



Frequently Asked Basic Electronics Interview Questions and Answers



BASIC ELECTRONICS

1) Expand ECE.

Electronics & Communication Engineering.

2) What is Electronic?

The study and use of electrical devices that operate by controlling the flow of electrons or other electrically charged particles.

3) What is communication?

Communication means transferring a signal from the transmitter which passes through a medium then the output is obtained at the receiver. (or) communication says as transferring of message from one place to another place called communication.

4) Different types of communications? Explain.

Analog and digital communication.

As a technology, analog is the process of taking an audio or video signal (the human voice) and translating it into electronic pulses. Digital on the other hand is breaking the signal into a binary format where the audio or video data is represented by a series of "1"s and "0"s.

Digital signals are immune to noise, quality of transmission and reception is good, components used in digital communication can be produced with high precision and power consumption is also very less when compared with analog signals.

5) What is engineering?

The application of science to the needs of humanity and a profession in which a knowledge of the mathematical and natural sciences gained by study, experience, and practice is applied with judgment to develop ways to use economically the materials and forces of nature for the benefit of mankind.



6) Difference between electronic and electrical.

Electronics work on DC and with a voltage range of -48vDC to +48vDC. If the electronic device is plugged into a standard wall outlet, there will be a transformer inside which will convert the AC voltage you are supplying to the required DC voltage needed by the device. Examples: Computer, radio, T.V, etc...

Electric devices use line voltage (120vAC, 240vAC, etc...). Electric devices can also be designed to operate on DC sources, but will be at DC voltages above 48v. Examples: are incandescent lights, heaters, fridge, stove, etc...

7) What is sampling?

The process of obtaining a set of samples from a continuous function of time $x(t)$ is referred to as sampling.

8) State sampling theorem.

It states that, while taking the samples of a continuous signal, it has to be taken care that the sampling rate is equal to or greater than twice the cut off frequency and the minimum sampling rate is known as the Nyquist rate.

9) What is cut-off frequency?

The frequency at which the response is -3dB with respect to the maximum response.

10) What is pass band?

Passband is the range of frequencies or wavelengths that can pass through a filter without being attenuated.

11) What is stop band?

A stopband is a band of frequencies, between specified limits, in which a circuit, such as a filter or telephone circuit, does not let signals through, or the attenuation is above the required stopband attenuation level.

12) Difference between mobile and a cell phone.

There is no difference, just language use, which differs from country to country, so in Britain it is called a mobile, and in USA and South Africa and other places a cell phone.

Even in Europe the name differs. The Germans call it a "handy", which in English has completely another meaning as an adjective, meaning useful.

In Italy it is called a telefonino or "little phone".

This difference in British and American English is also evident in many other things we use every day, like lifts and elevators, nappies and diapers, pickups and trucks. The list goes on and on, any student of English has to decide which he or she will use, as the default setting.



13) Explain RF?

Radio frequency (RF) is a frequency or rate of oscillation within the range of about 3 Hz to 300 GHz. This range corresponds to frequency of alternating current electrical signals used to produce and detect radio waves. Since most of this range is beyond the vibration rate that most mechanical systems can respond to, RF usually refers to oscillations in electrical circuits or electromagnetic radiation.

14) What is modulation? And where it is utilized?

Modulation is the process of varying some characteristic of a periodic wave with an external signals.

Radio communication superimposes this information bearing signal onto a carrier signal.

These high frequency carrier signals can be transmitted over the air easily and are capable of travelling long distances.

The characteristics (amplitude, frequency, or phase) of the carrier signal are varied in accordance with the information bearing signal.

Modulation is utilized to send an information bearing signal over long distances.

15) What is demodulation?

Demodulation is the act of removing the modulation from an analog signal to get the original baseband signal back. Demodulating is necessary because the receiver system receives a modulated signal with specific characteristics and it needs to turn it to base-band.

16) Name the modulation techniques.

For Analog modulation--AM, SSB, FM, PM and SM

Digital modulation--OOK, FSK, ASK, Psk, QAM, MSK, CPM, PPM, TCM, OFDM

17) Explain AM and FM.

AM-Amplitude modulation is a type of modulation where the amplitude of the carrier signal is varied in accordance with the information bearing signal.

FM-Frequency modulation is a type of modulation where the frequency of the carrier signal is varied in accordance with the information bearing signal.

18) Where do we use AM and FM?

AM is used for video signals for example TV. Ranges from 535 to 1705 kHz.

FM is used for audio signals for example Radio. Ranges from 88 to 108 MHz.

19) How does a mobile work?



When you talk into a mobile telephone it converts the sound of your voice to radiofrequency energy (radio waves). The radio waves are transmitted through the air to a nearby base station. The base station then sends the call through the telephone network until it reaches the person you are calling. When you receive a call on your mobile phone the message travels through the telephone network until it reaches a base station near to you. The base station sends out radio waves, which are detected by your telephone and converted back to speech. Depending on the equipment and the operator, the frequency that each operator utilises is 900MHz, 1800MHz or 2100MHz.

The mobile phone network operates on the basis of a series of cells. Each cell requires a radio base station to enable it to function.

There are three types of base station and each has a particular purpose:

1. The Macrocell is the largest type and provides the main coverage for mobile phone networks.
2. The Microcell is used to improve capacity in areas where demand to make calls is high, such as shopping centres.
3. The Picocell only has a range of a few hundred metres and may be used to boost weak signals within large buildings.

Each base station can only cope with a certain number of calls at any one time. So if demand exceeds the capacity of a base station an additional base station is needed.

20) What is a base station?

Base station is a radio receiver/transmitter that serves as the hub of the local wireless network, and may also be the gateway between a wired network and the wireless network.

21) How many satellites are required to cover the earth?

3 satellites are required to cover the entire earth, which is placed at 120 degree to each other. The life span of the satellite is about 15 years.

22) What is a repeater?

A repeater is an electronic device that receives a signal and retransmits it at a higher level and/or higher power, or onto the other side of an obstruction, so that the signal can cover longer distances without degradation.

23) What is attenuation?

Attenuation is the reduction in amplitude and intensity of a signal. Signals may attenuate exponentially by transmission through a medium, or by increments calculated in electronic circuitry or set by variable controls. Attenuation is an important property in telecommunications and ultrasound applications because of its importance in determining signal strength as a function of distance. Attenuation is usually measured in units of decibels



per unit length of medium (dB/cm, dB/km, etc) and is represented by the attenuation coefficient of the medium in question.

24) What is multiplexing?

Multiplexing (known as muxing) is a term used to refer to a process where multiple analog message signals or digital data streams are combined into one signal over a shared medium. The aim is to share an expensive resource. For example, in telecommunications, several phone calls may be transferred using one wire.

25) What is CDMA, TDMA, FDMA?

Code division multiple access (CDMA) is a channel access method utilized by various radio communication technologies. CDMA employs spread-spectrum technology and a special coding scheme (where each transmitter is assigned a code) to allow multiple users to be multiplexed over the same physical channel. By contrast, time division multiple access (TDMA) divides access by time, while frequency-division multiple access (FDMA) divides it by frequency.

An analogy to the problem of multiple access is a room (channel) in which people wish to communicate with each other. To avoid confusion, people could take turns speaking (time division), speak at different pitches (frequency division), or speak in different directions (spatial division). In CDMA, they would speak different languages. People speaking the same language can understand each other, but not other people. Similarly, in radio CDMA, each group of users is given a shared code. Many codes occupy the same channel, but only users associated with a particular code can understand each other.

26) Difference between CDMA and GSM.

These are the two different means of mobile communication being presently used worldwide. The basic difference lies in the Multiplexing method used in the aerial communication i.e. from Mobile Tower to your mobile and vice versa.

CDMA uses Code Division Multiple Access as the name itself indicates, for example you are in a hall occupied with number of people speaking different language. You will find that the one language you know will be heard by you and the others will be treated like noise. In the same manner each CDMA mobile communication takes place with a "code" communicating between them and the other end if one is knowing that code then only it can listen to the data being transmitted i.e. the communication is in the coded form.

On the other hand GSM (Global System for Mobile Communications) uses narrowband TDMA, which allows eight simultaneous calls on the same radio frequency. TDMA works by dividing a radio frequency into time slots and then allocating slots to multiple calls. In this way, a single frequency can support multiple, simultaneous data channels.



27) What is an Amplifier?

An electronic device or electrical circuit that is used to boost (amplify) the power, voltage or current of an applied signal.

28) What is Barkhausen criteria?

Barkhausen criteria, without which you will not know which conditions, are to be satisfied for oscillations.

“Oscillations will not be sustained if, at the oscillator frequency, the magnitude of the product of the transfer gain of the amplifier and the magnitude of the feedback factor of the feedback network (the magnitude of the loop gain) are less than unity”.

The condition of unity loop gain $-A\beta = 1$ is called the Barkhausencriterion. This condition implies that $|A\beta|=1$ and that the phase of $-A\beta$ is zero.

29) Explain Full duplex and half duplex.

Full duplex refers to the transmission of data in two directions simultaneously. For example, a telephone is a full-duplex device because both parties can talk at once. In contrast, a walkie-talkie is a half-duplex device because only one party can transmit at a time.

Most modems have a switch that lets you choose between full-duplex and half-duplex modes. The choice depends on which communications program you are running.

In full-duplex mode, data you transmit does not appear on your screen until it has been received and sent back by the other party. This enables you to validate that the data has been accurately transmitted. If your display screen shows two of each character, it probably means that your modem is set to half-duplex mode when it should be in full-duplex mode.

30) What is a feedback? And explain different types of feedback.

Feedback is a process whereby some proportion of the output signal of a system is passed (fed back) to the input. This is often used to control the dynamic behaviour of the system.

Types of feedback:

Negative feedback: This tends to reduce output (but in amplifiers, stabilizes and linearizes operation). Negative feedback feeds part of a system's output, inverted, into the system's input; generally with the result that fluctuations are attenuated.

Positive feedback: This tends to increase output. Positive feedback, sometimes referred to as "cumulative causation", is a feedback loop system in which the system responds to perturbation (A perturbation means a system, is an alteration of function, induced by external or internal mechanisms) in the same direction as the perturbation. In contrast, a



system that responds to the perturbation in the opposite direction is called a negative feedback system.

Bipolar feedback: which can either increase or decrease output.

31) Advantages of negative feedback over positive feedback.

Much attention has been given by researchers to negative feedback processes, because negative feedback processes lead systems towards equilibrium states. Positive feedback reinforces a given tendency of a system and can lead a system away from equilibrium states, possibly causing quite unexpected results.

32) Example for negative feedback and positive feedback.

Example for -ve feedback is ---Amplifiers

And for +ve feedback is – Oscillators

33) What is Oscillator?

An oscillator is a circuit that creates a waveform output from a direct current input. The two main types of oscillator are harmonic and relaxation. The harmonic oscillators have smooth curved waveforms, while relaxation oscillators have waveforms with sharp changes.

34) What is a transducer and transponder?

A transducer is a device, usually electrical, electronic, electro-mechanical, electromagnetic, photonic, or photovoltaic that converts one type of energy or physical attribute to another for various purposes including measurement or information transfer.

In telecommunication, the term transponder (short-for *Transmitter-responder* and sometimes abbreviated to XPDR, XPNDR, TPDR or TP) has the following meanings:

- An automatic device that receives, amplifies, and retransmits a signal on a different frequency (see also broadcast translator).
- An automatic device that transmits a predetermined message in response to a predefined received signal.
- A receiver-transmitter that will generate a reply signal upon proper electronic interrogation.

A communications satellite's channels are called transponders, because each is a separate transceiver or repeater.

35) What is an Integrated Circuit?



An integrated circuit (IC), also called a microchip, is an electronic circuit etched onto a silicon chip. Their main advantages are low cost, low power, high performance, and very small size.

36) What is crosstalk?

Crosstalk is a form of interference caused by signals in nearby conductors. The most common example is hearing an unwanted conversation on the telephone. Crosstalk can also occur in radios, televisions, networking equipment, and even electric guitars.

37) What is a rectifier?

A rectifier changes alternating current into direct current. This process is called rectification. The three main types of rectifier are the half-wave, full-wave, and bridge. A rectifier is the opposite of an inverter, which changes direct current into alternating current.

HWR- The simplest type is the half-wave rectifier, which can be made with just one diode. When the voltage of the alternating current is positive, the diode becomes forward-biased and current flows through it. When the voltage is negative, the diode is reverse-biased and the current stops. The result is a clipped copy of the alternating current waveform with only positive voltage, and an average voltage that is one third of the peak input voltage. This pulsating direct current is adequate for some components, but others require a more steady current. This requires a full-wave rectifier that can convert both parts of the cycle to positive voltage.

FWR- The full-wave rectifier is essentially two half-wave rectifiers, and can be made with two diodes and an earthed centre tap on the transformer. The positive voltage half of the cycle flows through one diode, and the negative half flows through the other. The centre tap allows the circuit to be completed because current cannot flow through the other diode. The result is still a pulsating direct current but with just over half the input peak voltage, and double the frequency.

38) What is resistor?

A resistor is a two-terminal electronic component that opposes an electric current by producing a voltage drop between its terminals in proportion to the current, that is, in accordance with Ohm's law: $V = IR$.

39) What is capacitor?

A capacitor is an electrical/electronic device that can store energy in the electric field between a pair of conductors (called "plates"). The process of storing energy in the capacitor is known as "charging", and involves electric charges of equal magnitude, but opposite polarity, building up on each plate.

Capacitors are often used in electric and electronic circuits as energy-storage devices. They can also be used to differentiate between high-frequency and low-frequency signals. This property makes them useful in electronic filters.



Capacitors are occasionally referred to as condensers. This term is considered archaic in English, but most other languages use a cognate of *condenser* to refer to a capacitor.

40) What is inductor?

An inductor is a passive electrical device employed in electrical circuits for its property of inductance. An inductor can take many forms.

41) What is conductor?

A substance, body, or device that readily conducts heat, electricity, sound, etc. Copper is a good conductor of electricity.

42) What is a semi conductor?

A semiconductor is a solid material that has electrical conductivity in between that of a conductor and that of an insulator (An insulator is a material that resists the flow of electric current. It is an object intended to support or separate electrical conductors without passing current through itself); it can vary over that wide range either permanently or dynamically.

43) What is diode?

In electronics, a diode is a two-terminal device. Diodes have two active electrodes between which the signal of interest may flow, and most are used for their unidirectional current property.

44) What is transistor?

In electronics, a transistor is a semiconductor device commonly used to amplify or switch electronic signals. The transistor is the fundamental building block of computers, and all other modern electronic devices. Some transistors are packaged individually but most are found in integrated circuits.

45) What is op-amp?

An operational amplifier, often called an op-amp, is a DC-coupled high-gain electronic voltage amplifier with differential inputs^[1] and, usually, a single output. Typically the output of the op-amp is controlled either by negative feedback, which largely determines the magnitude of its output voltage gain, or by positive feedback, which facilitates regenerative gain and oscillation.

46) what is the difference between SCR and diode rectifier?

ans: diode is a 2 terminal device, in scr gate controls the rectifying. SCR is used in High frequency applications but diode is low frequency devices, SCR can be in high temperatures



but not diode.

47) what is intersymbol interference

ans: In telecommunication, intersymbol interference (ISI) means a form of distortion of a signal that causes the previously transmitted symbols to have an effect on the currently received symbol. This is usually an unwanted phenomenon as the previous symbols have similar effect as noise, thus making the communication less reliable. ISI is usually caused by echoes or non-linear frequency response of the channel. Ways to fight against intersymbol interference include adaptive equalization or error correcting codes (especially soft-decoding with Viterbi algorithm).

48) Distinguish between Angle modulation and Amplitude modulation.

ans: In amplitude Modulation as the amplitude of given signal varies, the amplitude of carrier signal also varies in the same way.

In angle modulation, the frequency or phase may vary according to the amplitude of given signal

49) What is Biasing?

ans: biasing is a process of connecting dc voltage to a device by which we can select the operating point of the device. by biasing actually we select the operating point of the device.

50) What do you mean by ASCII, EBCDIC?

ans: ASCII (American Standard Code for Information Interchange), is a character encoding based on the English alphabet.

EBCDIC (Extended Binary Coded Decimal Interchange Code) is an 8-bit character encoding used on IBM mainframe operating systems

51) What do you mean by 3 dB cutoff frequency? Why is it 3 dB, not 1 dB?

ans: 3db implies 70% (0.707) of the power, i.e. we are interested to consider the bandwidth range from peak to 70% b'coz upto 70% it's reliable. hence 3db is called as half power freq. 3db value is the mean square value which is 70% of the maximum value.

52) What is meant by pre-emphasis and de-emphasis?

ans: Pre-emphasis

" Improving the signal to noise ratio by increasing the magnitude of higher frequency signals with respect to lower frequency signals"

De-emphasis

" Improving the signal to noise ratio by decreasing the magnitude of higher frequency signals with respect to lower frequency signals"

53) What is Race-around problem? How can you rectify it?

ans: A condition in logic network in which the difference in propagation times through two or



more signal paths in the network can produce an erroneous output. in jk flip flop race around problem will occur when both the inputs are high. it can be prevented by using master slave jk flip flop

54) What is the basic difference between Latches and Flip flops?

ans: latch works without clock signal, but works with a control signal and it is level triggered device. whereas flip flop is a 1 bit storage element and works with a clock signal. it's an edge triggered device. normally latches are avoided and flip flops are preferred.

55) what is Barkhausen Criterion?

ans:

1. $|AB|=1$, i.e. the magnitude of loop gain must be unity

2. the total phase shift around the closed loop is zero or 360 degrees.

56) what are active and Passive Components?

ans: ACTIVE COMPONENTS The components which produce the energy in the form of current or voltage are called as active components. Example: transistors etc.,

57) What is difference between Microprocessor and Microcontroller ?

Microprocessors generally require external components to implement program memory, ram memory and Input/output.

Intel's 8086, 8088, and 80386 are examples of microprocessors.

Micro controllers incorporate program memory, ram memory and input/output resources internal to the chip. Microchip's pic series and Atmel's AVR series are examples of micro controllers.

58) Why is Zener Diode always used in Reverse Bias condition ?

When biased in the forward direction it behaves just like a normal signal diode passing the rated current, but when a reverse voltage is applied to it the reverse saturation current remains fairly constant over a wide range of voltages. The reverse voltage increases until the diode's breakdown voltage V_B is reached at which point a process called *Avalanche Breakdown* occurs in the depletion layer and the current flowing through the zener diode increases dramatically to the maximum circuit value (which is usually limited by a series resistor). This breakdown voltage point is called the "zener voltage" for zener diodes.

59) Define Analog and Digital Signal Processing

Analog signal processing

Analog signal processing is for signals that have not been digitized, as in classical radio, telephone, radar, and television systems. This involves linear electronic circuits such as passive filters, active filters, additive mixers, integrators and delay lines. It also involves non-linear circuits such as companders, multipliers (frequency mixers and voltage-



controlled amplifiers), voltage-controlled filters, voltage-controlled oscillators and phase-locked loops.

Discrete time signal processing

Discrete time signal processing is for sampled signals that are considered as defined only at discrete points in time, and as such are quantized in time, but not in magnitude.

Analog discrete-time signal processing is a technology based on electronic devices such as sample and hold circuits, analog time-division multiplexers, analog delay lines and analog feedback shift registers. This technology was a predecessor of digital signal processing (see below), and is still used in advanced processing of gigahertz signals.

The concept of discrete-time signal processing also refers to a theoretical discipline that establishes a mathematical basis for digital signal processing, without taking quantization error into consideration.

60) What is RS in RS-232 ?

RS-232 (Recommended Standard - 232) is a telecommunications standard for binary serial communications between devices. It supplies the roadmap for the way devices speak to each other using serial ports. The devices are commonly referred to as a DTE (data terminal equipment) and DCE (data communications equipment); for example, a computer and modem, respectively

61) What is Lenz law ?

An induced current is always in such a direction as to oppose the motion or change causing it whenever there is an induced electromotive force (emf) in a conductor, it is always in such a direction that the current it would produce would oppose the change which causes the induced emf. If the change is the motion of a conductor through a magnetic field, the induced current must be in such a direction as to produce a force opposing the motion. If the change causing the emf is a change of flux threading a coil, the induced current must produce a flux in such a direction as to oppose the change.

62) What is Transmission Frequency of Bluetooth, Wi-Fi and Wi-MAX ?

Bluetooth uses a radio technology called frequency-hopping spread spectrum, which chops up the data being sent and transmits chunks of it on up to 79 bands (1 MHz each) in the range 2402-2480 MHz. This range is in the globally unlicensed Industrial, Scientific and Medical (ISM) 2.4 GHz short-range radio frequency band. between 2.402 GHz and 2.480 GHz, to be exact

Wi-Fi stands for Wireless Fidelity. Wi-Fi is based on the IEEE 802.11 family of standards and is primarily a local area networking (LAN) technology designed to provide in-building broadband coverage.

WiMAX is an IP based, wireless broadband access technology that provides performance similar to 802.11/Wi-Fi networks with the coverage and QOS (quality of service) of cellular networks. WiMAX is also an acronym meaning "Worldwide Interoperability for Microwave Access (WiMAX).

WiMAX is a wireless digital communications system, also known as IEEE 802.16, that is intended for wireless "metropolitan area networks". WiMAX can provide broadband wireless



access (BWA) up to 30 miles (50 km) for fixed stations, and 3 - 10 miles (5 - 15 km) for mobile stations. In contrast, the WiFi/802.11 wireless local area network standard is limited in most cases to only 100 - 300 feet (30 - 100m).

63) What is difference between Piconet and Scatternet ?

A piconet is the type of connection that is formed between two or more Bluetooth-enabled devices, one device takes the role of 'master', and all other devices assume a 'slave' role for synchronization reasons.

Where as a scatternet is a number of interconnected piconets that supports communication between more than 8 devices. Scatternets can be formed when a member of one piconet (either the master or one of the slaves) elects to participate as a slave in a second, separate piconet.

64) What is Moore's Law ?

The prediction by Gordon Moore (cofounder of the Intel Corporation) that the number of transistors on a microprocessor would double periodically (approximately every 18 months).

65) How many satellites comprise the GPS and expand it ?

The minimum satellites required to track your position is three. That is why it is known as triangulation. Currently, there are 32 satellites in the GPS system. The exact number varies as old satellites fail or are retired, and new satellites are sent up to replace them.

66) What is ZigBee and its specifications ?

ZigBee is a low-cost, low-power, wireless mesh networking standard. First, the low cost allows the technology to be widely deployed in wireless control and monitoring applications. Second, the low power-usage allows longer life with smaller batteries. Third, the mesh networking provides high reliability and more extensive range. ZigBee relies on the basic 802.15.4 standard to establish radio performance

67) What is FPGA ?

A Field-programmable Gate Array (FPGA) is an integrated circuit designed to be configured by the customer or designer after manufacturing—hence "field-programmable". Applications of FPGAs include digital signal processing, software-defined radio, aerospace and defense systems, ASIC prototyping, medical imaging, computer vision, speech recognition, cryptography, bioinformatics, computer hardware emulation, radio astronomy, metal detection and a growing range of other areas.

68) What is MIMO ?

MIMO (multiple input, multiple output) is an antenna technology for wireless communications in which multiple antennas are used at both the source (transmitter) and the destination (receiver). The antennas at each end of the communications circuit are combined to minimize errors and optimize data speed. MIMO is one of several forms of smart antenna technology, the others being MISO (multiple input, single output) and SIMO (single input, multiple output)



69) What is VOIP ?

VoIP (voice over IP) is an IP telephony term for a set of facilities used to manage the delivery of voice information over the Internet. VoIP involves sending voice information in digital form in discrete packets rather than by using the traditional circuit-committed protocols of the public switched telephone network (PSTN). A major advantage of VoIP and Internet telephony is that it avoids the tolls charged by ordinary telephone service.

70) On what principle do Transformers work ?

A transformer is a static device that transfers electrical energy from one circuit to another through inductively coupled conductors—the transformer's coils. A varying current in the first or primary winding creates a varying magnetic flux in the transformer's core and thus a varying magnetic field through these secondary winding. This varying magnetic field induces a varying electromotive force (EMF) or "voltage" in the secondary winding. This effect is called mutual induction.

71) What is EDFA ?

Erbium Doped Fiber Amplifier (EDFA) A device that boosts the signal in an optical fiber. EDFA is an optical repeater device that is used to boost the intensity of optical signals being carried through a fiber optic communications system. An optical fiber is doped with the rare earth element erbium so that the glass fiber can absorb light at one frequency and emit light at another frequency. An external semiconductor laser couples light into the fiber at infrared wavelengths of either 980 or 1480 nanometers. This action excites the erbium atoms. Additional optical signals at wavelengths between 1530 and 1620 nanometers enter the fiber and stimulate the excited erbium atoms to emit photons at the same wavelength as the incoming signal. This action amplifies a weak optical signal to a higher power, effecting a boost in the signal strength.

72) What are different types of antennas ?

An antenna (or aerial) is a transducer that transmits or receives electromagnetic waves. In other words, antennas convert electromagnetic radiation into electric current, or vice versa.

They are used to transmit and receive electromagnetic radiation of radio frequency, that is, radio waves, and are a necessary part of all radio equipment

There are different types of antennas, they can mainly be divided into directional & unidirectional. A simple type of directional antenna: helical antenna

A simple type of unidirectional antennas: Yagi & loop antennas

73) What is Yagi-Uda antenna ?

Directional antenna system consisting of an array of a dipole and additional closely coupled parasitic elements (usually a reflector and one or more directors). The dipole in the array is driven, and another element, typically 5% longer, effectively operates as a reflector.

Other parasitic elements shorter than the dipole may be added in front of the dipole and are referred to as directors



74) why the input resistance of an op-amp is high whereas it's output resistance is low?
Loading at the input point and to pass the maximum output to the load is the requirement of Op-Amp which is a current exchange device from input side to output side.

75) what do you understand by microwaves? why these are called micro
Micro waves are those waves whose wavelength is less than a foot(30 cms) or freq ranging from 1 GHz to 1000 GHz.Because of there tinyness these are called micro.

76) how do microwave oven works??
Heart of microwave oven is magnatron which generates frequency of appox. 2.4 GHz.explain working of magnatron.

77) What is CMRR? Explain briefly.
CMRR stands for common mode rejection ratio. It is a measure of the ability of a test instrument to reject interference that is common to both of its measurement input terminals. It is expressed in decibels and it is the ratio of the actual or common signal level appearing on the two input terminals together to the measured level.

78) What is meant by D-FF? D Flip Flop
The D flip-flop is the most common flip-flop in use today. It is better known as delay flip-flop or data latch.

79) What is the basic difference between Latches and Flip flops?
flip flops are edge-triggered devices whereas latches are level triggered devices.●
latch does not have clock signal whereas flip flop does.●
Flip flop has two values while latch has only one value.●
(Latches do not store information, here, a bit)

80) What is a multiplexer?
A multiplexer, sometimes referred to as a "multiplexor" or simply "mux", is a device that selects between a number of input signals. In its simplest form, a multiplexer will have two signal inputs, one control input, and one output.

An everyday example of an analog multiplexer is the source selection control on a home stereo unit.

Multiplexers are used in building digital semiconductors such as CPUs and graphics controllers.

In these applications, the number of inputs is generally a multiple of 2 (2, 4, 8, 16, etc.), the number of outputs is either 1 or relatively small multiple of 2, and the number of control signals is related to the combined number of inputs and outputs.

81) What do you mean by an ideal voltage source?



In electric circuit theory, an ideal voltage source is a circuit element where the voltage across it is independent of the current through it. Sources infinite current to any load without any change in o/p voltage.

82) What do you mean by zener breakdown and avalanche breakdown?

Zener breakdown

In Zener breakdown the electrostatic attraction between the negative electrons and a large positive voltage is so great that it pulls electrons out of their covalent bonds and away from their parent atoms. ie Electrons are transferred from the valence to the conduction band. In this situation the current can still be limited by the limited number of free electrons produced by the applied voltage so it is possible to cause Zener breakdown without damaging the semiconductor.

Avalanche breakdown

Avalanche breakdown occurs when the applied voltage is so large that electrons that are pulled from their covalent bonds are accelerated to great velocities. These electrons collide with the silicon atoms and knock off more electrons. These electrons are then also accelerated and subsequently collide with other atoms. Each collision produces more electrons which leads to more collisions etc. The current in the semiconductor rapidly increases and the material can quickly be destroyed.

83) What are the different types of filters?

low pass, high pass, band pass, band stop, resonant

84) What is sampling theorem?

Sampling Theorem: A bandlimited signal can be reconstructed exactly if it is sampled at a rate atleast twice the maximum frequency component in it.

85) What is impulse response?

Impulse response is the response of a system to a unit impulse at its input. The impulse response function is the inverse Laplace transform of the system transfer function $H(s)$.

86) Explain the advantages and disadvantages of FIR filters compared to IIR counterparts.

IIR filters are recursive and FIR filters are non-recursive. Also FIR filters are linear phase and IIR filters are not. fir filter are highly stable.we can obtain linear phase in fir filter. rounding error is absent in fir filter.

87) What is CMRR? Explain briefly.

The ratio of the gain of an amplifier for difference signals between the input terminals, to the gain for the average or common-mode signal component.

88) What do you mean by half-duplex and full-duplex communication? Explain briefly.

half duplex - both sender & receiver can communicate with each other, but not simultaneously...full duplex - same but simultaneous communication possible.



89) What are the flags in 8086?

Carry flag, Parity flag, Auxiliary carry flag, Zero flag, Overflow flag, Trace flag, Interrupt flag, Direction flag, and Sign flag.

90) What are the various interrupts in 8086?

Maskable interrupts, Non-Maskable interrupts

91) What is meant by Maskable interrupts?

An interrupt that can be turned off by the programmer is known as Maskable interrupt.

92) Which interrupts are generally used for critical events?

Non-Maskable interrupts are used in critical events Such as Power failure, Emergency, Shut off etc.

93) What is the Maximum clock frequency in 8086?

5 Mhz is the Maximum clock frequency in 8086.

94) What are the various segment registers in 8086?

Code, Data, Stack, Extra

95) Which Stack is used in 8086?

FIFO (First In First Out) stack is used in 8086. In this type of Stack the first stored information is retrieved first.

96) What are the various registers in 8085?

Accumulator register, Temporary register, Instruction register, Stack Pointer, Program Counter are the various registers in 8085 .

97) What is Stack Pointer

Stack pointer is a special purpose 16-bit register in the Microprocessor, which holds the address of the top of the stack

98) What is Program counter?

Program counter holds the address of either the first byte of the next instruction to be fetched for execution or the address of the next byte of a multi byte instruction, which has not been completely fetched. In both the cases it gets incremented automatically one by one as the instruction bytes get fetched. Also Program register keeps the address of the next instruction.

99) Which Stack is used in 8085?

LIFO (Last In First Out) stack is used in 8085. In this type of Stack the last stored information can be retrieved first.

100) What is meant by a bus?

A bus is a group of conducting lines that carries data, address, & control signals.



101) What is Tri-state logic?

Three Logic Levels are used and they are High, Low, High impedance state. The high and low are normal logic levels & high impedance state is electrical open circuit conditions. Tri-state logic has a third line called enable line.

102) Give an example of one address microprocessor?

8085 is a one address microprocessor.

103) In what way interrupts are classified in 8085?

In 8085 the interrupts are classified as Hardware and Software interrupts.

104) Examples of Software interrupts?

RST0, RST1, RST2, RST3, RST4, RST5, RST6, RST7.

105) Examples of Hardware interrupts?

TRAP, RST7.5, RST6.5, RST5.5, INTR.

106) Which interrupt has the highest priority?

TRAP has the highest priority.

107) Name 5 different addressing modes?

Immediate, Direct, Register, Register indirect, Implied addressing modes.

108) How many interrupts are there in 8085?

There are 12 interrupts in 8085.

109) What is clock frequency for 8085?

3 MHz is the maximum clock frequency for 8085.

110) In 8085 which is called as High order / Low order Register?

Flag is called as Low order register & Accumulator is called as High order Register.

111) Why crystal is a preferred clock source?

Because of high stability, large Q (Quality Factor) & the frequency that doesn't drift with aging. Crystal is used as a clock source most of the times.

112) What does Quality factor mean?

The Quality factor is also defined, as Q. So it is a number, which reflects the lossiness of a circuit. Higher the Q, the lower are the losses.