1) Master slave ki diagram banani thi.
2) Flip flop ka circuit complete karna tha.
3) Burglar alarm circuit banana tha.
4) Moore circuit diagram banani thi
5) Apply the state reduction process. Reduce the num of state as much as positive?
6) Incomplete circuit of 3 bit down counter flip flop 3 is left unconnected. Connect the 3 flip flop to the 2nd flip flop. In which a way the functionality down counter is achieved?
7) The in complete diagram of 4 bit synchronous binary counter. Complete diagram by putting appropriate gate in each red box. Just put tha gate names.
8) Draw the circuit diagram of serial in /shift right serial out register?
9) Draw the timing diagram of 3 bit synchronous counter?
10) Draw the 3-bit up/down synchronous diagram
11) Draw serial in/shift right/serial out diagram
12) Draw the right shift register diagram
13) Draw the d flip flop diagram
14) Draw Circuit for 4-bit serial in /parallel out shift register

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