



SNS COLLEGE OF TECHNOLOGY
(An Autonomous Institution)
Coimbatore-35



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

19ECT311 - WIRELESS COMMUNICATION

Two marks Questions and Answers

UNIT III- CELLULAR NETWORKS

1. What are the features of TDMA?

Features of TDMA are:

- i. TDMA shares a single carrier frequency with several users, where each user makes use of non overlapping time slots.
- ii. Data transmission occurs in bursts.
- iii. Handoff process is much simpler
- iv. Duplexers are not required, since transmission and reception occurs at different time slots.

2. What are the features of FDMA?

Features of FDMA are:

- i. FDMA channel carries only one phone circuit at a time
- ii. The bandwidth of FDMA channels are relatively narrow as each channel supports only one circuit per carrier.

3. Justify whether CDMA is an access method or an air interface method.

CDMA appears increasingly attractive as the wireless access method of choice. Integration of various types of traffic is readily accomplished in a CDMA environment as coexistence on such an environment does not require any specific coordination among user terminals. CDMA is both an access method and air interface.

4. What is meant by capacity on demand principle in GPRS networks?

Capacity demand principle: It means that the capacity allocation for GPRS is based on the actual need for packet transfer. GPRS does not need permanently allocated physical channels.

5. What are VLR and HLR? Where they are physically located and why we need them?

VLR-Visitor Location Register HLR-Home Location Register They are physically located in Base Station. HLR is database software that handles the management of the mobile subscriber account. VLR is the temporary database software similar to the HLR identifying the subscribers' visiting inside the coverage area of an Mobile Switching Centre (MSC).

6. What are the design consideration requirements for TDMA?

The mobile wireless TDMA design consideration requirements are Number of logical channels. Maximum cell radius. Frequency. Maximum vehicle speed (V_m) Maximum coding delay. Maximum delay speed (Δm). Bandwidth.

7. List the components in Base Station Subsystem.

A Base Station Subsystem consists of a Base Station Controller (BSC) and one or more Base Transceiver stations. Each Base Transceiver Station (BTS) defines a single cell; it includes a radio antenna and a link to a Base Station controller.

8. List the advantages of CDMA.

The advantages of CDMA are i) frequency Diversity ii) Multipath resistance iii) Privacy iv) Graceful degradation.

9. List the functions of RNCP.

It carries information for the general control of UTRAN radio network operations. It carries information for control of UTRAN in the context of each specific call. It carries user call control (CC) and mobility management (MM) signaling messages.

10. What is the need for Iur interface?

The connection between two RNCs (serving RNC (SRNC) and drift RNC (DRNC)) is the Iur interface. It is used in soft handoff scenarios when different macro diversity streams of one communication are supported by Node Bs that belong to different RNCs. Communication between one RNC and one Node B of two different RNCs are realized through the Iur interface.

11. What are the functions carried out by Iur interface?

Basic inter-RNC mobility support, Dedicated channel traffic support, Common channel traffic support and Global resource management support.

12. What is the need for Iub interface?

The connection between the RNC and Node B is the Iub interface. There is one Iub interface for each Node B. The Iub interface is used for all of the communications between Node B and the RNC of the same RNS.

13. State the functionality of Uu interface. The UMTS Uu interface is the radio interface between a Node B and one of its UE. The Uu is the interface through which UE accesses the fixed part of the system.

14. State the functions of 3G-MSC.

The 3G-MSC is the main CN element to provide CS services. The 3G-MSC also provides the necessary control and corresponding signaling interfaces including SS7, MAP, ISUP (ISDN user part), etc. The 3G MSC provides the interconnection to external networks like PSTN and ISDN.

15. List the sub-systems of UMTS Terrestrial Radio Access Network (UTRAN).

The UTRAN consists of a set of radio network subsystems (RNSs). The RNS has two main logical elements: Node B and an RNC.

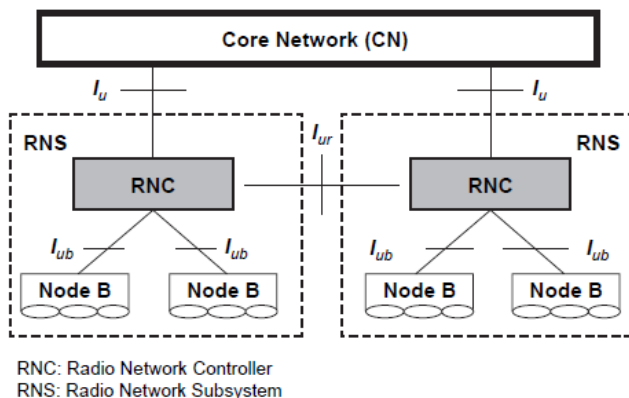
16. State the responsibilities of an RNC.

An RNC is responsible for the use and allocation of all the radio resources of the RNS to which it belongs. The RNC also handles the user voice and packet data traffic, performing the actions on the user data streams that are necessary to access the radio bearers.

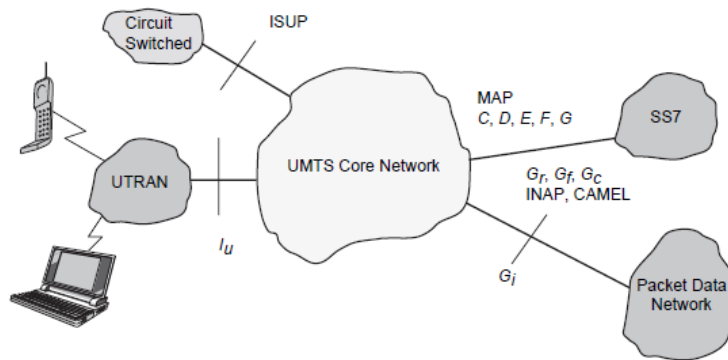
17. State the responsibilities of Node B.

A Node B is responsible for radio transmission and reception in one or more cells to/from the user equipment (UE).

18. Draw the UTRAN logical architecture



19. Draw UMTS core network architecture.



20. List the key features of 4G networks from the user point of view. (April 2017)

- High usability: anytime, anywhere, and with any technology
- Support for multimedia services at low transmission cost
- Personalization
- Integrated services

21. Mention the challenges faced by 4G networks (April 2017)

- Limitations in device size
- Cost and power consumption,
- Backward compatibilities to systems

22. What are the applications of 4G technology?

- Virtual navigation
- Tele-medicine
- Tele-geo-processing applications

23. How efficient packet data transmission can be achieved in 4G networks?

Efficient packet data transmission can be achieved by using a suitable automatic repeat request (ARQ) scheme combined with an adaptive modulation and coding system, and a time-slot scheduler that uses channel predictions.

24. Explain services provided by 4G?

4G systems will provide not only telecommunications services, but also data and multimedia services. To support multimedia services, high-data-rate services with system reliability will be provided. Personalized service will be provided by 4G networks. It is expected that when 4G services are launched, users in widely different locations, occupations, and economic classes will use the services.

25. HOW DOES 5G WORK?

A: This network, as with the current 4G LTE network, is OFDM (orthogonal frequency-division multiplexing)-based and operates on the same mobile networking principles. However, the new 5G NR (New Radio) air interface will enhance OFDM for more flexibility and scalability.

26. WILL 5G BE BETTER THAN FIBRE?

While the 5G network brings with it many benefits – particularly high speed – it will take some time before it can rival the existing fibre networks. Fibre will remain the predominant form of communication for the majority of businesses, but 5G will play an important role in the Internet of Things.

27. WILL 5G MAKE WIFI OBSOLETE?

Most experts believe that 5G and WiFi will continue to co-exist for the foreseeable future, with the two networks complementing each other rather than competing. Currently, WiFi – particularly fibre optic connectivity – provides the fastest, most affordable internet connection for home and office use.