[07 BENG – 3143]

III/IV B.Tech. DEGREE EXAMINATION.

First Semester

Computer Science and Engineering

DATA COMMUNICATION AND COMPUTER NETWORKS

(Effective from the admitted batch of 2022-2023)

Time : Three hours   Maximum : 70 marks

First Question is compulsory.

Answer any FOUR from remaining questions.

All questions carry equal marks.

SECTION A — (14 marks)

1.   (a)   Define Computer Network.

     (b)   What is Composite signal?

     (c)   What do mean by error control?

     (d)   What is packet fragmentation?

     (e)   Define Jitter.

     (f)   What are tile different transmission media?

     (g)   What is FDM?

SECTION B — (56 marks)

2. (a) Write short notes on circuit switching, packet switching and message switching.

   (b) Define switching and briefly explain the Datagram Approach in packet switching Method with neat diagram.

3. (a) Explain the working of electronic mail. How SMTP used in email applications?

   (b) List and discuss the types of DNS records.

4. (a) Discuss stop and wait protocol.

   (b) Discuss about Selective repeat ARQ.

5. (a) Explain distance vector routing in detail.

   (b) Discuss about Inter-network Routing.

6. (a) Explain about the Guided transmission Medias in computer networks.

   (b) Brief explain about the public switched telephone networks.

7. (a) Write briefly about World Wide Web.

   (b) Describe about High-speed LANs.

8. (a) Data Communication is a process of exchanging data or information explains with example.

   (b) Define 802.11 Architecture and frame structure with Example.

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[07 BENG – 3132]

III/IV B.Tech. DEGREE EXAMINATION.

First Semester

Computer Science and Engineering

DATA COMMUNICATIONS AND COMPUTER NETWORKS

(Common with Information Technology)

(Effective from the admitted batch of 2021–2022)

Time : Three hours   Maximum : 70 marks

Answer question No. 1 Compulsory.

Answer any other FOUR Questions from remaining.

All questions carry equal marks.

1. (a) Differentiate simplex and duplex communication systems.
    (b) How data is represented in case of ASCII coding system?
    (c) Write about Digital Signals.
    (d) Differentiate Analog and digital signals.
    (e) Define Piggybacking.
    (f) Write features of UDP.
    (g) What is SMTP?

2. (a) What are the applications and advantages of data communication networks?

(b) Explain the classification of data communication networks.

3. (a) Write about Block Coding and explain how the errors are detected and corrected using Block coding?

(b) Explain about HDLC Configurations, Transfer Modes and different types of frames.

4. (a) Find the CRC for the data polynomial $x9 + x7 + x5 + x2 + 1$, with the generator polynomial $x3 + x + 1$.

(b) Differentiate between Packet Switching and Circuit Switching. What kind of networks you will advocate for the PSTN and Internet respectively?

5. (a) Suppose the spectrum of a channel is between 5MHz and 6MHz. If the signal to noise ratio is found to be 24dB. Find the maximum number of signal levels in the maximum number of signal levels in the transmitted signal?

(b) Draw the block diagram of a general communication model and explain the function of each block?

6. Explain distance vector routing. What are the problems associated with Distance vector routing?

7. What is Domain Name system? Discuss the three main divisions of the domain name space.

8. (a) Assume a Go-Back N protocol is used with a window size of 4 and that the ACK for packet 2 gels lost. Show the events until packet 2 is acknowledged at the sender side?

(b) What are the various fields of TCP Header format? Clearly Explain the meaning of each field.

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DEC 2023

[07 BENG - 3132]

III/IV B.Tech. DEGREE EXAMINATION
Computer Science and Engineering
First Semester
DATA COMMUNICATIONS
AND COMPUTER NETWORKS
(Common with Information Technology)
(Effective from the admitted batch of 2021 - 2022)

Time : 3 Hours   Max. Marks : 70

Question No. 1 is compulsory.
Answer any FOUR questions from the remaining.
All questions carry equal marks.
Answer all parts of any question at one place.

1. Answer the following in brief:

   (a) What do you mean by Data Communication?

   (b) Define Multiplexing.

   (c) What is X.25 protocol?

   (d) Name any three methods of error detection.

   (e) Define firewalls and gateways.

   (f) What are functions of applications layer?

   (g) What do you mean by Ring Topology?

(P.T.O)

2. Explain in detail about logic and shift micro operation.

3. (a) Write briefly about communications model.

   (b) Define and explain types of networks.

   (c) Explain the operation of TCP / IP protocol architecture.

4. (a) Explain the need for flow control in the data link layer.

   (b) Discuss about error control protocol with diagram.

5. Classify wireless LANs & wired LANs and give LAN standards.

6. Discuss IP addressing procedure and its advantages.

7. List the transport layer's quality of service parameters and explain them.

8. Under what conditions of delay, bandwidth, load and packet loss will TCP retransmit significant volumes of data unnecessarily.

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III/IV B.Tech. DEGREE EXAMINATION.

Computer Science and Engineering

First Semester

DATA COMMUNICATIONS AND COMPUTER
NETWORKS

(Effective from the admitted batch of 2020-2021)

Time : Three hours   Maximum : 70 marks

First Question is Compulsory.

Answer any FOUR from the remaining questions.

All questions carry equal marks.

1. Answer all parts of any question at one place.

    (a) What is firewall?

    (b) Define Data Communications.

    (c) What is bit stuffing?

    (d) Give a formula for Nyquist bit theorem.

    (e) What is flooding?

    (f) What are the key elements for the protocol?

    (g) What is Multiplexing?

2. Explain about OSI Model with n ıt sketch.

3. What is an Error? Find CRC for

    Message = 101000101

    Pattern = 110101

4. What is Line Coding? Draw NRZ-L, NRZ-I, RZ, ME, DME for the sequence of 01001110.

5. What is flow control? Explain about Stop and Wait, Go-Back-N, selective-repeat.

6. Explain about HDLC frame format in detail.

7. (a) What are the network layer design issues?

    (b) Explain Shortest Path Routing algorithm with an example.

8. Write a brief note on :

    (a) World wide web

    (b) Electronic mail

    (c) DNS.

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III/IV B.Tech. DEGREE EXAMINATION.

Second Semester

Computer Science Engineering

DATA COMMUNICATIONS

(Effective from the admitted batch of 2006-2007)

Time : Three hours   Maximum : 70 marks

First question is compulsory.

Answer any FOUR from the remaining questions.

All questions carry equal marks.

Answer all parts of any question at one place.

1.   Write the following in brief.

(a)   What are the differences between analog and digital signals?

(b)   What is protocol? Define it.

(c)   Define flow control and list its protocols.

(d)   What CRC?

(e)   What are the different types of modems? List them.

(f)   List the characteristics of statistical TDM.

(g)   List basic terminal components.

2. Discuss in detail about OSI model protocol architecture with a neat diagram.

3. (a) What are the advantages and disadvantages of twisted pair? Explain its forms.

(b) Discuss about the capabilities, limitations applicability issues of NRE and Rt codes.

4. Define the terms "flow control" and 'Error Control'. Discuss about their protocols.

5. (a) Discuss about various communication processing devices.

(b) What are the basic terminal components? Discuss different types of terminals and their significance.

6. (a) What is multiplexing? Explain the differences between TDM and FDM.

(b) Write a detailed note on Data modems.

7. (a) Discuss the performance issues of stop and wait flow control.

(b) Distinguish between virtual circuits and datagrams. Explain how error are hadled in these two cases.

8. Write short notes on the following :

(a) Synchronous TDM

(b) Concentrators

(c) Multidrop lines

(d) Front-end processors

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III/IV B.Tech. DEGREE EXAMINATION.

Second Semester

Computer Science Engineering

DATA COMMUNICATIONS

(Effective from the admitted batch of 2006–2007)

Time : Three hours

Maximum : 70 marks

First question is compulsory.

Answer any FOUR from the remaining questions.

All questions carry equal marks.

Answer all parts of any questions at one place.

1. (a) Write any two difference between LANs and WANs.

   (b) Mention the advantages of standardizing protocols.

   (c) List the design factors related to the transmission medium and the signal that determines the data rate and distance.

   (d) What are the four important characteristics of an interface between the DTE and the DCE?

(e) What do you mean by flow control?

(f) Mention the purpose of switching processors.

(g) Why do we need a modem?

2. (a) Explain the purpose of various layers of OSI model.

   (b) List and explain the important characteristics of a periodic signal.

3. (a) Describe optical fibre transmission modes.

   (b) Why should PCM be preferable to DM for encoding signals that represent digital data?

4. (a) What are the three frame types supported by HDLC? Describe each.

   (b) Differentiate between selective repeat and Go back in ARQ techniques.

5. Give a brief note on the following :

   (a) Clustering of terminal devices

   (b) Front and processors

   (c) General purpose terminals.

6. (a) Why is a statistical time division multiplexer more efficient than a synchronous time division multiplexer?

   (b) Give a note on multidrop lines and concentrators.

7. (a) What function does a modem perform?

   (b) Describe the most significant transmission impairments.

8. (a) What is the bandwidth efficiency of FSK, ASK, PSK and QPSK for a bit error rate of 10^{-7} on a channel with an SNR of 12 dB?

   (b) Explain the requirements and objectives for effective data communication between two directly connected transmitting-receiving stations.

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II/IV B.Tech. DEGREE EXAMINATION

Second Semester

Computer Science and Engineering

DATA COMMUNICATIONS

(Common with information Technology)

(Effective from the admitted batch of 2015–2016)

Time : Three hours   Maximum : 70 marks

First question is compulsory.

Answer any FOUR from the remaining questions.

All questions carry equal marks.

Answer all questions of any part at one place.

1.   Write short notes on the following :

(a)   What is a Protocol?

(b)   Define Amplitude

(c)   What is meant by a Primary Station?
      A secondary Station.

(d)   Define data terminal Equipment

(e) Define TDM.

(f) Define Switching.

(g) What you meant by Line conditioning?

2. (a) Explain the protocol Architecture with a neat Sketch.

(b) Explain different Transmission Impairments.

3. (a) Explain the Applications of Optical fiber communications.

(b) What is the Bandwidth efficiency for FSK, ASK, PSK and QPSK for bit error rate of 10^{-7} on a channel with an S/N of 12db.

4. (a) Find the CRC for p = 110101 M = 101000110I.

(b) Explain the Frame structure of HDLC.

5. (a) List several types of data terminal Equipment and explain.

(b) Describe the operation of a UART transmitter and A UART receiver.

6. (a) Explain the concept of Switching in detail.

(b) Briefly explain the need of multiplexers in the Real-world.

7. (a) Explain the characteristics of Asynchronous voice-Band MODEMS.

(b) Explain the difference between dedicated Lines and Leased Lines.

8. (a) What is multiplexing? Explain FDM.

(b) Explain the characteristics of Statistical- Time division multiplexing.

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2nd year 2nd sem

[07 BENG – 2204]

II/IV B.Tech. DEGREE EXAMINATION.

Second Semester

Computer Science Engineering

DATA COMMUNICATIONS

(Common with Information Technology)

(Effective from the admitted batch of 2015–2016)

Time : Three hours   Maximum : 70 marks

First question is compulsory.

Answer any FOUR questions from the remaining.

All questions carry equal marks.

Answer all parts of any question at one place.

1.   (a)   How do guided media differ from unguided media?

    (b)   Define latency delay.

    (c)   List out the differences between flow control and error control.

(d) Differentiate between serial and parallel transmission.

(e) Explain the need of multiplexing in Data communication.

(f) Differences between Asynchronous and synchronous modems.

(g) List out the characterstics of Remote job entry terminals.

2. (a) Explain the need for a protocol architecture.

(b) Explain the TCP/IP protocol architecture.

3. (a) Describe PCM and DM of analog signal to digital data conversion.

(b) Explain in detail about wireless transmission.

4. (a) Explain in detail about HDLC protocol.

(b) Explain Go-Back-N error control technique.

5. (a) Explain basic terminal concepts.

(b) Explain the importance of clustering of terminal devices.

6. (a) Explain about switching processors.

(b) Explain about Fron-end processors.

7. (a) Explain about contrast the characteristics of synchronous TDM and Statistical TDM.

(b) Explain about Modem circuits.

8. (a) List out the most significant transmissions impairments.

(b) Explain the use of piggy backing.

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II/IV B.Tech. DEGREE EXAMINATION.

Second Semester

Computer Science Engineering

DATA COMMUNICATIONS

(Common with Information Technology)

(Effective from the admitted batch of 2015–2016)

Time : Three hours

Maximum : 70 marks

First question is compulsory.

Answer any FOUR questions from the remaining.

All questions carry equal marks.

Answer all parts of any question at one place.

1. (a) Explain the protocol vs interface.

   (b) Differences between analog and digital transmission.

   (c) List out the major differences between category 3 and 5 UTP cables.

   (d) Explain about infrared.

(e) Explain about multidrop lines.

(f) Difference between LAN and WAN.

(g) Define attenuation.

2. Explain about various layers of OSI-ISO reference model.

3. (a) Describe any two types of guided transmission media.

(b) A light signal is travelling through a fiber. What is the delay in the signal of the length of the fiber optic cable is 50 m, 100m and 2 km. (Assume propagation speed of 2×10^8 m/s)

4. (a) List the services provided by the data link layer.

(b) Explain about Go-Back-N ARQ error control mechanism.

5. (a) Compare and contrast asynchronous transmission and synchronous transmission.

(b) Describe about line configuration.

6. (a) Explain about multiplexers and concentrators.

(b) Compare and contrast remote job entry terminals and transaction terminals.

7. (a) Differentiates between FDM and TDM.

(b) Explain about digital carrier systems.

8. Write a short notes on :
   (a) Characteristics of data transmission.
   (b) Routing.
   (c) HDLC.