

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

QUESTION BANK

Subject Code/Name: IT1351/Telecommunication switching

Year/Sem: III/VI

UNIT I -METHODS OF COMMUNICATION

PART-A

1. Define communication
2. What are the basic components of a transmission line?
3. What is a coaxial line?
4. What is the signification of channel in a communication system?
5. State the difference between different types of RF Communication
6. Define radio waves
7. Define Polarization
8. Define horizontal polarization
9. Define Vertical Polarization
10. What is a dipole antenna?
11. Define directional antenna
12. Define magnetron
13. Define klystron and explain its types
14. State the difference between folded dipole and half wave dipole antenna
15. When an antenna is said to be omni directional?
16. Define counterpoise or radial
17. Mention the application of ground plane antenna
18. In an communication system it is more advantageous to restrict the direction in which signals are sent or received .Explain which antenna can be Preferred for the communication
19. Define Directivity
20. Define Beam width
21. Define Effective radiated power
22. Define Array director
23. Define Parasitic Arrays
24. Explain the necessity of impedance matching in a tuned circuit
25. Explain how the quarter wave line can be used as a Antenna tuners
26. Define and state the importance of Standing waves and compute standing wave ratio

PART-B

1. Explain the different types of transmission lines in detail
2. Explain the half wave dipole and folded dipole antenna
3. Explain the Ground plane antenna and directional antennas
4. Explain the concept of antenna impedance matching
5. Compare the different propagation modes of RF Signal
6. Explain about parasitic arrays and Driven arrays
7. Explain 2 cavity klystron in detail
8. Mention the ideal transmission line application
9. Explain 2 reflex klystron in detail
10. Explain 2 Magnetron in detail
11. Explain the different modes of RF Wave Propagation
12. Explain the different types of antenna in detail
13. Explain Waveguides and its modes of operation
14. Explain about different types of Microwave Semiconductor diodes
15. With a neat diagram, explain the Working and principle of Traveling Wave tube

UNIT II SATELLITE COMMUNICATION

PART- A

1. Define Centripetal /Centrifugal force
2. Define Satellite
3. State the Necessity of Choosing the orbit in Launching the Satellite
4. Define Apogee and Perigee
5. Define Angle of Inclination
6. Define Angle of elevation
7. What is a subsystem?
8. State the necessity of transmitter and receiver subsystem
9. Explain the process involved in GCE transmitter and receiver
7. Draw the block diagram of transmitter and receiver
- 8.State the necessity of loop in a microwave devices
- 9.Draw and mention the axis of Circular and elliptical orbit
- 10.Define Geosynchronous Satellite
- 11.Explain the necessity of thruster jet in Satellite
- 12.State the necessity of three stabilization technique in launching the satellite

- 13.Define Sub Satellite point
- 14.Explain about longitude and latitude
15. What is tracking system?
- 16.Define ascending node and descending node
- 17.Define prime meridian
- 18.define satellite payload and space probe

19. Define transfer orbit
20. What is a repeater?
21. Define Transponder
22. With an example ,explain the bandwidth allocation in satellite communication
- 23.Define frequency reuse
- 24.Define Spatial Isolation
- 25.Explain about single and double frequency transponders
- 26.Mention the application of Satellite Communication

PART-B

1. Explain in Detail about Satellite Orbits
2. Explain about the Three Stabilization Techniques
3. Explain in detail about Satellite launching
4. Give the necessary block diagrams and explain about transponders, satellite frequency allocation, and bandwidth
5. Give the necessary block diagrams and explain about Spatial isolation and frequency reuse concept
6. Draw the block diagram of an Earth station and explain in detail
7. State the necessity of GCE transmitter and receiver of an earth station
8. Explain in detail about Surveillance in detail
9. Explain in detail about Navigation in detail
10. Explain in detail about TV distribution
11. Explain in detail about satellite telephone
12. Explain the basic concepts of the mobile communication systems

UNIT III FUNDAMENTALS OF FIBER OPTIC COMMUNICATION

PART-A

1. Mention the advantages of optical fibers in communication systems
2. Define light pipe or light guide
3. Define geometric ray tracing
4. What is Total internal reflection?
5. Define refraction
6. Write the expression of snell's law
7. How the maximum acceptance angle of a fiber can be obtained?
8. Write the expression for the numerical aperture
9. Define index profile
10. Define graded index profile
11. Define Step index profile
12. What are the different modes of propagation in optical communication systems?
13. Draw the different modes of propagation in optical fiber
14. Write the expression for normalized frequency of a optical fiber
15. An optical fiber is made of a glass with a refractive index of 1.55 and is clad with another glass with a refractive index of 1.51. Launching takes place from air. a) What numerical aperture does the fiber have? b) what is the acceptance angle?
16. The fiber has a core diameter of $50\mu\text{m}$ and is used at a light wavelength of $0.80\mu\text{m}$. find its V number
17. What are the different types of losses in fibers?
18. Define dispersion and explain its types
19. Three semiconductor diodes are made using materials that have energy band gaps of 1.9, 1.46 and 0.954 eV. Find the wavelengths and frequencies of the light produced by them
20. State the Principle behind the operation of LED
21. State the Principle behind the operation of LASER
22. Write the Expression for Bragg relationship
23. Define photodiode
24. List the different types of losses in connectors and splicers
25. Draw the block diagram of optical receiver circuit

PART-B

1. Explain the principles of light transmission in a fiber
2. Derive the expression for Numerical aperture due to the effect of reflection and refraction
3. Derive the expression for the no.of.modes in step-indexed fiber
4. The fiber is designed as a graded index fiber with a grading profile of 2, but with the same dimensions and indexes of refraction. Find the no.of.modes it will support
5. A Single mode fiber is made with a core diameter of $10\mu\text{m}$ and is coupled to a laser diode that produces $1.3\mu\text{m}$ light. its core glass has a refractive index of 1.55. a) Find the maximum value required for the normalized index difference) Find the refractive index required for the cladding glass) Find the fiber acceptance angle
6. Explain the different types of losses in fiber.
7. Explain the Intermodal dispersion in the fiber
8. Draw the spectral component and explain the chromatic dispersion in detail
9. Explain LED and Semiconductor laser diodes in detail
10. Explain Fabry Perot laser diode
11. Explain the different types of photodetectors in detail

UNIT IV TELEPHONE SYSTEM AND ITS APPLICATION

PART-A

1. Define terminal set
2. Define Subscriber line interface circuit
3. What are the functions of SLIC?
4. The electromagnetic ringer is replaced by a Motorola MC34017. Give reason
5. Define Multi frequency tone dialing
6. Define feed through loss
7. Define negative impedance amplifier
8. State Barkhausen criteria
9. Define trunk circuits
10. What are the functions of facsimile?
11. Define Scanning. Explain its types
12. Define Synchronization
13. The drum diameter of a facsimile machine is 70.4mm and the scanning pitch is 0.2mm per scan. Find the index of cooperation
14. What is AMPS?
15. Define cell
16. What are the functions of MTSO?
17. Draw the block diagram of a paging system
18. What type of modulation is used in a cellular radio?
19. What is the purpose of the APC Circuit?. What operates this circuit?
20. What is the source of the frequency divider ratios in the frequency synthesizer PLLs? in the cellular telephone?
21. Draw the block diagram of digital paging receiver
22. What is ISDN?
23. What type of signal can an ISDN system carry?
24. What is basic frequency response of the telephone local loop?. can it carry digital as well as analog signals?

PART-B

1. Explain the basic telephone systems in detail
2. Explain Electronic telephone systems with neat block diagram
3. Explain Cordless telephones with necessary block diagrams
4. Explain the BORSCHT functions in the subscriber line interface and its hierarchy
5. What are the components of the facsimile system?. Explain how drum scanner is used in early fax machine.
6. Explain how LED/CCD scanner is used in a modern fax machine.
7. Explain fax machine operation with neat block diagram
8. Draw the block diagram of the cellular transmitter and receiver and explain the each block
9. State the necessity of frequency synthesizers in cellular system. with neat block diagram explain it briefly
10. Explain Paging systems with its neat block diagram
11. What is the name of the signal encoding used in ISDN to achieve high data rates on a low data rate lines?. state the specification of the coding method?
12. Explain ISDN Signals and ISDN Frame formats with neat diagram

UNIT V CELLULAR COMMUNICATION

PART-A

1. Define pseudo noise sequence. (2)
2. Define spread spectrum technique (2)
3. Differentiate Slow and fast FH SS technique. (2)
4. Differentiate TDMA and FDMA. (2)
5. Define processing gain for DS SS technique (2)
6. What are the advantages of Spread Spectrum techniques? (2)
7. Differentiate DS –SS and FH-SS. (2)
8. Define processing gain for FH SS technique (2)
9. What are the disadvantages of DS SS techniques? (2)
10. What are the advantages of FH SS techniques? (2)
11. Define hard handoff and soft handoff

PART- B

1. Explain in detail the transmitter and receiver of DS SS technique. (16)
2. Explain in detail the transmitter and receiver of FH SS technique. (16)
3. Explain in detail the characteristics of PN sequence (16)
4. Explain the two common multiple access technique for wireless communication. (16)
5. Differentiate direct sequence and frequency hop spread spectrum technique (16)
Compare and contrast TDMA and CDMA techniques
6. Explain IS-95 CDMA Technique in detail
7. Explain forward and reverse channels in detail
8. Explain power control management in cellular communication in detail