MIDTERM EXAMINATION 2011 (October-November)

Q-21

Draw function table of a half adder circuit? (2)

Answer: - Page 135 Lec14

Half-Adder Logic Circuit

The Half-Adder Logic Circuit can be directly implemented from the Sum and Carry Out Boolean expressions. Figure 14.6

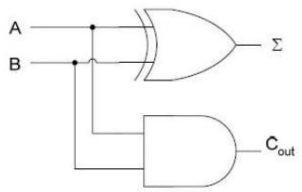

Figure 14.6 Half-Adder Logic Circuit

Q-22

What is difference b/w BCD to decimal decoder and binary 4-to-16 bit decoder? (2)

Answer: (Page 163) Lec17

The operation of the BCD-to-Decimal Decoder is the same as a Binary 4-to-16 decoder, the only difference being that the BCD-to-Decimal Decoder has ten output pins instead of sixteen and the input is a valid BCD number.

Q-23

Explain major use of decoder circuits? (3) Lec16

Answer: (Page 158)

Decoders have two major uses in Computer Systems.

1. Selection of Peripheral Devices

Computers have different internal and external devices like the Hard Disk, CD Drive, Modem, Printer etc. Each of these different devices is selected by specifying different codes. A decoder similar to the Electronic Door Lock/Unlock circuit is used to uniquely select or deselect the appropriate devices.

2. Instruction Decoder

Computer programs are based on instructions which are decode by the Computer Hardware and implemented. These instruction codes are decoded by an Instruction Decoder to generate signals that control different logic circuits like the ALU and memory to perform these operations.

Q-25

PALS comes in different configurations and are identified by a unique number, identify parts of this number? (5)

Answer: (Page 186) Lec19

PALs come in different configurations they are identified by unique number. The numbers begin with the prefix PAL followed by two digits that indicate the number of inputs followed by a letter L active-low, H active-high or P programmable polarity followed by a single or two digits that indicate the number of outputs. In addition to the standard number there may be suffixes which specify the speed, package type and temperature range

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Q-26

One of the ABEL entry methods uses logic equation. Explain at least two examples? (5)

Answer: (Page 201) Lec20

ABEL however is case sensitive, thus variable 'A' is treated separately from variable 'a'. All ABEL equations must end with ';'.

Examples:-

(a) $X = A\bar{B}C + \overline{ABC} + AB + \bar{B}C$

(b) $Y = (\bar{A} + B + \bar{C} + D)(A + B + C)$

Solution

(a)X = A& !B & C # !A & !B & !C # A & B # !B & C;

(b)Y = (!A # B # !C #D) & (A # B # C);

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