53 (EC 713) WRSY

2016

WIRELESS SYSTEMS

Paper : EC 713

Full Marks : 100

Time : Three hours

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

Answer Q. No. ***1*** *and* ***any four*** *from the rest.*

1. *(a)* Which of the following mobile communication technologies is based on spread spectrum? 1

   (i) GSM

   (ii) AMPS

   (iii) CDMA

   (iv) UMTS

(b) IPv4 is a _____ bit address. 1

(c) GSM is technology based on 1

(i) FDD/TDMA

(ii) FDD/FDMA

(iii) TDD/TDMA

(iv) TDD/FDMA

(d) Which of the following is not a property of CDMA? 2

(i) Near-far problem

(ii) Self jamming

(iii) better channel capacity

(iv) lower bandwidth of carrier signal

(e) What is the full form of PSTN? 1

(f) X·25 is a CCITT developed protocol which works on 2

(i) Physical Layer

(ii) First two lower of ISI model

(iii) First three layer of ISI model

(iv) Application layer

(g) Maximum data rate of CDPD is 1

(i) 19·2*kbps*

(ii) 8*kbps*

(iii) 64*kbps*

(iv) 4·32*Mbps*

(h) D channel and B channel of ISDN has _____ and _____ *kbps* respectively. 2

(i) What is the full form of OMAP in SS7 signalling? 1

(j) RAKE receiver is successful when 2

(i) Multipath delay is lesser than 1 *bit* delay

(ii) Multipath delay is greater than coherence time

(iii) Multipath delay is greater than 1 *bit* delay

(iv) It has no relation with path delay

(k) The discovery of IP in mobile is governed by the following protocol 1

(i) ICMP

(ii) IGMP

(iii) OSPF

(iv) BGP

(l) The IEEE standard of WLAN is _____. 1

(m) "WLAN works on ISM band". The bandwidth range of ISM band is _____. 2

(n) Change the following IPv4 address into dotted decimal notation 2

10000001 00001011 00001011 11101111

2. *(a)* What is a RAKE receiver ? Why it is required ? Draw the block diagram of a RAKE receiver system and explain it's working, advantages and limitations. 14

(b) Derive the expression of a TDMA frame efficiency. 6

3. *(a)* What are the different packet radio protocols ? Find the probability of success and throughput in Slotted ALOHA and pure ALOHA. 14

(b) Describe the limitations of wireless packet networking. 6

4. *(a)* Draw the block diagram of X·25 network and explain how communication is done between two host using X·25 protocol. 8

(b) Why signalling is required in wireless networking? What are the different signalling systems in GSM system? Explain with functional block diagram, the working of SS7 signalling. Discuss function of each level of the SS7 system. 12

5. (a) Describe briefly the following terms in the context of mobile-IP management : 5×3

(i) Discovery

(ii) Registration

(iii) Tunneling

(b) What is WAP? How it works with mobile IP based systems? 5

6. (a) List and briefly define key requirements of wireless LANs. 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)*** 10×2

(i) ATM

(ii) CDPD

(iii) Bluetooth

(iv) IPv6