SYLLABUS S.Y.B.Sc. Computer Science – Digital System Hardware (ELC-211 / 21321)

UNIT- 1: Digital circuit design [12]

Introduction to digital circuit design, Circuit design using logic gates: Binary to gray converter, Gray to Binary converter, Decimal to BCD encoder, Circuit designusing state table/K-map: Design of Full adder, full subtractor, BCD to seven segment decoder, Concept of excitation table, Design of 3 bit synchronous up counter , 3 bit random sequence generator .

UNIT- 2: Memory [12]

Memory Architecture, Memory Hierarchy, Introduction to USB storage device, Memory parameters (Access time, speed, capacity, cost), Vertical & horizontal Memory expansion (increasing the capacity, increasing word size), Associative Memory, Cache memory, cache mapping techniques, virtual memory, virtual memory mapping (paging and segmentation).

UNIT- 3: Computer Organization [14]

Concept of Address Bus, Data Bus, Control Bus. Register based CPU organization, stack organization, I/O organization: need of interface, block diagram of general I/O interface. Working concepts like polling, interrupt initiated data transfer. Concept of DMA , DMA transfer, DMA Controller Serial communication: Synchronous, asynchronous and their data transmission formats, RS–232, General block diagram of UART.

UNIT- 4: Microprocessor [10]

Evolution of Microprocessor (8086 to Pentium 4), Features like address, data, bus size, speed, cache capacity, number of parallel instructions executed. Concept of RISC & CISC, Von-Neumann & Harvard Architecture, Concept of pipeline. Architecture of basic microprocessor: 8086 & Pentium (Basic Version), Introduction to multicore processors, its development and impact on Hardware, Software.

UNIT- 1: Digital circuit design

1. Answer the following questions in one or two sentences. (1 Marks Each)

1. Convert (111011)2 into Gray code.
2. Define Excitation table.
3. Convert the binary (110101)2 into Gray code.
4. Draw the excitation table for JK flip-flop,
5. What is the BCD equivalent of the decimal number 9 ?
6. Convert $(11101)_{GRAY}$ into $(?)_2$?
7. What is state diagram ?
8. How many address lines are required to address 1MB memory?
9. Convert 100101 gray code in to Binary.
10. Define State Table.
11. Give status of 7-segments a,b,c,d,e,f & g to display number 5 on common anode display.

2. Attempt the following : (5 Marks Each)

1. Design an adder circuit to add three bits A, B and C.
2. Draw a truth table for conversion of BCD data to 7 segment output. Also design combinational circuit for segment ‘d’ using K map.
3. Draw the excitation table and the K maps for the following state diagram.
4. Design full adder circuit using K-Map technique.
5. Draw the truth table for BCD to seven segment decoder using common cathode type of display and design combinational circuit to glow the segment 'C' of the display using K-map.
6. Design a combinational logic circuit to convert 4-bit binary number into Gray Code.
7. Design 3-bit synchronous up counter using J-K Flip-flops.
8. Using rules of Boolean algebra find out put expression for, What is meant by diagonal and offset adjacencies.
9. For the following state diagram design the random sequence generator.
10. Design Decimal to BCD encoder and discuss its working.

UNIT- 2: Memory

1. Answer the following questions in one or two sentences. (1 Marks Each)

1. What is CAM ?
2. Define the term hit and miss in cache memory.
3. Mention the mapping techniques used in virtual memory.
4. How many address lines are required to access 256 MB of RAM ?
5. How many address lines are required to address 1 kB of memory ?
6. Find the hit ratio of the cache if the number of hits are 200 out of 350 total memory references.
7. Define memory access time.
8. What is virtual memory.
9. Mention any two mapping technique used with cache memory.
10. If we have to build 16 k × 32 memory using 4k × 4 memory how many memory chips of 4k × 4 memory required. Find number of address lines required for final memory.
11. Define the capacity of Memory.
12. What is Stack?

2. Attempt the following : (5 Marks Each)

1. Draw the general architecture of a memory and explain the function of various blocks in it.
2. What is the advantage of a cache ? Explain the direct mapping technique used in cache.
3. If main memory capacity is 2 KB, virtual memory capacity is 256 KB and page size is 256 bytes, find the number of pages and number of blocks.
4. What is stack ? Explain register stack organization.
5. What is memory hierarchy ? Explain two and three levels of memory hierarchy.
6. Explain direct mapping technique of cache memory.
7. Define hit ratio. If h = 10 nsec and c t = 100 nsec, then calculate the average memory access time.
8. A machine makes 1000 references to memory and 850 time the information is found in the cache. If the cache access time is 100uS and main memory access time is 800uS, find the average access time. What will happen if hit ration is 100% ?
9. What is an interface ? mention important reasons for using an interface.
10. Explain virtual mapping using paging. What is it's disadvantages.
11. Explain how push and pop are implemented in memory stack. Where do you think the stack pointer has to be initialised in memory stack ?
12. Explain segmentation technique of virtual memory mapping.
13. Available memory chip size is 256 x 8 using this build the memory of size 1K x 8.
14. Explain with neat diagram Associative memory.

UNIT- 3: Computer Organization

1. Answer the following questions in one or two sentences. (1 Marks Each)

1. Mention the operations that can be performed on a stack.
2. Why is serial communication slow ?
3. What is priority interrupt ?
4. Give two features of CISC architecture.
5. What is the size of data bus and address bus of 8086 microprocessor ?
6. State the functions of CARRY flag.
7. Give the function of control bus.
8. Mention types of serial data communication.
9. Define Polling.
10. If CS = 016A h and IP = 260B h, calculate the physical address for 8086 microprocessor.
11. Give any two specifications of RS-232.
12. "DMA data transfer is faster". Comment.

2. Attempt the following : (5 Marks Each)

1. Draw the block diagram of CPU organisation using 7 General purpose registers. Explain the working in brief.
2. Give the function of RTS, DTR, TXD and RXD signals of RS 232.
3. Explain the concept of pipelining.
4. Differentiate between asynchronous and synchronous serial data transfer.
5. Mention important specifications of RS232.
6. Explain parallel priority interrupt method.
7. Explain the general register organization using 7-general purpose registers and one external input.
8. Draw the block diagram of DMA controller. Explain the function of Address register, word count register and control register.
9. With a neat block diagram explain DMA controller.
10. Explain data transfer using DMA.

UNIT- 4: Microprocessor

1. Answer the following questions in one or two sentences. (1 Marks Each)

    1. Mention any two features of 8088 processor.
    2. What is a multicore processor.
    3. List general purpose registers of Pentium.
    4. Define Super scalar architecture.
    5. State segment registers of 8086 microprocessor.

2. Attempt the following : (5 Marks Each)
    1. Give the function of the following units of 8086
       I) Queue II) Flag register III) BIU IV) EU V) ALU.
    2. Draw and explain schematic to illustrate how Harvard architecture is different than Von-Neuman Architecture.
    3. Give the functions of the following registers:
       1. SP 2. IP 3. CS 4. AX 5. BP
    4. Compare 8086 and Pentium on the basis of address lines, data lines, availability of cache, clock speed and pipelines.
    5. Give functions of the following blocks of pentium :
       (*i*) Pipelines (*ii*) TLB (*iii*) FPU (*iv*) Prefetch buffer (*v*) Bus unit.
6. Compare between CISC and RISC Architecture.
7. Explain BIU (Bus Interface unit) of 8086 microprocessor.

Question Bank

S.Y.B.Sc. (C.S.) SEM-I

Electronics-II (Analog Systems)

2015-16

Prepared by: Mrs. Vandana Pagar

UNIT –I: Analog Electronic System

1 mark Questions

1. Define Sensor
2. Define Transducer
3. Define Active sensor
4. Define active transducer
5. Define Passive Sensor
6. Define Accuracy/Range/Linearity/Sensitivity/Resolution/Reproducibility of a sensor
7. Calculate output of LM35 at 55 degree centigrade
8. Calculate output of AD590 at 290 degree Kelvin
9. List any two light intensity sensors
10. What is the use of Fresnel lens in PIR based intruder detector system.
11. What is the principle of LVDT?
12. State applications of light sensors
13. State applications of tilt sensor
14. List any three types of tilt sensors

5 mark Questions:

1. Draw and explain black diagram of analog electronic communication system.
2. Give the comparison between active and passive sensors.
3. Give the important Specifications/Parameters of sensors.

4. Explain the working principle of PIR sensor in detail.
5. Explain the intruder detector system using PIR sensor in detail.
6. Explain the working principle of LVDT in detail.
7. Write a note on Tilt sensor.
8. Explain the working principle of LDR in detail.
9. Explain the working principle of Ultrasonic sensor in detail.
10. Explain the working principle of pH sensor in detail.
11. State 5 important features of LM 35.
12. State 5 important features of AD590.
13. Write a note on piezoelectric humidity sensor.
14. Explain working principle of capacitive touch sensor
15. Explain working principle of Resistive touch sensor
16. Explain the working of piezoelectric humidity sensor with the help of a neat diagram.
17. List three types of tilt sensors and explain tilt activated LED switch.

UNIT- 2: Signal Conditioning

1 Mark Questions

1. Define Filter
2. Define Active filter
3. Define passive filter
4. Define cut off frequency of low pass filter
5. What is an all pass filter
6. What is pass band?
7. What is Stop band?
8. Give the applications of filter
9. What is the use of Wheatstone's Bridge?
10. Draw circuit diagram of inverting amplifier using op amp
11. Draw circuit diagram of Level shifter.

12. Find out the value of unknown resistance in Wheatstone's bridge if R1=10K R2=10K , R3=15K
13. State any two important features of instrumentation amplifier.

5 Mark Questions

1. Draw and explain block diagram of AC signal conditioning system.
2. Draw and explain block diagram of DC signal conditioning system.
3. Explain the working of Wheatstone's bridge and state its application.
4. Explain instrumentation amplifier with a neat Circuit diagram.
5. Explain level shifter Circuit and its applications.
6. Active – passive filter: definition, comparison, advantages, disadvantages.
7. Explain the concept of Order of filter and its impact on performance.
8. Draw the circuit diagram of V to F converter and explain its working with proper waveforms.
9. Draw and explain circuit of low pass filter. Draw its frequency response
10. Draw and explain circuit of first order high pass Butterworth filter. Draw its frequency response.
11. Draw and explain circuit of wide band pass filter. Draw its frequency response.
12. Draw and explain circuit of narrow band pass filter. Draw its frequency response
13. Draw and explain circuit of wide band reject filter. Draw its frequency response
14. Draw and explain circuit of notch filter. Draw its frequency response
15. Design a first order low pass filter with a pass band gain of 2 and cut off frequency of 2 KHz. Draw the designed circuit.
16. Design a first order high pass Butterworth filter with a pass band gain of 2 and cut off frequency of 3 KHz. Draw the designed circuit.
17. Design a wide band pass filter with a pass band gain of 2 and FL= 2 KHz and FH=10 KHz. Draw the designed circuit.
18. Design a first order low pass filter with a pass band gain of 2 and cut off frequency of 2 KHz. Draw the designed circuit.
19. Design an active notch filter for rejecting the mains frequency of 50 Hz

UNIT- 3: Data Converters

1 Mark Questions:

1. Define Quantization error.
2. Define Resolution of ADC.
3. Define Conversion time of ADC.
4. Define accuracy and linearity for ADC.
5. Calculate time required for conversion in SA type ADC when clock frequency is 50 KHz.
6. Find number of comparators required for a 8 bit flash type ADC.
7. Calculate resolution of 4 bit R-2R ladder DAC if Vfs=10V
8. State any two advantages of R-2R ladder DAC over Binary weighted DAC.
9. State any two applications of ADC

5 mark Questions:

1. Explain working of resistive networks
2. Explain working of Binary weighted resistor DAC with a neat circuit diagram.
3. Explain 4 bit R-2R ladder and write expression for analog output voltage
4. Draw circuit diagram of R-2R ladder DAC. Determine full scale output voltage and analog output voltage for digital data 1100.
5. Draw general block diagram of DAC
6. List advantages of R-2R ladder DAC over binary weighted DAC.
7. Define accuracy, linearity and resolution of DAC.
8. How many bits are required to build R-2R DAC if reference voltage is 5V and DAC has resolution of 1 mV.
9. Find the output voltage from a 4-bit ladder type DAC for digital input 1010. Assume that 0=0V and 1=+10V.
10. Explain working of 4 bit dual slope ADC with appropriate diagrams.

11. Explain working of 3 bit Flash ADC with a neat circuit diagram.
12. Explain working of 2 bit Flash ADC with a neat circuit diagram.
13. Explain the working principle of successive approximation ADC with its block diagram.
14. Give the comparison between Dual slope ADC, Flash ADC, Successive approximation ADC.
15. Draw a circuit diagram of 4 bit R-2R ladder network DAC. For a 4 bit R-2R ladder assume '0'=0 volts and '1'=+12 Volts,

    Find:

    1) Full scale analog voltage

    2) Analog voltage for 1010 digital input

    2) Analog voltage due to LSB change.

UNIT – 4: Case studies

1 Mark Questions

1. Which type of filter is preferred in ECG system: LPF/HPF?
2. Which electronic components are used in Temperature monitoring system
3. Which type of sensors are used in Electrocardiography
4. What are the different types of temperature sensors available?
5. What is float switch?

5 Mark Questions

1. Explain working of temperature monitoring system using LM35.
2. Explain the working of Intruder detector system using PIR sensor.
3. Explain the working of water level indicator system using float switch.
4. Explain the working of Electrocardiography system.

MIT Arts, Commerce & Science College

Alandi (D), Pune-412105

Question Bank

Subject: The 8051 Architecture, Interfacing & Programming

Prepared by: Pallavi Hailkar

Chapter 1: Basics of Microcontroller & Intel 8051 architecture

Short Answer Questions (Marks -1)

1. Give features of 8051 microcontroller.
2. Which pins are used to select register bank.
3. What is the function of the bits PSW.3 and PSW.4?
4. Which ports requires external pull up register.
5. Give the function of PSEN pin.
6. Give the function of EA pin.
7. Give the function of ALE pin.
8. Which two ports are used as a lower & higher order address?
9. State features of 8051 microcontroller.
10. List different types of registers used in 8051.
11. List various types of SFR in a microcontroller.
12. State the difference between general purpose resisters and SFR's.
13. What is the size of ROM in 8051?
14. What is the address of stack when the 8051 is reset?
15. How many register banks are in 8051? Write their address.
16. Which of the port in 8051 has no alternate function?
17. What is the significance of EA pin of 8051?
18. State the significance of ALE pin of 8051.
19. What is the role of WR and RD pin?
20. Which port requires external pull up register?
21. What is size of RAM & ROM available in 8051?

Long Answer Questions (Marks -5)

1. Difference between micro-controller & micro-processor.
2. Explain block diagram of microcontroller.
3. Explain internal RAM organization with proper diagram.
4. Explain Program Status Word registers with diagram. (Give the function of each pin)
5. Explain the function of …..Port. (Port can be P0,P1,P2,P3)
6. Draw diagram of Interrupt Priority register and explain function of each pin (IP)
7. Draw diagram of Interrupt Enable register and explain function of each pin (IE)
8. Draw diagram of TCON (Timer Control Register) and explain function of each register.

9. Give the function of 8051 microcontroller pins(EA, PSEN, ALE)
10. Explain function assigned to Port 3
11. Interface 8kx8 data ROM with 8051 micro-controller.

Chapter 2: Programming Model of 8051

Short Answer Questions (Marks -1)

1. Explain assembler directives.
2. Comment: All the ports can be used for both input and output.
3. Write an instruction to get the status of P2.7 and P2.0
4. Write an instruction to toggle both bits at P1.7 and P1.0 continuously.
5. "SETB P2.1" makes P2.1 High will it affect on other bits of P2.
6. Which ports of the 8051 are bit addressable?
7. What is the dual role of port 2?
8. Why does port 0 need pull up resistors?
9. What are advantages of C programming?
10. State the directives used in 8051?
11. Questions based on instruction set (ex Explain function of DJNZ r2,Again)

Long Answer Questions (Marks -5)

1. Explain addressing modes of 8051 microcontroller.
2. How pull up registers are connected in Port 0. Explain with proper diagram.
3. Draw and explain the interfacing of seven segment display to 8051 microcontroller.
4. Write assembly language program for interfacing of LED's with 8051 microcontroller. (Draw interfacing diagram.)
5. Write an assembly language program to monitor the P1.5 when it is high make high to low pulse on P1.3
6. Write an assembly language program to generate a square wave of 25% duty cycle on Pin P2.3
7. Explain directives used in 8051
8. Write a program to toggle all the bits of P1 and P2 continuously
9. Explain alternate facilities available on Port 3
10. Explain in detail about port 0 and port 1
11. Questions based on addressing modes
    Ex. Explain following instructions
    a. CJNE A, #99H
    b. DJNZ R2, AGAIN
    c. MOV @R1, B
    d. MOVX A, @DPTR

Chapter 3: Timer/Counter serial communication, Interrupts & Programs using C Language

Short Answer Questions (Marks -1)

1. What is meant by the term ISR?
2. Show the instruction to enable the EX1 and timer 1 interrupt.
3. Which bits of the IE register belong to EX0?
4. What is the highest priority interrupt of 8051?
5. Explain the role of TCON.1 and TCON.3 in the execution of external interrupt 1.
6. Draw the bit format of TCON?
7. Draw the bit format of TMOD?
8. Draw the bit format of IE?
9. Draw the bit format of IP?
10. Find the value of TMOD for timer 1 in mode 2.

Long Answer Questions (Marks -5)

1. Write a c language program to generate a frequency of 2500Hz on P2.3(Use timer 1 mode 2 to create the delay)
2. Write a program that displays a value 'Y' at Port 0 and 'N' at port 2. And also generate a square wave.
3. Write an 8051 c program to toggle all bits of P2 continuously every 500ms. Use timer 1, mode 1 to create the delay
4. Write a program in which 8051 reads data from P1 and writes it to P2 continuously while giving a copy of it to the serial COM port to be transferred serially
5. Explain in detail about the interrupts available in 8051
6. Explain interrupt vector table for the 8052
7. Which steps are followed to enable an interrupt
8. Explain the concept of interrupts versus polling
9. Explain in detail the concepts of interrupt priority in 8051
10. Two switches are connected to P1.2 and P1.3 when a switch is pressed the corresponding line goes low write a program,
    a. Light all LED's connected to port 0, if the first switch is pressed
    b. Light all LED's connected to port 2, the second switch is pressed

Chapter 4: Interfacing, Programming using C-language & application of 8051

Short Answer Questions (Marks -1)

1. Draw diagram of ADC0804.
2. Explain the concept of data converter.
3. Explain serial ADC.
4. What is analog and digital ground?
5. Why separate grounds are provided for analog and digital signal.
6. If R=10k, and C=150pf calculate the clock frequency for ADC0808.
7. Assuming that R=5kΩ, I_{ref}=2mA, Calculate V_{out} for input 11001000(C8H).
8. What are the control pins of LCD?
9. State the full form of ARM and PIC microcontroller.
10. State the parameters of ADC.
11. Define step Angle.
12. State applications of Stepper motor.
13. State two applications of ARM or PIC.
14. Find step angle of stepper motor if steps per revolution is 8.

Long Answer Questions (Marks -5)

1. Explain the features and applications of ARM microcontroller.
2. Explain the features and applications of PIC microcontroller.
3. Write a program to display the message “WELCOME” on LCD with 8051 microcontroller.
4. Draw and explain pin diagram of ADC 0804.
5. Explain in brief the concept of parallel and serial ADC.
6. Explain the functions of pins of ADC 0804.
7. With proper interfacing diagram write a program to interface ADC 0804 to 8051 microcontroller.
8. Write a C program for generation of sine wave using DAC.
9. Explain working of stepper motor with proper diagram.
10. Write a C language program to interface stepper motor with microcontroller (Interfacing diagram is expected)
11. Write a note on ARM.
12. Define following parameters of ADC
    i) Accuracy
    ii) Resolution
    iii) Conversion time or settling time
    iv) Linearity
    v) Monotonocity

Question Bank

Subject: Communication principles

Class: S.Y.B.Sc (C.S.)

2015-16

CHAPTER 1

Introduction to Electronic Communication

5 Marks Questions:

1. Draw the block diagram of communication system? Explain the role of each element.
2. Explain simplex and duplex communication systems with suitable example.
3. Write a note on Asynchronous communication system.
4. Write a note on synchronous communication system.
5. Give the comparison between Synchronous and Asynchronous communication systems.
6. State limitations of Asynchronous data communication.
7. State the relation between channel and signal bandwidth for error free communication.
8. Define S/N ratio, channel bandwidth, bit rate, baud rate, signal bandwidth and channel bandwidth.
9. State and explain Nyquist theorem.
10. Explain the concept of companding.
11. Explain the serial mode of data transmission? State its merit and demerits?
12. Explain the Parallel mode of data transmission? State its merit and demerits?
13. Differentiate between serial and parallel data transmission
14. State and explain Shannon's Theorem.
15. Calculate the maximum bit rate for a channel having bandwidth 3100 Hz and S/N ratio 20 dB.
16. Calculate maximum bit rate for noise free bandwidth of 3KHz. Calculate number of signal levels needed to achieve maximum capacity in presence of noise with S/N equals to 30 dB.
17. What are different factors that decide channel capacity?
18. Explain the use of hamming code for error detection and correction. Calculate even parity hamming code for data 1001.

1 Marks Questions:

1. State various elements of communication system?

2. State the different types of communication system?
3. Define noise in communication system.
4. What are different types of noise signal?
5. Define channel bandwidth
6. Define signal to noise ratio
7. Define data rate and baud rate
8. Define channel capacity.
9. What is synchronous communication system?
10. What do you mean by simplex communication system?
11. Define half duplex Communication system.
12. Define full duplex Communication system.
13. Give one example of simplex and full duplex communication system.
14. State whether paging services and Radar are simplex, half duplex or full duplex?
15. State Nyquist's Theorem.
16. Write the expression for maximum data rate using Shannon's Theorem
17. Give the expression for Shannon's Channel capacity.
18. State Shannon's theorem.
19. What are the drawbacks of synchronous data communication
20. Why a synchronous transmission is not suitable for communicating a bulk of data?
21. What are the advantages and disadvantages of asynchronous communication?
22. State any two applications of LF band.
23. Give bandwidth of voice signal.

Chapter 2

Modulation and Demodulation

5 Marks Questions

1. Define modulation? Explain the concept of amplitude modulation?
2. Explain need of modulation.
3. Explain the circuit of transistorized amplitude modulator.
4. What is demodulation? Explain diode demodulator circuit.
5. Give the comparison between AM and FM.
6. Define and explain the concept of frequency modulation; state its advantages and disadvantages.
7. Define and explain the concept of phase modulation; state its advantages and disadvantages.
8.
9. What is delta modulation with the help wave forms explain the delta modulation
10. Explain the concept of QPSK modem

11. Explain the concept of Pulse Code modulation
12. With the help of phasor diagram? Explain the concept QPSK modulation
13. What is modem? Draw block diagram and explain FSK modem
14. With the help of suitable block diagram and wave forms explain pulse amplitude modulation.
15. Explain PCM concept and PCM system. Also mention any two limitations of PCM
16. Explain AM with respect to definition AM wave forms, frequency spectrum, modulation index, Disadvantages
17. Explain the working of Diode demodulator for an amplitude modulated wave form.
18. What is Keying? What are the principles of ASK & FSK? Draw the output wave forms for sending data 01110101 using ASK?
19. Explain working of Diode modulator with suitable Circuit Diagram?
20. What is the principle of BPSK modem? Draw the output wave forms for sending data 10101110 using BPSK module?
21. Explain the working of QPSK modulator?
22. Draw and explain the functional block diagram of FSK modem
23. What is constellation diagram? Draw it for QAM how can this technique be used for increasing the speed of data communication?
24. Give the classification of modem based on data rates? State modulation technique use for each type?

1 mark question (Chapter 2)

1. Define modulation index of amplitude modulation
2. What is the need of modulation
3. Define base band communication
4. Define amplitude modulation
5. Define frequency modulation
6. Define phase modulation
7. Give any two advantages of FM and AM
8. Give any two application of AM
9. What is the function of demodulator
10. Give any two drawbacks of amplitude modulation
11. The modulating signal vm=10sin(2pi*100t) is used to modulate carrier signal of vc=20 sin(2pi* 2000t) in AM system. Calculate modulation index.
12. Name the type of modulation used in high speed modem's
13. Representation the case of over modulation in amplitude modulation with suitable wave form
14. Draw the phasor/constellation diagram of QPSK
15. What is the function of a modem?
16. Enlist different types of modems.

17. Which type of modulation technique is used in medium speed modem
18. Explain the term quantization with respect to PCM
19. State the advantages of DM over PCM.
20. State any one limitation of delta modulation
21. Which type of modulation technique is used in low speed modem
22. What is ASK/FSK/PSK
23. What is over modulation?

Chapter 3

Multiplexing and multiple access techniques

5 Mark Questions

1. Compare TDM and FDM
2. What is TDM? Differentiate between synchronous and asynchronous TDM
3. What is the need guard band in FDM
4. Explain the concept of FDM for broadband communication.
5. Explain the grouping the concept in frequency multiplexing and what is the use of FDM in telephony system
6. Explain how TDM can be use for sending several base band channels on a single transmission line
7. What is FDM explain the formation of 12 channel group
8. Write a note on code division multiplexing and space division multiplexing
9. Explain Code division multiplexing with proper diagram
10. Explain TDMA
11. Compare FDMA,TDMA & CDMA
12. Explain CDMA
13. State and explain the types of spread spectrum techniques
14. Explain the concept of frequency hopping spread spectrum with proper diagrams.
15. Write a note on DSSS
16. Explain the principle of SDMA

1 mark Questions

1. What is guard band
2. What is multiplexing
3. Name various multiple access method

4. What is Spread spectrum technique
5. State features of FDMA /TDMA/CDMA/SDMA
6. State advantages and disadvantages of TDMA
7. What is SDM
8. What is FDM
9. What is CDM
10. What is TDM
11. Define Dwell time
12. State applications of FDM
13. State any two advantages of FHSS over DSSS
14. State advantages of DSSS
15. State advantages of spread spectrum technique

Chapter 4
Wireless Communication System
5 marks questions

1. Define the term antenna and explain its radiation mechanism.
2. Write in detail about parameters of antenna
3. Give the comparison between wired and wireless communication
4. Explain the concept of cellular system.
5. Explain the advantages of cellular system in detail
6. Explain the detailed architecture of GSM
7. Write a note on Handover in GSM
8. Write a note on GPRS
9. Explain Infra Red communication in detail.
10. Explain the important features of Zigbee
11. Explain the working of Bluetooth
12. Explain Wi-Fi technique
13. Give the comparison between Bluetooth, Wi-Fi and Zigbee based on Range, Speed, type of protocol used etc.
14. Explain ADHOC network
15. List the different protocols used in communication system and explain RFID

1 mark Question

1. What is an antenna?
2. Define radiation pattern of an antenna
3. Define directive gain
4. Define power gain

5. Define directivity
6. Define beam width of an antenna
7. Define Front to back ratio of an antenna
8. Define Bandwidth of an antenna
9. Define isotropic antenna
10. What is major lobe?
11. What is base station?
12. State different types of handover scenarios in GSM.
13. Define cell and cluster
14. What is frequency reuse?
15. Define GSM
16. Define piconet and scatter nets.
17. Write any two functions of Network and Switching Subsystem(NSS) /Radio Subsystem(RSS)/ Operation subsystem(OSS).

**********Best of Luck*********