

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA – SEMESTER IV – EXAMINATION – SUMMER 2017

Subject Code: 640001

Date: 30/05/2017

Subject Name: Fundamentals of Networking

Time: 10.30 AM TO 01.00 PM

Total Marks: 70

Instructions:

1. All questions are compulsory. Internal Options may be there.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q1.A. Answer the following: [07]

1. Network layer operates in a Hop to Hop Manner. State True or False with reason.
2. Data Link layer is generally implemented in hardware. State True or False with reason.
3. Which component of a PC connects the PC with a switch in a switched Star LAN?
4. Mention the name of any leading company which manufactures Network Interface Devices.
5. Mention the most important difference between a Hub and a Switch from functionality point of view.
6. Which is the most popular technology as on today for WLAN?
7. Mention any popular technology for PAN?

Q1.B Answer the following: [07]

1. What is the maximum data rate for a noiseless channel with 3 KHz bandwidth and binary signal?
2. What is meant by Guard Band with respect to FDM?
3. What is FHSS?
4. Between single mode and multi mode fiber, which one gives better performance?
5. What is the importance of ISM Band?
6. What is meant by a Geo Stationary Satellite?
7. What is meant by footprint of a satellite?

Q2.A Answer the following:

1. Compare and Contrast Copper Cable based systems with Fiber Optic based systems. [05]
2. Briefly explain: Multi Path Fading in Wireless Systems [02]

Q2.B Answer the following:

1. Explain the hidden and exposed station problem in wireless systems. [05]
2. Briefly explain the working of p-persistent CSMA. [02]

OR

Q2.B Answer the following:

1. Explain the working of CSMA/CD with binary exponential back-off. [05]
2. Briefly explain how RTS and CTS approach solve the hidden and exposed station problem. [02]

Q3.A Answer the following:

1. Mention and very briefly explain in 1-2 sentences the desirable properties of any routing algorithm. [05]
2. Differentiate between the job of routing algorithm and the forwarding process. [02]

Q3.B Answer the following:

1. Explain the Hop by Hop Choke Method for congestion control in network layer. [05]
2. Briefly explain collision and contention. [02]

OR

Q3.A Answer the following:

1. Explain the count to infinity problem arising in Distance Vector Routing algorithm. [05]
2. Briefly explain the optimality principle with respect to routing. [02]

Q3.B Answer the following:

1. Write a short note on: Bluetooth Architecture. [05]
2. What is meant by milk and wine policy with respect to load shedding for congestion control at network layer? [02]

Q4.A Answer the following:

1. Explain how the 3 way handshake protocol handles various abnormal scenarios during connection release. [05]
2. What is meant by a reliable and connection oriented transport protocol? [02]

Q4.B Answer the following:

1. Explain in detail the working of Selective Repeat Protocol. [05]
2. Briefly explain: Piggybacking and its advantage. [02]

OR

Q4.A Answer the following:

1. Mention and briefly explain in 1-2 sentences the five Transport Service Primitives. [05]
2. Briefly explain the two army problem. [02]

Q4.B Answer the following:

1. Explain in detail the working of Go back N Protocol. [05]
2. Briefly explain: Pipelining and its advantage. [02]

Q5.A Answer the following:

1. Write a short note on: DNS Resource Record Types. [05]
2. Compare IMAP with POP3 on any two relevant criteria. [02]

Q5.B Answer the following:

1. Explain the working of DES algorithm. [05]
2. Why does the two key Triple DES follow EDE approach instead of EEE? [02]

OR

Q5.A Answer the following:

1. Explain different types of DNS domains with examples. [05]
2. Give full form and explain very briefly in 1-2 sentences the role of SMTP protocol. [02]

Q5.B Answer the following:

1. Explain Transposition Cipher with example. [05]
2. Briefly explain: One Time Pads. [02]
