

GUJARAT TECHNOLOGICAL UNIVERSITY**SEMESTER– 4 EXAMINATION – WINTER 2012****Subject code: 640001****Date: 07/01/2013****Subject Name: Fundamentals of Networking****Time: 10:30 – 13:00****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q.1 (a) State whether the following statements are True or False. If False, justify it. **07**

- I. Both Go-Back-N and Selective-Repeat protocols use a sliding window.
- II. In CRC a value used for error detection, is formed by adding data units using one's complements arithmetic and then complementing the result.
- III. In the Stop-and-Wait protocol, the sender sends one frame, stops until it receives confirmation from the receiver, and then sends the next frame.
- IV. Encryption is a recovery of the original message from the encrypted data.
- V. RSA cryptosystem is a popular symmetric key encryption method.
- VI. Dedicated control channel is used for location updating, registration, and call setup.
- VII. TPDU stands for Twisted Pair Data Unit.

(b) Fill in the blanks. **07**

- I. A technique called _____ is used to improve the efficiency of the bidirectional protocols.
- II. In _____ protocol, we can send several frames before receiving acknowledgements, improving the efficiency of transmission.
- III. Protocols in which stations listen for a carrier and act accordingly are called _____ protocols.
- IV. FHSS stands for _____.
- V. The loss of a signal's energy due to the resistance of the medium is known as _____.
- VI. _____ is the basic access method in wireless LANs; stations contend with each other to get access to channel.
- VII. In CDMA each station is assigned a unique m bit code called _____.

Q.2 (a) Explain OSI reference model with its all seven layers in detail. **07**

- (b)**
- I. Explain hidden station and exposed station problem of wireless LAN protocol. **04**
 - II. Explain Count-to-Infinity problem in distance vector routing. **03**

OR

- (b)**
- I. Illustrate the four protocol scenarios of releasing a connection at transport layer using three-way handshaking. **04**
 - II. Explain the role of SMTP and POP3 in mail transfer from sender to receiver in brief. **03**

Q.3	(a)	I. What is the advantage of cipher block chaining mode?	02
		II. Why the upper end of the electro magnetic spread spectrum is not used for communication?	02
		III. What is sliding window protocol? How it is different from normal protocol?	03
	(b)	I. What if handoff? Discuss soft handoff and hard handoff.	04
		II. What is the importance of RTS and CTS in the wireless transmission?	03
OR			
Q.3	(a)	I. Explain transport service primitive of transport layer.	04
		II. Discuss optimality principal for routing algorithms at network layer.	03
	(b)	I. Explain encryption method of transposition cipher.	04
		II. Write a short note on microwave transmission.	03
Q.4	(a)	I. What is congestion? How is congestion controlled in virtual circuit network?	04
		II. Explain jitter control with reference to congestion control.	03
	(b)	I. List and explain the services provided by IEEE 802.11 standard.	04
		II. Explain the problem with DES. How triple DES solve the problem?	03
OR			
Q.4	(a)	I. What are resource records? Explain any three DNS resource records types.	04
		II. What is piggybacking? How it is useful?	03
	(b)	I. Explain Carrier Sense Multiple Access protocol with persistent and non-persistent scenarios.	04
		II. Generate CRC for frame 1101011011 using generator 10011.	03
Q.5	(a)	I. For a data bit pattern 10000101111 sketch the wave form for each of the following signal encoding schemes (i) Binary (ii) Manchester	02
		II. Define: (i) Shortest path (ii) Flooding.	02
		III. Explain byte stuffing with example.	03
	(b)	I. Explain Connection-oriented and Connection-less services.	04
		II. What is forbidden region? How TPDU enter into forbidden region?	03
OR			
Q.5	(a)	I. Compare light sources, required for fiber optic communication.	04
		II. Give minimum three comparisons between fiber optic cable and copper cable.	03
	(b)	I. What is digital signature? Explain symmetric key signature.	04
		II. Write a short note on substitution ciphers.	03
