3G Interview Questions And Answers Guide.

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3G Job Interview Preparation Guide.

Question # 1

Explain the advantages of 3G?

Answer:-

* Overcrowding is relieved in existing systems with radio spectrum
* Bandwidth, security and reliability are more
* Provides interoperability among service providers
* Availability of fixed and variable rates
* Support to devices with backward compatibility with existing networks
* Always online devices - 3G uses IP connectivity which is packet based
* Rich multi media services are available

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Question # 2

Explain the disadvantages of 3G?

Answer:-

* The cost of cellular infrastructure , upgrading base stations is very high
* Needs different handsets.
* Roaming and data/voice work together has not yet been implemented
* Power consumption is high
* Requires closer base stations and are expensive
* Spectrum-license costs, network deployment costs and handset subsidies subscribers are tremendous.

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Question # 3

Can you please explain the difference between 3G and 2G?

Answer:-

* Packet data speed is higher in 3G, and it is up to 384 KBPS
* Voice and sms speed is also 384 KBPS in 3G
* 2G utilizes different switching techniques for voice and data, where as 3G uses single switching, irrespective of data
* 3G has at least 2MB of data link of a mobile, where in 2G the data rate is in KBPS
* 3G has WiMAX facility for faster VOIP and internet
* 2G uses GSM TDMA technology with narrow band 200 KHz.
* 3G uses CD-MA technology with broadband 5 MHz, with same frequency carrier and time.

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Question # 4

Explain GSM (Global System for Mobile Communications)?

Answer:-

* Most popular standard for mobile telephony systems, originated from Group Special Mobile
* The ubiquity of GSM enables the international roaming arrangements among mobile phone operators.
* Both signaling and speech channels are digital, and thus GSM is considered as 2G mobile phone system.
* GSM standard benefited customers the ability to roam and switch carriers without replacing the hand sets and network operators.
* GSM implements low-cost implementation of Short Message Service

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Question # 5

Explain GPRS (General Packet Radio Service)?

Answer:-

* Packet oriented mobile data service available to the users of 2G cellular systems.

* It is global system for communicating through mobile phones using GSM as well as in 3G systems.
* GPRS data transfer is charged per MB of traffic transferred, where as in circuit switching, data transfer is charged per minute of connection time
* GPRS is better packet switching service, as opposed to circuit switching.
* 2G cellular systems are combined with GPRS and known as 2.5 G.
* Provides moderate speed data transfer by using unused TDMA channels, such as GSM.

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Question # 6

What is HLR (Home Location Register)?

Answer:-

* For GSM and CDMA wireless networks
* It's responsibility is to authenticate and authorize subscribers and their services

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Question # 7

Explain iDEN(Integrated Digital Enhanced Network)?

Answer:-

* A wireless technology for Motorola
* It has the capabilities of digi-cellular phone, 2 way radio, alphanumeric pager and data modem / fax modem in a single network
* Operational bands are 800 MHz, 900 MHz and 1.5 GHz
* iDEN is based on TDMA(Time Division Multiple Access) and GSM architecture
* For voice compression it uses Motorola's Vector Sum Excited Linear Predictors vocoder
* For delivering 64 KBPS over a 25 KHz channel, it uses QAM modulation.
* iDEN is designed to serve the mobile user for accessing information quickly without carrying several devices.

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Question # 8

What are the types of hand over?

Answer:-

* Hard Handover
* Soft Handover

Read More Answers.

Question # 9

What is Hard handover?

Answer:-

Hard handover means that all the old radio links in the UE are removed before the new radio links are established. Hard handover can be seamless or non-seamless. Seamless hard handover means that the handover is not perceptible to the user. In practice a handover that requires a change of the carrier frequency (inter-frequency handover) is always performed as hard handover.

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Question # 10

What is Soft handover?

Answer:-

Soft handover means that the radio links are added and removed in a way that the UE always keeps at least one radio link to the UTRAN. Soft handover is performed by means of macro diversity, which refers to the condition that several radio links are active at the same time. Normally soft handover can be used when cells operated on the same frequency are changed.

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Question # 11

Tell me what is typical TMA gain?

Answer:-

TMA typically has a 12 dB gain; however, the effective gain comes from noise figure reduction and the gain is close or equivalent to the feeder loss.

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Question # 12

Explain several Event in 3G?

Answer:-

* Event 1A:UTRAN will add the new cell in the UE's active cell list and will send an ACTIVE SET UPDATE message.
* Event 1B:UTRAN will send ACTIVE SET UPDATE message to remove the cell from UE's active set.
* Event 1C:UTRAN will send ACTIVE SET UPDATE message that will remove one or more cells and will add one or more cells. The only restriction for 1C is that there should be atleast one radio link that is not affected by the procedure.

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Question # 13

What is a typical NodeB sensitivity level?

Answer:-

The service and load determines the NodeB sensitivity; in general, in a no-load condition, the sensitivity is between -115dBm to -125dBm. For Ericsson, the NodeB sensitivity level is calculated at around:
CS12.2: -124 dBm ,PS-64: -119 dBm, PS-128: -115 dBm, PS-384: -115 dBm

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Question # 14

Tell me what is a typical NodeB maximum output power?

Answer:-

The maximum NodeB output power is usually 20W or 40W, that is, 43dBm or 46dBm.

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Question # 15

Do you know what is a typical antenna gain?

Answer:-

The antenna gain depends on antenna model; in link budget we use around 17dBi.

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Question # 16

Explain typical maximum path loss?

Answer:-

The maximum path loss is dependent on the service and vendor recommendations; typically it is in between 135 to 140dB for urban areas and between 150 to 160dB for rural areas.

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Question # 17

Do you know how does TMA work?

Answer:-

A TMA reduces system noise, improves up-link sensitivity and leads to longer UE battery life. Sensitivity is the minimum input power needed to get a suitable signal-to-noise ratio (SNR) at the output of the receiver. It is determined by receiver noise figure, thermo noise power and required SNR. Thermo noise power is determined by bandwidth and temperature, SNR is determined by modulation technique, therefore the only variable is noise figure.

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Question # 18

RSCP stands for?

Answer:-

RSCP stands for Received Signal Code Power - the energy per chip in CPICH averaged over 512 chips.

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Question # 19

Explain SIR?

Answer:-

SIR is the Signal-to-Interference Ratio - the ratio of the energy in dedicated physical control channel bits to the power density of interference and noise after dispreading.

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Question # 20

What is pole capacity?

Answer:-

The uplink noise increases with the loading exponentially. When the up-link noise approaches infinity then no more users can be added to a cell - and the cell loading is close to 100% and has reached its pole capacity

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Question # 21

Tell me how does soft/softer handover work?

Answer:-

* Soft/softer handover down-link: UE rake receiver performs maximum ratio combining, i.e. UE combines multi-path signals and form a stronger signal.
* Soft handover up-link: RNC performs selection combining, i.e. RNC selects the better signal coming from multiple NodeB.
* Softer handover up-link: NodeB performs maximum ratio combining, i.e. NodeB rake receiver combines signals from different paths and forms a stronger signal

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Question # 22

What is gsm burst?

Answer:-

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Question # 23

Explain 3G?

Answer:-

Third generation (3G) wireless networks will offer faster data transfer rates than current networks. The first generation of wireless (1G) was analog cellular. The second generation (2G) is digital cellular, featuring integrated voice and data communications. So-called 2.5G networks
offer incremental speed increases. 3G networks will offer dramatically improved data transfer rates, enabling new wireless applications such as streaming media.

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Question # 24

What is International Telecommunication Union?

Answer:-

The International Telecommunication Union is the eldest organization in the UN family still in existence. It was founded as the International Telegraph Union in Paris on 17 May 1865 and is today the leading United Nations agency for information and communication technology issues, and the global focal point for governments and the private sector in developing networks and services.

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Question # 25

What is Universal Mobile Telecommunications System?

Answer:-

Universal Mobile Telecommunications System (UMTS) is one of the third-generation (3G) mobile telecommunications technologies, which is also being developed into a 4G technology. The first deployment of the UMTS is the release99 (R99) architecture. It is specified by 3GPP and is part of the global ITU IMT-2000 standard.

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Question # 26

What is 2G?

Answer:-

2G (or 2-G) is short for second-generation wireless telephone technology. Second generation 2G cellular telecom networks were commercially launched on the GSM standard in Finland in 1991. Three primary benefits of 2G networks over their predecessors were that phone conversations were digitally encrypted, 2G systems were significantly more efficient on the spectrum allowing for far greater mobile phone penetration levels; and 2G introduced data services for mobile, starting with SMS text messages.

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Question # 27

What is 4G?

Answer:-

4G refers to the fourth generation of cellular wireless standards. It is a successor to 3G and 2G standards. The nomenclature of the generations generally refers to a change in the fundamental nature of the service. The first was the move from analogue (1G) to digital (2G) transmission. This was followed by multi-media support, spread spectrum transmission and at least 200 kbit/s (3G) and now 4G, which refers to all IP packet-switched networks, mobile ultra-broadband (gigabit speed) access and multi-carrier transmission.

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Question # 28

Explain CDMA2000?

Answer:-

CDMA2000 (also known as IMT Multi-Carrier (IMT-MC)) is a family of 3G mobile technology standards, which use CDMA channel access, to send voice, data, and signaling data between mobile phones and cell sites. The set of standards includes: CDMA2000 1X, CDMA2000 EV-DO Rev. 0, CDMA2000 EV-DO Rev. A, and CDMA2000 EV-DO Rev. B. All are approved radio interfaces for the ITU's IMT-2000.

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Question # 29

Explain Digital Enhanced Cordless Telecommunications?

Answer:-

Digital Enhanced Cordless Telecommunications (DECT), known as Digital European Cordless Telephone until 1995, is an ETSI standard for digital portable phones (cordless home telephones), commonly used for domestic or corporate purposes. It is recognised by the ITU as fulfilling the IMT-2000 requirements and thus qualifies as a 3G system. Within the IMT-2000 group of technologies, DECT is referred to as IMT-2000 Frequency Time (IMT-FT)

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Question # 30

Explain WiMAX?

Answer:-

WiMAX, an acronym for Worldwide Interoperability for Microwave Access, is a telecommunications protocol that provides fixed and fully mobile internet access. The current WiMAX revision provides up to 40 Mbps with the IEEE 802.16m update expected offer up to 1 Gbit/s fixed speeds. (WiMAX is based on the IEEE 802.16 standard, also called Broadband Wireless Access). The name WiMAX was created by the WiMAX Forum, which was formed in June 2001 to promote conformity and interoperability of the standard.

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Question # 31

Explain Enhanced Data Rates for GSM Evolution?

Answer:-

Enhanced Data rates for GSM Evolution (EDGE) (also known as Enhanced GPRS (EGPRS), or IMT Single Carrier (IMT-SC), or Enhanced Data rates for Global Evolution) is a backward-compatible digital mobile phone technology that allows improved data transmission rates, as an extension on top of standard GSM. EDGE is considered a 3G radio technology and is part of ITU's 3G definition.

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Question # 32

Explain High Speed Packet Access?

Answer:-

High Speed Packet Access (HSPA) is a collection of two mobile telephony protocols, High Speed Downlink Packet Access (HSDPA) and High Speed Uplink Packet Access (HSUPA), that extends and improves the performance of existing WCDMA protocols. A further standard, Evolved HSPA (also known as HSPA+), was released late in 2008 with subsequent adoption worldwide into 2010.

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Question # 33

What is 3GPP Long Term Evolution?

Answer:-

LTE (Long Term Evolution) is the trademarked project name of a high performance air interface for cellular mobile telephony. It is a project of the 3rd Generation Partnership Project (3GPP), operating under a named trademarked by one of the associations within the partnership, the European Telecommunications Standards Institute.

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Question # 34

What is Evolution-Data Optimized?

Answer:-

Evolution-Data Optimized or Evolution-Data only, abbreviated as EV-DO or EVDO and often EV, is a telecommunications standard for the wireless transmission of data through radio signals, typically for broadband Internet access. It uses multiplexing techniques including code division multiple access (CDMA) as well as time division multiple access (TDMA) to maximize both individual user's throughput and the overall system throughput. It is standardized by 3rd Generation Partnership Project 2 (3GPP2) as part of the CDMA2000 family of standards

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