Department of Information Technology

Data Communication Systems

(II B.tech -I Sem)

T.N.V.S.PRAVEEN

Asst. Professor

J.B. Institute of Engineering & Technology

Yenkapally, Moinabad (Mandal)

Himayathnagar (post), Hyderabad

Results Target:-

Total Strength of the Class:

S. No	Class / Division	No. of Students
a.	First Class with Distinction	
b.	First Class	
c.	Pass Class	

Method of Evaluation:-

a.	Internal Examination	2
b.	Unit Wise Assignments	4
c.	Descriptive Exam	2
d	Objective	2
e.	Final Examination	1

Course Overview:-

It is hard to imagine a world without the Inter-net. Networking has made the sharing of information much faster than it was before. We get emails and instant messages with pictures attached instead of waiting days for postal delivery. We register \on-line" for classes instead of waiting \in line" to pull computer cards. We buy worldwide from eBay or locally from Craig's List instead of visiting our local bricks-and-mortar store.

People want to be connected. The world needs workers with technical skills. This course is focused on those skills: creating wiring, connecting computers, and making networks. This course will prepare you to understand, set up, and operate your own home network, or small business, or Internet Cafe. You will understand the fundamentals of networking and what things are necessary for success with those activities.

Building on that foundation, this course will prepare you to take other courses in the IT major. IT 426 Computer Network Servers and IT 480 Computer Network Design build on your knowledge from IT 280. In IT 426 you can develop skill and experience conjuring and operating network servers. In IT 480 you can develop skill and experience conjuring networking equipment such as switches and routers.

J.B.Institute of Engg & Technology

Department of Information Technology

Syllabus

Subject Name: Data Communication Systems Subject Code: 53036

Class : II B.tech -I SEM

Sl.No	Unit No:	Details of the unit
01	Unit I	**INTRODUCTION TO DATA COMMUNICATIONS AND NETWORKING:** Standards Organizations for Data Communications, Layered Network Architecture, Open Systems Interconnection, Data Communications Circuits, Serial and parallel Data Transmission, Data communications Circuit Arrangements, Data communications Networks, Alternate Protocol Suites. **SIGNALS, NOISE, MODULATION, AND DEMODULATION:** Signal Analysis, Electrical Noise and Signal-to-Noise Ratio, Analog Modulation Systems, Information Capacity, Bits, Bit Rate, Baud, and *M*-ary Encoding, Digital Modulation.
02	Unit II	**METALLIC CABLE TRANSMISSION MEDIA:** Metallic Transmission Lines, Transverse Electromagnetic Waves, Characteristics of Electromagnetic Waves, Transmission Line Classifications, Metallic Transmission Line Types, Metallic Transmission Line Equivalent Circuit, Wave Propagation on Metallic Transmission Lines, Metallic Transmission Line Losses. **OPTICAL FIBER TRANSMISSION MEDIA:** Advantages of Optical Fiber Cables, Disadvantages of Optical Fiber Cables, Electromagnetic spectrum, Optical Fiber Communications System Block Diagram, Optical Fiber construction, The Physics of Light, Velocity of Propagation, Propagation of Light Through an Optical fiber Cable, Optical Fiber Modes and Classifications, Optical Fiber Comparison, Losses in Optical Fiber Cables, Light sources, Light Detectors, Lasers.
03	Unit III	**DIGITAL TRANSMISSION:** Pulse Modulation, Pulse code Modulation, Dynamic Range, Signal Voltage –to-Quantization Noise Voltage Ration, Linear Versus

		Nonlinear PCM Codes, Companying, PCM Line Speed, Delta Modulation PCM and Differential PCM. **MULTIPLEXING AND T CARRIERS:**Time- Division Multiplexing, T1 Digital Carrier System, North American Digital Multiplexing Hierarchy, Digital Line Encoding, T Carrier systems, European Time-Division Multiplexing, Statistical Time – Division Multiplexing, Frame Synchronization, Frequency- Division Multiplexing, Wavelength-Division Multiplexing, Synchronous Optical Network.
04	Unit IV	**WIRLESS COMMUNICATIONS SYSTEMS:** Electromagnetic Polarization, Rays and Wave fronts, Electromagnetic Radiation, Spherical Wave front and the Inverse Square Law, wave Attenuation and Absorption, Optical Properties of Radio Waves, Terrestrial Propagation of Electromagnetic Waves, Skip Distance, Free-Space Path Loss, Microwave Communications Systems, Satellite Communications Systems.
05	Unit V	**TELEPHONE INSTRUMENTS AND SIGNALS:** The Subscriber Loop, Standard Telephone Set, Basic Telephone Call Procedures, Call Progress Tones and Signals, Cordless Telephones, Caller ID, Electronic Telephones, Paging systems. **THE TELEPHONE CIRCUIT:** The Local Subscriber Loop, Telephone Message- Channel Noise and Noise Weighting, Units of Powers Measurement, Transmission Parameters and Private-Line Circuits, Voice-Frequency Circuit Arrangements, Crosstalk.
06	Unit VI	**CELLULAR TELEPHONE SYSTEMS:** First- Generation Analog Cellular Telephone, Personal Communications system, Second-Generation Cellular Telephone Systems, N-AMPS, Digital Cellular Telephone, Interim Standard, North American Cellular and PCS Summary, Global system for Mobile Communications, Personal Communications Satellite System.
07	Unit VII	**DATA COMMUNICATIONS CODES, ERROR CONTROL, AND DATA FORMATS:** Data Communications Character Codes, Bar Codes, Error Control, Error Detection, Error Correction, Character Synchronization. **DATA COMMUNICATIONS EQUIPMENT:** Digital Service Unit and Channel Service Unit, Voice- Band Data Communication Modems, Bell Systems-Compatible Voice- Band Modems, Voice- Band Modern Block Diagram, Voice- Band Modem

		Classifications, Asynchronous Voice-Band Modems, Synchronous Voice-Band Modems, Modem Synchronization, ITU-T Voice-Band Modem Specifications, 56K Modems, Modem Control: The AT Command Set, Cable Modems, Probability of Error and Bit Error Rate.
08	Unit VIII	**DATA –LINK PROTOCOLS:** Data –Link Protocol Functions, Character –and Bit- Oriented Protocols, Data Transmission Modes, Asynchronous Data – Link Protocols, Synchronous Data – Link Protocols, Synchronous Data – Link Control, High – Level Data – Link Control.

Text Books/ Material:-

Text Books (TB)

TB1Introduction to Data Communications and Networking, Wayne Tomasi, Pearson Education.

Suggested/ Reference Books (RB)

RB 1 :Data Communications and Networking, Behrouz A Forouzan, Fourth Edition.TMH.

RB 2 :Computer Communications and Networking Technologies, Gallow, Second Edition Thomson

RB 3 :Computer Networking and Internet, Fred Halsll, Lingana Gouda Kulkarni, Fifth Edition, Pearson Education.

Web sites:

W1= Web resource1=http://www.google.com

W2= Web resource2=http://www.wikipedia.com

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SUBJECT PLAN :

Subject Name : Data Communication Systems Subject Code : 53036

Class : II B.Tech Faculty Name : T N V S PRAVEEN

Number of Hours / lectures available in this Semester / Year 65

Distribution of Hours Unit – Wise

Unit	Topic	Total No. of Hours
I	Standards Organizations for Data Communications	11
	Layered Network Architecture	
	Open Systems Interconnection	
	Data Communications Circuits	
	Serial and parallel Data Transmission	
	Data communications Circuit Arrangements	
	Data communications Networks	
	Alternate Protocol Suites	
	SIGNALS, NOISE, MODULATION, AND DEMODULATION	
	Signal Analysis, Electrical Noise and Signal-to-Noise Ratio	
	Bit Rate, Baud, and *M*-ary Encoding, Digital Modulation	

II	METALLIC CABLE TRANSMISSION MEDIA	**12**
	Metallic Transmission Lines, Transverse Electromagnetic Waves	
	Characteristics of Electromagnetic Waves	
	Transmission Line Classifications	
	Metallic Transmission Line Types	
	Metallic Transmission Line Equivalent Circuit	
	Wave Propagation on Metallic Transmission Lines	
	Metallic Transmission Line Losses	
	Advantages of Optical Fiber Cables, Disadvantages of Optical Fiber Cables	
	Electromagnetic spectrum, Optical Fiber Communications System Block Diagram	
	Optical Fiber construction, The Physics of Light, Velocity of Propagation	
	Propagation of Light Through an Optical fiber Cable	
III	Pulse Modulation, Pulse code Modulation	**12**
	Dynamic Range	
	Signal Voltage –to-Quantization Noise Voltage Ration	
	Linear Versus Nonlinear PCM Codes	
	Companding	
	PCM Line Speed	
	Delta Modulation PCM	
	Differential PCM	
	Time- Division Multiplexing, T1 Digital Carrier System, North American Digital Multiplexing Hierarchy	
	T Carrier systems, European Time- Division Multiplexing, Statistical Time – Division Multiplexing	
	Frame Synchronization	
	Wavelength- Division Multiplexing	

IV	Electromagnetic Polarization Rays and Wave fronts Electromagnetic Radiation Spherical Wave front and the Inverse Square Law wave Attenuation and Absorption Optical Properties of Radio Waves Terrestrial Propagation of Electromagnetic Waves Skip Distance, Free-Space Path Loss Microwave Communications Systems	**09**
V	The Subscriber Loop, Standard Telephone Set, Basic Telephone Call Procedures Call Progress Tones and Signals Cordless Telephones Caller ID Electronic Telephones Paging systems The Local Subscriber Loop Telephone Message- Channel Noise and Noise Weighting	**07**
VI	Units of Powerd Measurement, Transmission Parameters and Private-Line Circuits Voice-Frequency Circuit Arrangements, Crosstalk First- Generation Analog Cellular Telephone	**04**

VII	Data Communications Character Codes, Bar Codes, Error Control, Error Detection, Error Correction, Character Synchronization	**06**
	Digital Service Unit and Channel Service Unit	
	Voice- Band Modern Block Diagram, Voice- Band Modem Classifications, Asynchronous Voice-Band Modems	
	56K Modems, Modem Control	
	Cable Modems, Probability of Error and Bit Error Rate	
VIII	Data –Link Protocol Functions, Character –and Bit-Oriented Protocols	**04**
	Data Transmission Modes, Asynchronous Data – Link Protocols	
	Synchronous Data – Link Protocols	
	Synchronous Data – Link Control, High – Level Data – Link Control	
	Total	**65**

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LESSON PLAN:

Subject Name: Data Communication Systems Subject Code: 53036

Class: II B.Tech Faculty Name: T N V S PRAVEEN

Unit I :

INTRODUCTION TO DATA COMMUNICATIONS AND NETWORKING: SIGNALS, NOISE, MODULATION, AND DEMODULATION:

LECTURE PLAN:

Total no of classes: 11

Unit #	Topic as per JNTU syllabus	Lesson #	Suggested Books ** (Refer the list	Question Bank			Hand outs
				OQ	DQ	AQ	
Unit 1	Standards Organizations for Data Communications						
Unit 2	Layered Network Architecture						
Unit 3	Open Systems Interconnection						
Unit 4	Data Communications Circuits						
Unit 5	Serial and parallel Data Transmission						
Unit 6	Data communications Circuit Arrangements						
Unit 7	Data communications Networks						
Unit 8	Alternate Protocol Suites						

Unit 9	SIGNALS, NOISE, MODULATION, AND DEMODULATION						
Unit 10	Signal Analysis, Electrical Noise and Signal-to-Noise Ratio			**T**			**1**
11	Bit Rate, Baud, and *M*-ary Encoding, Digital Modulation			**T**			**1**

OBJECTIVE QUESTIONS :

1. If the Nyquist's rate of a signal x(t) is fo, the Nyquists rate of its integral is **fo**

2. In 8-PSK system, adjacent phasors differ by an angle given by(in degrees) **π/4**

3. Band Width efficiency of a Digital Modulation Method is

(Transmission Bit rate)/(Minimum Band width)

4. The minimum band width required to multiplex 12 different message signals each of band width 10 KHz is **120KHz**

5. The minimum band width required for a BPSK signal is equal to **bit rate**

6. The Auto-correlation function of White Noise is **Impulse function**

7. BPSK and QPSK systems are of **same bit error probability**

8. The phase angles of the possible outcomes of an 8-PSK system are obtained as **(2m+1)π/8 where 'm' is an integer**

DESCRIPTIVE QUESTIONS:

1. List out standard organizations
2. serial and parallel data transmission
3. Describe the following network topologies

i) bus ii) star iii) mesh

ASSIGNMENT QUESTIONS:

1. a. Define protocol. Distinguish between connection oriented and connection less protocol.

b. Describe the following network topologies

i) bus ii) star iii) mesh

2.explain the following terms

i)protocol

ii)peer to peer

iii)serial and parallel data transmission

iv)encapsulation and decapsulation

3. a) Describe OSI layered network.
   b) Describe network components, functions and features.
4) List out standard organizations.
5) Explain signal analysis.
6) I) write short notes on signal to noise ratio.
   II) Write about analog modulation.
   III) Write about Digital modulation

UNIT-II :

METALLIC CABLE TRANSMISSION MEDIA:

OPTICAL FIBER TRANSMISSION MEDIA:

LECTURE PLAN:

Total No of Classes: 12

S.No	Name of the Topic	Reference book code	No. of classes required
12	METALLIC CABLE TRANSMISSION MEDIA	T	1
13	Metallic Transmission Lines, Transverse Electromagnetic Waves	T	1
14	Characteristics of Electromagnetic Waves	T	1
15	Transmission Line Classifications	T/R	1
16	Metallic Transmission Line Types	T	1
17	Metallic Transmission Line Equivalent Circuit	T	1
18	Wave Propagation on Metallic Transmission Lines	T	1
19	Metallic Transmission Line Losses	T/R	1
20	Advantages of Optical Fiber Cables, Disadvantages of Optical Fiber Cables	T	1

21	Electromagnetic spectrum, Optical Fiber Communications System Block Diagram	**T**	**1**
22	Optical Fiber construction, The Physics of Light, Velocity of Propagation	**T**	**1**
23	Propagation of Light Through an Optical fiber Cable	**T / R**	**1**

OBJECTIVE QUESTIONS :

1.Frequency spectrumisdivided into _____categories:**Infrared,visible,Ultraviolet**

2. Wavelength=**Velocity of light/frequency**

3.Energy of photon=**Planck's constant*Frequency of light**

4.optical power=**Instantaneous charge/ Instantaneous change in time**

5.Refractive index is:**Amount of bending that occur at the interface of two materials with different densities**

6.lasers are:**Gas,Liquid,Solid,Semiconductor**

7.Characteristics of electromagnetic waves:**wave velocity,frequency,wavelength**

8.twisted pairs are:**Shielded and unshielded**

DESCRIPTIVE QUESTIONS :

1. Write about advantages and disadvantages of optical fiber cable
2. Explain about light sources and light detectors
3. Explain about transmission line classifications and characteristics of electro magnetic wave

ASSIGNMENT QUESTIONS:

1) Explain about metallic transmission line losses.
2) Explain about transmission line classifications and characteristics of electro magnetic wave.
3) Discuss about transverse electro magnetic waves.
4) Explain in detail about
   i) Coaxial and
   ii) Twisted pair.
5) Write about advantages and disadvantages of optical fiber cable.
6) Explain about velocity of propagation
7) a) Write about optical fiber modes and classification and
   b) Losses in optical fiber cables.
8) Explain about light sources and light detectors.
9) Explain about lasers.

UNIT-III :

DIGITAL TRANSMISSION:

MULTIPLEXING AND T CARRIERS:

LECTURE PLAN:

Total No of Classes: 12

S.No	Name of the Topic	Text/Reference book code	No. of classes required
24	Pulse Modulation, Pulse code Modulation	T	1
25	Dynamic Range	T	1
26	Signal Voltage –to-Quantization Noise Voltage Ration	T	1
27	Linear Versus Nonlinear PCM Codes	T	1
28	Commanding	T/R	1
29	PCM Line Speed	T/R	1
30	Delta Modulation PCM	T/R	1
31	Differential PCM	T	1
32	Time- Division Multiplexing, T1 Digital Carrier System, North American Digital Multiplexing Hierarchy	T	1
33	T Carrier systems, European Time-Division Multiplexing, Statistical Time – Division Multiplexing	T	1
34	Frame Synchronization	T	1

35	Wavelength- Division Multiplexing	**T**	**1**

OBJECTIVE QUESTIONS :

1. Companding results in **Uniform S/N ratio through out the base band signal**

2. A uniform quantizer is having a step size of .05 volts. This quantizer suffers from a maximum quantization error of **0.025 V**

3. In the output of a Delta Modulation speech encoder, the consecutive pulses are of opposite polarity during the time interval t=2 sec to t= 4 sec .This indicates that, during this interval **i/p to the modulator is essentially a constant**

4. 5. Under equal band width requirement , **sampling rate in Delta Modulation is more than that of PCM**

5. Which of the following signaling schemes is a differential coding scheme? **NRZ-I**

6. Granular Noise in Delta Modulation system can be reduced by **decreasing the step size**

7. quantization error is independent of **sampling rate**

8. The advantage of DPCM over Delta Modulation is **quantization noise power is less**

DESCRIPTIVE QUESTIONS :

1. . Discuss about Pulse code modulation?
2. Short notes on
   i) Signal voltage to Quantization noise voltage ratio?
   ii) Dynamic range?
3. Discuss about
   i) Time division multiplexing
   ii) Frequency division multiplexing

ASSIGNMENT QUESTIONS:

1. Discuss about Pulse code modulation?
2. What is companding and discuss its methods?
3. Short notes on
   i) Signal voltage to Quantization noise voltage ratio?
   ii) Dynamic range?
4. Explain about T1 Digital carrier system?
5. Discuss about
   i) Time division multiplexing

ii) Frequency division multiplexing

6. Explain about Digital line encoding?

UNIT-IV :

WIRLESS COMMUNICATIONS SYSTEMS:

LECTURE PLAN:

Total No of Classes: 09

S.No	Name of the Topic	Text/Reference book code	No. of classes required
36	Electromagnetic Polarization	T	1
37	Rays and Wave fronts	T/R	1
38	Electromagnetic Radiation	T/R	1
39	Spherical Wave front and the Inverse Square Law	T	1
40	wave Attenuation and Absorption	T	1
41	Optical Properties of Radio Waves	T	1
42	Terrestrial Propagation of Electromagnetic Waves	T	1
43	Skip Distance, Free-Space Path Loss	T	1
44	Microwave Communications Systems	T/R	1

OBJECTIVE QUESTIONS :

1.Electromagnetic waves consists:**Elctric and magnetic fields**

2.Ray is a **line**

3.Power density is :**rms electric field intensity/ rms magnetic field intensity**

4.Loss of energy is:**Attenuation**

5.Optical propertoes:Refraction.reflection,Diffraction,Interference

6.Microwave frequency range:**500MHz to 300GHz**
7.TDM**:time division multiplexing**

DESCRIPTIVE QUESTIONS :

1. Explain the following terms
   i) Electromagnetic polarization
   ii) Wave attenuation and absorption.

2. Compare three modes of propagating electro magnetic waves

ASSIGNMENT QUESTIONS:

1 . a. What is spherical wave front? Explain.
   b. Explain the operation of microwave radio link transmitter and receiver with the help of block diagram.
   b. Give geosynchronous orbit requirements.
2) a. Discuss optical properties of radio waves.
   b. Explain satellite orbits and orbital.
3) a. what is skip distance. Explain.
   b. What are the advantages of microwave radio communication?
c. What is free space path loss?
4) Explain the following terms
   i) Electromagnetic polarization
ii) Wave attenuation and absorption.
b. Compare three modes of propagating electro magnetic waves

UNIT-V:

TELEPHONE INSTRUMENTS AND SIGNALS:

THE TELEPHONE CIRCUIT:

LECTURE PLAN:

Total No of Classes: 07

S.No	Name of the Topic	Text/Reference book code	No. of classes required
45	The Subscriber Loop, Standard Telephone Set, Basic Telephone Call Procedures	T/R	1
46	Call Progress Tones and Signals	T	1
47	Cordless Telephones	T	1
48	Caller ID	T	1
49	Electronic Telephones	T	1
50	Paging systems	T/R	1
51	The Local Subscriber Loop	T	1
52	Telephone Message- Channel Noise and Noise Weighting	T	1

OBJECTIVE QUESTIONS :

1.Cordless phones occupied_____ frequency: **narrow band**
2. When was the first telephone was manufactured:**1920**
3. PSTN refers: **Public switched telephone network**.
4. Which type of keypad used in 2500 type telephone: **Touch-tone keypad**
5. Which type of plugs used in telephone cable -**RJ-11**
6. RJ Stands for: **Registered jacks**
7. How many conductors used in the RJ-11 :**six**
8. Switching systems outputs ____voltage: **-48vdc**
9. The ringer circuit is originally_____: **electromagnetic bell**
10. The STDP is circuit: **On/off hook**
11. Resistors and capacitors are known as____ : **equalizers**
12. Speaker converts electric signal into_____: **acoustic signal**
13. Dialing circuit contain____: **touch tone keypad**
14. Ring back tone frequency:**440hz to 480hz**
15. What is the frequency combinations of key 8 in DTMF:**852hz,1336hz**

DESCRIPTIVE QUESTIONS :

1. Explain Basic Telephone call procedure?
2. List and explain transmission parameters?
3. Discuss about units of power measurements?

ASSIGNMENT QUESTIONS:

1. Explain local subscriber loop?
2. Explain Basic Telephone call procedure?
3. Write short notes on
   i) Cordless phones ii)caller id
4. List and explain transmission parameters?
5. Discuss about units of power measurements?
6. Explain standard telephone set?

UNIT-VI:

CELLULAR TELEPHONE SYSTEMS:

LECTURE PLAN:

Total No of Classes: 03

S.No	Name of the Topic	Text/Reference book code	No. of Lecture classes required
53	Units of Powerd Measurement, Transmission Parameters and Private-Line Circuits	T	1
54	Voice-Frequency Circuit Arrangements, Crosstalk	T/R	1
55	First- Generation Analog Cellular Telephone	T	1

OBJECTIVE QUESTIONS :

1 Non linear crosstalk is a direct result of: non linear

amplification
2. Nature of cross talk is described in: intelligible
3. Signals propagatr in four wire circuit is: E-W direction
4. Cellular telephone operates in: frequency modulation
5. Expand FCC: federal communication commission
6. Bell telephone introduce_____: AMPS
7. AMPS use a technique: frequency division multiflexing
8. The mobile unit transmit carrier frequency uses:128 channels
9. Transmit carrier frequency f1 for (866hz):0.03N+825
10. Transmit carrier frequency f1__:0.03(N-1023)+825
11. Mobile identification has how many bits:34 bits
12. Mobile identification has _____bits area code :3
13. SID is :15 bit binary code
14. GSMA-Global System for mobile communication

DESCRIPTIVE QUESTIONS :
1. Explain about personal communication system?
2. Discuss about GSM?
3. Write about N-AMPS?

ASSIGNMENT QUESTIONS:
1. Explain about personal communication system?
2. Discuss about GSM?
3. Write about N-AMPS?
4. Explain personal satellite communication system and what are its advantages?
5. Discuss about interim standard 95?

UNIT-VII

DATA COMMUNICATIONS CODES, ERROR CONTROL, AND DATA FORMATS:

DATA COMMUNICATIONS EQUIPMENT:

LECTURE PLAN:

Total No of Classes: 05

S.No	Name of the Topic	Text/Reference book code	No. of classes required
56	Data Communications Character Codes, Bar Codes, Error Control, Error Detection, Error Correction, Character Synchronization	T/W1/W2	1
57	Digital Service Unit and Channel Service Unit		1
58	Voice- Band Modern Block Diagram, Voice- Band Modem Classifications, Asynchronous Voice-Band Modems		1
59	56K Modems, Modem Control		1
60	Cable Modems, Probability of Error and Bit Error Rate		1

OBJECTIVE QUESTIONS :

1. Error Control includes: Both error detection and error Correction

2. Error correction is accomplished with: Automatic repeat request [ARQ]

3. Automatic request repeat sometime called as: Automatic request for retransmission

4. The Morse code was introduced by Samuel F.B Morse.

5. When was the first mode code is used: 1844

6. After establishment of Morse code the world's first digital communications link between Washington,D.C., and Baltimore Maryland [Gantasala]using the telephone system.

7. The international Morse code for SOS(save our sip) is: . . ._ _ _...

8. The Morse for fraction bar is: _ . . _ .

9. The Baudot code is also called as: Telex code.

10. Which of the following are the Baudot code's special control functions Figure shift and letter shift.

11. RTTY stands for Radio teletype.

12. USASCII stands for: United States of American Standard

DESCRIPTIVE QUESTIONS :

1. Write short notes on
   i) Error Detection ii) Error correction
2. Asynchronous Voice band modems?
3. List and explain data communication character codes?

ASSIGNMENT QUESTIONS:

1. List and explain data communication character codes?
2. Explain about Bar codes?
3. Write short notes on
   i) Error Detection ii) Error correction
4. Discuss about character synchronization?
5. Explain about Voice-Band data communication modems/
6. Discuss about
   i) Asynchronous Voice band modems?
   ii) Synchronous Voice band modems?

UNITVIII:

DATA –LINK PROTOCOLS:

LECTURE PLAN:

Total No of Classes: 04

S.No	Name of the Topic	Text/Reference book code	No. of classes required
61	Data –Link Protocol Functions, Character –and Bit- Oriented Protocols		1
62	Data Transmission Modes, Asynchronous Data – Link Protocols		1
63	Synchronous Data – Link Protocols		1
64	Synchronous Data – Link Control, High – Level Data – Link Control		1

OBJECTIVE QUESTIONS :

1. Which of these following is character oriented protocol: KERMIT
2. The more efficient protocol is: Bit Oriented protocol
3. SDLC stands for: Synchronous data-link communications.
4. HDLC stands for: High-level data-link Communications.
5. When an operator is not typing, the terminal is in: idle sate
6. The non data characters are: Bell(BEL),CR(carriage return),LF (line feed)
7. The assortment of characters transmitted as a group is called as: block or frame Of data
8. In a polling environment the which mode of transmission is more appropriate for multi drop data communications circuits Operating: Block mode
9. The fist file transfer protocol is designed by: Ward Christiansen
10. In which year the first file transfer protocol is designed: In 1979
11. Christiansen's protocol is now called as: XMODEM
12. XMODEM is designed for to use: between two PCs (or) between One PC and a main frame or host computer
13. The frame format of XMODEM consists of: four fields
14. Character oriented protocols sometimes called as: Byte-oriented protocols

DESCRIPTIVE QUESTIONS :

1. Short notes on
   i) Asynchronous Data-link protocols
   ii) Synchronous Data-link protocols

2. Discuss about High-level Data-link control?

ASSIGNMENT QUESTIONS:

1. Discuss character and bit oriented protocols?
2. Short notes on
   i) Asynchronous Data-link protocols
   ii) Synchronous Data-link protocols

3. Explain about synchronous Data-link control?
4. Discuss about High-level Data-link control?
5. Explain data link functions?

Time Table:-

DEPARTMENT OF INFORMATION TECHNOLOGY

INDIVIDUAL TIME TABLE

NAME OF THE FACULTY: **T N V S PRAVEEN**

Period	1	2	3	4		5	6	7
Time	9.00-9.50	9.50-10.40	10.40-11.30	11.30-12.20	LUNCH	12.50-1.40	1.40-2.30	2.30-3.20
Mon								
Tue								
Wed								
Thu								
Fri								
Sat								

Data Communication System (DCS):-

Total no of theory classes : 10

Total no of practical classes : 06

Total no of classes : 16

Internal Theory exams:-

J. B.Institue of Engineering & Techology

II B.tech -2012-Batch/I SEM (I-MID DESCRIPTIVE)

BRANCH: INFORMATION TECHNOLOGY

SUB: Data Communication Systems

TIME: 60 MINUTES **Marks: 10**

SECTION-A

Answer any TWO of the following: **(2x5=20M)**

1. xxxxxxxxxxxxxxx

a) xxxxxxxxxxxx

b) xxxxxxxxxxx

c) xxxxxxxxxxxxxxxxxx

2. xxxxxxxxxxxxxxxxxx

   a) xxxxxxxxxxxxxxxx

   b) xxxxxxxxxxxxxxx

   c) xxxxxxxxxxxxx

3. xxxxxxxxxxxxxxxxxxx?

4. xxxxxxxxxxxxxxxx? xxxxx?

J. B.Institue of Engineering & Techology

IIB.Tech -2012-Batch/I SEM (II-MID DESCRIPTIVE)

BRANCH: INFORMATION TECHNOLOGY

SUB: Data Communication Systems

TIME: 60 MINUTES **Marks: 10**

SECTION-A

Answer any TWO of the following: **(2x5=10M)**

1. xxxxxxxxxxxxxxx

a) xxxxxxxxxxxx

b) xxxxxxxxxxx

c) xxxxxxxxxxxxxxxxxx

2. xxxxxxxxxxxxxxxxxx

   a) xxxxxxxxxxxxxxxx

   b) xxxxxxxxxxxxxxx

   c) xxxxxxxxxxxxx

3. xxxxxxxxxxxxxxxxxxx?

4. xxxxxxxxxxxxxxxx? xxxxx?

Marks for the Internal Theory exams:-

ROLL.NO	NAME OF THE STUDENT	I MID (Des+Obj+Assign))	II MID Des+Obj+Assign))