Govt. Polytechnic College ,pali
Third Class Test, 2017-18
Code: EL-209(ELECTRONIC INSTRUMENTS)
Time: 1 Hour Maximum marks: 15

Q1: What do you understand by the loading effect in multimeters? Explain ?

(5)

Q2: Explain the construction and working of the dot matrix display using LED?

(2+3)

Q3: Explain the working of Seven Segment LED Display with suitable diagram?

(3+2)

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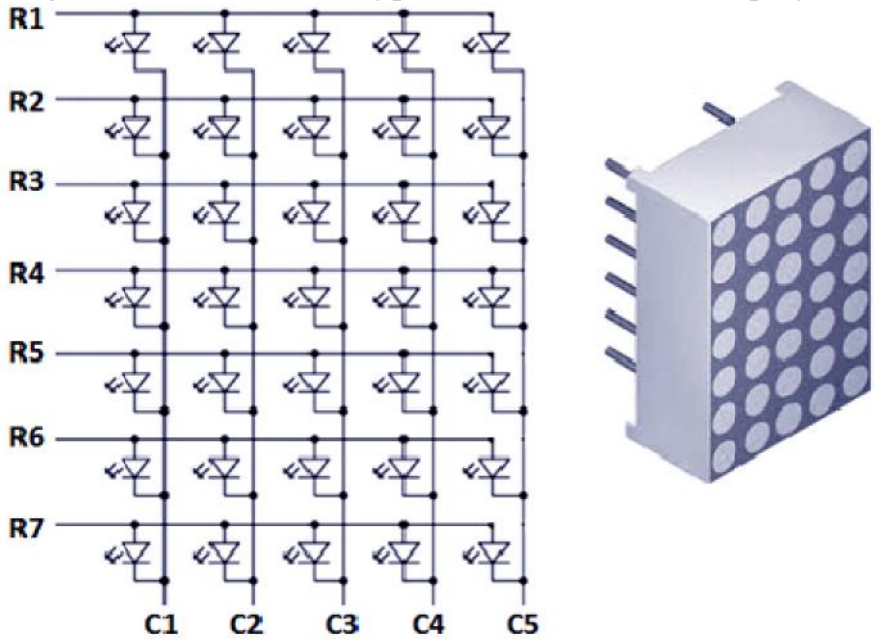
MODEL ANSWERS

Ans 1: When an instrument of lower sensitivity is used with a heavier load the measurement it makes is erroneous, this effect is known as loading effect. A multimeter which is an electronic device it has a resistance.Now for measuring voltages across small resistance (i.e. in ohms and kiloohms) this resistance of a multimeter does not affect the voltage of a circuit and it gives the exact value it is because the resistance of a multimeter offers resistance in megaohms and current always take that path which offers low resistance so we get actual value of voltages.

For measuring voltage across high resistance (in megaohms) the resistance of multimeter become comparable to the resistance of the circuit and now the current divides between these two resistance and we didnot get the actual values, this is called the loading effect of multimeter.

Ans 2:dot matrix display using LED

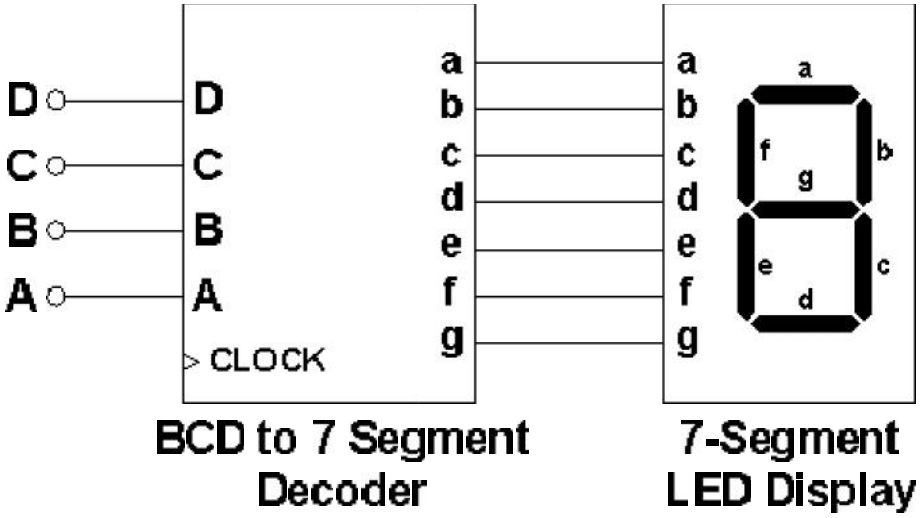
Construction: An LED dot matrix display consists of a matrix of LED's arranged in a rectangular configuration. The desired character or graphics can be displayed by switching ON /OFF a desired configuration of LED's. Common display configurations available are 7×5, 8×8, 7×15, etc. LED dot matrix can be used in simple display applications where the resolution is not a big concern. The figure below shows the arrangement of LEDs in a typical 7×5 dot matrix display.



Working:since all the LED in a matrix share their positive and negative terminal in each row and column, it is not possible of controlling of each LED at the same time. The matrix controlled through each row very quickly by triggering the correct column pins to light desired LED's for that particular row. If the switching done with a fixed rate, human can't see the displaying messages, because human

eye can’t detect the imageswith in the milliseconds of time. Thus thedisplaying of a message on LED matrix must be controlled, with the rows being scanned sequentially at a rate greater than 40MHz while sending out the column data at the exact same rate. This kind of controlling can be done by interfacing the LED matrix display with the microcontroller.

Ans 3:A seven segment display is one of the most common forms of digital displays available. It can be LCD , LED or some other technology based. The name 7 segment comes from the fact that the display has 7 segments. Some have 8. if you include the decimal point too. Usually, this display will have a driver pin for each of the segments, including the decimal, in the package.



To display digits on seven segment LED display BCD to seven segment Decoder(7447) is required. It can display numbers from 0 to 9.
In 7 segment display there are two types
Common cathode: In common cathode all the cathode terminals are connected to a common ground that is logic 0 so that it should not conduct. Whenever there is a logic 1 from the any input corresponding number is displayed.
Common anode: In common anode all the anode terminals are connected to a common voltage source (Vcc) that is logic 1. Whenever there is logic 0 from the any input corresponding number is displayed.