53 (EC 713) WRSY

2018

WIRELESS SYSTEMS

Paper : EC 713

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

Answer ***any five*** *questions.*

1. 4+8+8

(a) State the functions of MAC sublayer.

(b) Find the probability of success and throughput for slotted ALOHA and pure ALOHA.

(c) In a CSMA based system, the equation of throughput is given by

$$S = \frac{G \times e^{-aG}}{G(1+2a)+e^{-aG}};$$

where $a = 1\mu s$; G is the offered load traffic. Find the value of G for which throughput will be maximum and find the maximum throughput.

2. (a) What are the benefits of OFDM over single carrier modulation? Derive the matrix representation of OFDM using cyclic prefix property in the impulse response of the OFDM sub channels. 3+10

(b) Draw block diagram of X-25 network and explain its protocol structure. 7

3. (a) Why signalling is required in wireless networking? Name different signalling systems in GSM. 3+2

(b) Explain with functional block diagram, the working of SS7 signalling. 4+6

(c) Describe the frame structure of GSM with appropriate diagram. 5

4. (a) Name the first wireless telephone standard. Describe CDPD frame structure with appropriate diagram. 1+10

(b) What are the benefits of ATM over ISDN and X-25? Discuss ATM leader structure with its functionalities. 3+6

5. (a) What are the challenges of Mobile IP implementation? 3

(b) Describe briefly the following terms in the context of mobile IP management :
(i) Discovery (ii) Registration
(iii) Tunnelling. 4×3

(c) What are the different types of IP address in IPv4? 2

(d) Match the following : 3

123.42.135.1	Class A
127.42.137.37	Class B
220.128.199.125	Class C
225.239.127.33	Class D
172.16.0.1	Private IP
192.168.0.1	

6. (a) List briefly the key requirements of wireless LAN. 10

(b) Name different types of WLAN technology. Explain the strengths and weakness of Infrared LANS. 3+7

7. Write short notes on : ***(any two)*** 10+10

(i) ISDN

(ii) Bluetooth

(iii) CDMA

(iv) IPv6.
