Electronics Interview Questions And Answers Guide.

Electronics Job Interview Preparation Guide.

Question # 1

6dB pad introduces how much attenuation?

Answer:-

If you are talking about power, a 3db gain cuts the signal in half and another 3db gain, for a total of 6 cuts the signal in half again for a total attenuation of 75%.

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Question # 2

How to check the Mobile Battery charge status?

Answer:-

You can tell the state of charge on a 9V battery by touching both poles across your tongue. If it tingles, the battery still has life. If not, throw it away.

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Question # 3

What is the exactly meaning of manual testing?

Answer:-

Exact meaning of Manual testing is,testing the software or any application by manually without use of automation tools.

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Question # 4

What is the Buffer size of
transmission buffer or rectiption buffer in TM,UM and AM of
RLC?

Answer:-

The pay load size is of 32kb

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Question # 5

Explain negative test cases for testing
mobile phones?

Answer:-

Negative test cases for testing mobile phones:
1.removing the SIM card and made a call
2.by invalid phone number
3.made a call at which there is no tower signal
4.Made a call after removing the battery or at no power in battery and also we can add some more points...

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Question # 6

What is the difference between TDMA and FDMA?

Answer:-

TDMA:
Time division multiple access (TDMA) is a channel access method for shared medium (usually radio) networks. It allows several users to share the same frequency channel by dividing the signal into different time slots. The users transmit in rapid succession, one after the other, each using his own time slot. This allows multiple stations to
share the same transmission medium (e.g. radio frequency channel) while using only a part of its channel capacity. TDMA is used in the digital 2G cellular systems such as Global System for Mobile Communications (GSM), IS-136, Personal Digital Cellular (PDC) and iDEN, and in the Digital Enhanced Cordless Telecommunications (DECT)

standard for portable phones. It is also used extensively in satellite systems, and combat-net radio systems.
FDMA:
Frequency Division Multiple Access or FDMA is a channel access method used in multiple-access protocols as a channelization protocol. FDMA gives users an individual allocation of one or several frequency bands, allowing them to utilize the allocated radio spectrum without interfering
with each other. Multiple Access systems coordinate access between multiple users. The users may also share access via different methods such TDMA, CDMA, or SDMA. These protocols
are utilized differently, at different levels of the theoretical OSI model.

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Question # 7

What will be the common test case for SMS and Mp3 player applications?

Answer:-

There might be many common test cases: Here are 2
I)
1. For SMS: It uses UDP protocol
2. for MP3: Audio streaming also uses UDP protocol
II)
1. for SMS: For entering text for SMS, you need to open Text editor.
2. for MP3: For entering/editing play list names, text editor should be opened.
So, the test cases written for text editor can be used for both applications.

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Question # 8

How many memory locations can be addressed by a microprocessor with 14 address lines?

Answer:-

no of memory locations that can be addressed is 2 to the power of no. of address lines i.e. 2 power 14

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Question # 9

Which type of architecture 8085 has?

Answer:-

CISC Architecture

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Question # 10

How do you make a memory card of mobile phone?

Answer:-

A memory chip stores bits and mounted in a card with electrical contacts so a computer or camera can send data to be stored. There is not much more to it than that.

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Question # 11

Why do I not see the battery and capacitor combination for power backup?

Answer:-

There are "super capacitors" that are used for power backup - they are efficient for short-term power take-over, but they are leaky and are not good for long term. Batteries tend to die slowly, more slowly than the leakage on a power backup capacitor, so the capacitor does not do any good. Regular capacitors store so little energy they cannot really be a power source.

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Question # 12

When recording infrasound waves or microwaves how do they differ from one another? What is the best way to read them?

Answer:-

By microwaves, do you mean radio signals, like in a microwave oven? These have nothing to do with sound. There is no way to "record" microwaves really.
Sure, you can build a microwave transmitter with lots of power, enough to cook everyone in a building if you wanted to. The military has a microwave gun that heats up your skin painfully at a good distance (of course, all you do is wear aluminum foil and it does not affect you at all).

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Question # 13

How can we prove that radio waves are sine waves? What makes them sine?

Answer:-

Fourier says that only a sine wave has no harmonic content. The math works out that if you have any wave shape other than a sign wave, you can break it down into a group of sine waves of different harmonic frequency, phase, and amplitude. All those harmonics go to zero when the wave shape is a pure sine. We can tell that radio waves behave like a sine, you can run them through a narrowband filter, and no energy is lost. Maxwell's equations predict propagation and fields based on a sine wave, and anything other than that propagates as if it is multiple frequencies, which do not propagate energy as well. So mathematically, radio waves work as they measure to work only if you assume they are sine waves.

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Question # 14

Is it possible to reverse the order of a Variable Frequency Drive? Ex: I want to be able to create 120v power from a variable speed engine, with at least 6kw of power.

Answer:-

You say many alternators, but really, you need only one. The more I think about this, the more I think it is not so hard to do. If you have a 6KW alternator, it's possible that it has some kind of voltage regulation, maybe the rotor is not a permanent magnet, but an electromagnet with ring brushes, and there's a regulator circuit that drives this to keep the voltage constant regardless of frequency. If this is the case, what I would do (not many would try this) is rectify this to make 150 volts DC with a simple rectifier bridge and filter cap (total maybe $30). Then buy some 1KW inverters, and tap into them after the DC-DC converter (the part where it takes in 12VDC and steps it up to 150 VDC), drive the 150VDC in at that point, then let it switch this to AC for you. You could put 6 of these all running from the same alternator, so you could run 6 1KW loads.
Now taking this idea a step further, I would realize that the DC-DC converter is most of what you are paying for in the inverter, and it is the source of inefficiency in the inverter. So you are wasting a lot of money and watts, and so I would copy the circuit out of it that does the switching (4 power FETs and a 60 cycle driver) and have my inverter done much cheaper.

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Question # 15

Why does charging batteries take lengthy periods? What can be done to quicken the speed?

Answer:-

Batteries work through a chemical process, some kind of ion exchange where the battery contains two elements that want to combine ions and give up an electron to cause current flow. They do this energy release all by themselves with no energy added, it wants this exchange to happen it is more stable after the reaction. Therefore, to charge the battery you are forcing things to go backwards, which the reaction does not like. By adding a current, you are making the reaction reverse. This is not an efficient process, and usually takes more energy than is given back, like more than twice as much takes (depends on the battery type). Where does the extra energy go? It is into heat mostly.
Therefore, the problem with fast charging is you cannot put so much energy back that you get the battery too hot and melt it down. You can charge a battery at a much higher rate than you discharge it, so you can make the charge cycle take less time than the discharge (this depends on the discharge rate as well, of course). However, you are limited by the heat, so a 1-minute charge of your electric car just is not possible.

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Question # 16

What do mean by "flow of electron"?

Answer:-

Flow of electrons is just what it says - electrons flow down a wire that is what current, is. Good conductors like copper and silver and aluminum have free electrons in their outer shells, and they jump from atom to atom down a wire. It is somewhat similar to water flowing down a pipe.
It's kind of amazing that you can force this to happen with a battery or a magnet, and that you can transfer energy this way, but that's what it does.

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Question # 17

What are encoder and the decoder? What are the uses of these two devices? Also, write about how it works with circuit diagram.

Answer:-

There are zillions of things in electronics called encoders. You can look up LCDs and NAND gates as well and this is really basics.

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Question # 18

Do you have any ideas how to make a ping-pong ball launcher that reloads automatic and shoots automatically?

Answer:-

Air cannon is probably the simplest, PVC pipe from Home Depot and shoots things very far, can make any size you want, need a tire pump or air compressor to power it. It is also called Potato Cannons for obvious reasons. I shot a potato over 1000 feet with 60 psi and 2" pipe.

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Question # 19

Is it possible to build an AC or DC variable-speed generator with a variable field current, controlled by a signal from a torque sensor connected to the shaft of the generator (i.e., net torque = 0)?

Answer:-

You can control the field with anything, but why would you do it with torque? Why do you say net torque=0? What is the significance of variable speed?
I am trying to think of why you would do this. If the torque were low, you could increase the field to generate more energy, which would make the torque go up. That is positive feedback, but maybe it is constant power into a resistive load (voltage would go up). If you did negative feedback, that would mean the field would reduce as the torque went up, reducing the torque, so you would have a torque regulator. This would probably be good for a wind generator, as you want to control the torque to match the wind speed to get maximum energy out, but this would also vary the output of the generator a lot. Maybe if you were heating water this would work.

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Question # 20

What is the significance of "4-20 mA" signal in hart protocol?

Answer:-

The HART protocol is an old Frequency Shift Keying way of sending data, typically from highway sensors. This is a very old standard by today's standards there are so much better ways to send data. Of course, 4-20 ma loops are even older, dating back over 50 years, and still in common use. Must be something good about it - it is simple.
4-20 ma loops are a way to send an analog value, like temperature or position, over a pair of wires. It is simple on the surface, 4 mA is the minimum, and 20 mA is the maximum of the range. The cool thing about this is that it is constant current, not a voltage, so line resistance does not matter. Anything, constant current looks

like an open circuit, so it is supposedly immune to noise (though in reality it still has noise pickup problems). However, why not 0 to 20 mA the cool thing is you can power the remote sensor. You are running a current through the remote you have a voltage at the driving end why not use some of that power to run the electronics in the sensor? Therefore, if the sensor pulls less than 4 ma and you make the range 4-20, you always have enough current to power the remote at the same time.

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Question # 21

The current through a resistor of 50 ohms in an AC circuit at t = 0.008 s is 65% of the peak value. The smallest possible frequency of the generator delivering the current is

Answer:-

If it is then this is easy, you take the arcsine of 65% that gives you what angle you are at in the sine cycle, take the ratio of that to 360, and multiply that by 8mS to get the time of a full cycle, and then take one over that to get frequency. This will be the lowest frequency. Note that the 50 ohms has nothing to do with it, other than implying it is an RF circuit where 50 ohms is common. You say "smallest possible frequency" which also is not very clear I will assume you mean lowest frequency. There is no highest frequency you can meet this requirement with an arbitrarily high frequency.

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Question # 22

What is the difference between Photodiode and Solar cell?

Answer:-

A photodiode is made to detect light quickly a solar cell is made to collect energy from light. They are both typically silicon diodes, but modified to meet their different requirements. A photodiode has to be fast, which means low capacitance, which means small area of silicon. Therefore, it is not very sensitive, and cannot generate much power from light. A solar cell has as large an area as you can afford to buy, getting watts per square inch. There are other differences in the way they are made, and how the PN junction is grown, but they all relate to this difference in purpose.

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Question # 23

Can you explain electricity at atom level and if possible show some diagrams please

Answer:-

If you look at the classic Bohr model of the atom (from 1913), you have electrons orbiting around a nucleus of protons and neutrons. Normally there are as many electrons (negative charge) as protons (positive charge), so the net charge of the atom is zero. The various shells or orbit radii of the model have different characteristics as to how many electrons they are happy having orbiting in them. The first shell likes 2 max, the 2, and 6, etc. If there is one less electron that what the outermost used shell considers full, it will happily take on another electron, even if this unbalances the charge. If it has just one electron in a shell, it would happily give it up even if it unbalances the charge. Copper, one of the best conductors of electricity, has 29 electrons, which means in its 4th orbit, it has one electron. It is easily taken away by something pulling on it. In fact, if you put a bunch of copper atoms together, there is a cloud of electron sharing with that one electron moving from atom to atom, and others taking its place.

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Question # 24

How can the electromagnetic can travel in air and not lose any information contained in them?

Answer:-

There is a limit to how far you can get television signals. The power is spreading out the farther you are away from the source. At some distance, you reach a point where the noise in the atmosphere becomes greater than the signal, and you can no longer extract all the information from the signal. Digital television has much error correction, many bits are sent just so corrections can be made when there are errors. This helps on the fringe, but even this fails when the signal gets weak enough. However, error correction makes the signal perfect until you hit that exact point where the correction fails. Thus, digital TV has a sharp cutoff point - you get a perfect picture, or it goes away completely. Therefore, electromagnetic waves do lose information. Think of someone aiming a flashlight at you. The person walks further and further away from you. At some point, you are just not going to be able to tell. What if there were fogs or lots of pollution in the air? Alternatively, 20 other flashlights and you had to pick out just the one. It is easy and 100% when they are close.

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Question # 25

How is the transmission of a signal in a computer over x number of clock cycles translated into binary?

Answer:-

All computer logic today uses FETs as switches. A FET is a switch with gain, meaning that a small signal change on its input (the Gate) causes a bigger signal in the Drain. Bigger does not mean bigger voltage, it usually means more current at the same voltage, so it can drive many other inputs after it. Two FETs can be connected together to make a logic gate, like an AND function. In addition, gates can be connected together to make flip-flops and counters and adders, etc.
Logic "1" is usually a higher voltage than logic "0", and logic 0 is usually zero volts. In newer processors, the high voltage is less than a volt, since the FETs are so small that 1.5V will blow them up.
Therefore, it is not the presence of a signal or the lack of one; it is a high voltage and a low voltage. There is nothing that the computer translates, that voltage is it, throughout the computer. That is what binary means, one of two voltages. There is no clock involved to make something binary all signals in the computer are all binary logic with a voltage. Even a clock is just a logic signal that goes between 1 and 0 at a periodic rate.

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Question # 26

Can we calculate the resistor if it is installed in circuit board?

Answer:-

You can measure a resistor in a circuit but the circuit will most likely affect the value read (usually making it look lower in resistance). A simple example would be if there were two resistors in parallel in the circuit. If you measure one, you will get the resistance of the two in parallel, and maybe other effects of the rest of the circuit.
Most resistors have markings on them, and they rarely fail unless they are cooked by too much power. That is the easy way. If they are not marked, you want to know the value, and it is in a circuit, then it is hard to figure out the value. It might be easier to unsolder one end of it and then measure it.

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