

AMIETE – ET

Time: 3 Hours

DECEMBER 2012

Max. Marks: 100

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

Q.1 Choose the correct or the best alternative in the following: (2×10)

- a. IMT-2000 is a _____ generation cellular wireless system.
- (A) First (B) Second
(C) Third (D) Fourth
- b. Frequency Reuse distance is given by _____
- (A) $D = R\sqrt{3N}$ (B) $\frac{R}{D} = \sqrt{3N}$
(C) $\frac{R}{D} = \frac{1}{\sqrt{3N}}$ (D) $D = \sqrt{3NR}$
- c. In _____, a mobile station always communicates with just one base station.
- (A) Roaming (B) a hard handoff
(C) a soft handoff (D) a roaming handoff
- d. GSM employs _____ as the multiple access technique.
- (A) FDMA (B) CDMA
(C) W-CDMA (D) TDMA
- e. Spread spectrum techniques are employed in _____ system.
- (A) CDMA (B) FDMA
(C) TDMA (D) AM
- f. If the total number of channels in a cellular system is 119 and the reuse cluster size = 7, then the number of channels per cell = _____.
- (A) 7 (B) 17
(C) 119 (D) 10
- g. IS-95 uses CDMA bands of _____ per band.
- (A) 1.25 MHz (B) 12.5 MHz
(C) 25 MHz (D) 200 KHz

- b. Explain the concept of CSMA /CA with ACK and CSMA / CA with RTS and CTS. (8)
- Q.5** a. Explain the concept of TDMA with the help of the basic structure of a TDMA system. (6)
- b. How many bits can be transmitted in one second using 16 QAM to transmit a binary sequence if the baud rate is 2400 Hz? (4)
- c. Discuss the concept of channel allocation for overlapped cells with suitable diagrams. (6)
- Q.6** a. What are the parameters influencing handoff? Explain hard and soft handoff with schematic diagrams. (2+6)
- b. Draw the figure of generic satellite system architecture and explain the function of each section. (8)
- Q.7** a. With the help of a block schematic explain the operation of AMPS system. (6)
- b. How is authentication done in GSM? Explain with a diagram. (6)
- c. List the key features of IMT-2000 system. (4)
- Q.8** a. Explain features of wireless sensor network? Explain hierarchical routing in sensor networks with an example. (2+4)
- b. On what factors routing in a MANET is dependent? Explain table-driven routing. (5)
- c. Compare the characteristic features of source-initiated and on-demand routing. (5)
- Q.9** a. Discuss Bluetooth system architecture with a schematic diagram. (5)
- b. What is SDMA? Explain the basic functions of smart antenna with a diagram. (2+4)
- c. Give the advantages and disadvantages of UWB technology. (5)