



# [Question Bank]

LAB:

WIRELESS & MOBILE  
COMMUNICATION

Code: ECE-453

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Subject Teacher:

Dr. Simranjit Singh Tiwana

Semester VII<sup>th</sup>

**This booklet Includes:**

- List of Equipments
- List of Softwares
- List of Experiments
- lab Manual
- Question Bank

**ECE 453 WIRELESS & MOBILE COMMUNICATION LAB****Quiz Questions with Answers**

1. Which multiple access technology is used in 1G, 2G, 3G and 4G?

Ans. 1G – FDMA, 2G – TDMA, 3G – CDMA, 4G – OFDMA, SCFDMA

2. On what basis are mobile generations differentiated?

Ans. Data Rate

3. Where was the world's first 3G network launched?

Ans. Japan (FoMA – Freedom of Multimedia Access)

4. To which generation does technology called HSPA belong?

Ans. 3G

5. What is the defining trait of a true 4G network?

Ans. It is an all IP-architecture based network setup ( meaning it transfers data in packets that zoom through the Internet. Most 4G networks still overlap with older technologies and aren't all-IP.)

6. In mobile communications, the communications standard linking the base station to mobile equipment is called \_\_\_\_\_.

Ans. Air interface (e.g. WiMaX, LTE, HSPA+ etc.)

7. How much times faster on an average are 4G networks than 3G networks?

Ans. 10 times

8. Out of high, low and extremely high frequency bands, which one is most suitable for mobile communication and why?

Ans. For cellular communication, lower frequencies work best. They penetrate objects instead of bouncing off of them, like higher frequencies.

9. Which was the first country to introduce a 4G network?

Ans. Sweden in 2009.

10. After LTE which technology are the mobile service providers shifting to?

Ans. LTE Advanced

11. What is the meaning of multiple channel and coding scheme in EDGE?

Ans. It is the combination of various air interfaces (GMSK & 8-PSK and channel coding) which are available in EDGE. The capability of EDGE to select the best air interface is called incremental redundancy.

12. What is the frequency range of 802.11a standard?

Ans. 5 GHz

13. What are the IEEE standards of WiFi, Bluetooth and WiMax?

Ans. Wifi : 802.11b, Bluetooth: 802.15, WiMax: 802.16

14. What is the IEEE standard of Ethernet (RJ-45)?

Ans. 802.3

15. What is the maximum range of WiMax?

Ans. 30 miles

16. What is the full form of WiMax?

Ans. Worldwide interoperability for microwave access.

17. What is the reason for adjacent channel interference?

Ans. Poor filters, poor frequency planning and near-far effect.

18. Which 3G technology uses TDD instead of FDD?

Ans. TD-SCDMA (time division synchronous CDMA)

19. What is the major difference between the network architecture of 2G and 3G?

Ans. In 2G we have BTS – BSC – MSC and MSC is the central brain of the network.

In 3G we have node-RNC-MSC, even all RNCs are interconnected, so basic operations like handoff can be handled by RNCs.

20. What is the primary reason 4G is faster than 3G and 2G?

Ans. Technological difference (OFDMA, SCFDMA and MIMO)

Less latency

21. What is the factor which single handedly governs the cluster size in a mobile network?

Ans. Co-Channel Interference

22. What is Umbrella Cell Approach?

Ans. When the cell size decreases, the problem of handoff's due to high speed traffic increases. To handle this problem, a portion of the total spectrum is set aside and allocated to a large antenna mounted on a tall tower which gives service only to high speed traffic. This way the problems of handoff in smaller cells can be avoided.

23. What is cell splitting?

Ans. Initially the cellular concept was designed for a constant cell size. Later on, to improve the capacity further, it was proposed that a single cell can be further divided into microcells, picocells or even femto cells. This is called cell splitting.

24. What is sectoring?

Ans. When an omnidirectional antenna of a cell is replaced by 3 or 6 directional antennas transmitting at an angle of 120 degree or 60 degree respectively, it is called sectoring. The advantage of sectoring is that it reduces the number of co-channel interfering cells.

25. What are the 3 factors on which Large scale fading depends?

Ans. Reflection, diffraction and scattering.

26. What are the types of small scale fading?

Ans. Fast, Slow, Flat and Freq selective.

27. When there is no LOS path between transmitter and receiver, which fading channel will be used to model such condition?

Ans. Rayleigh fading

28. When there is one dominant LOS path along with diffuse power, which fading channel will be used to model such a condition?

Ans. Rician fading

29. What is the maximum speed achieved by Wifi?

Ans. 54Mbps

30. What does LMDS stand for?

Ans. Local Multipoint Distribution Service.