

Time: 3 Hours

DECEMBER 2013

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. A QPSK modem without power amplifier forms
- (A) Analytically complex system (B) Analytically tractable system
(C) Analytically intractable system (D) None of these
- b. The MIMO Channel capacity can be increased by
- (A) Space diversity
(B) STBC coding
(C) Increasing the number of antennas
(D) Having more data
- c. Which of the modulation schemes is introduced by IEEE 802.16E
- (A) Scalable OFDM (B) MC-CDMA
(C) CCK-DSSS (D) COFDM
- d. Zigbee is protocol for the
- (A) WSN (B) Wi-fi
(C) UWB (D) Data networks
- e. The EDGE is a
- (A) 2G technology (B) 3G technology
(C) 2.5 G technology (D) 1.5 G technology
- f. The frequency reuse
- (A) maintains spectrum efficiency (B) increase spectrum efficiency
(C) decrease spectrum efficiency (D) does not affect spectrum efficiency
- g. Cell splitting is done to
- (A) accommodate more traffic (B) accommodate more area
(C) save the power (D) increases the frequency reuse

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h. In CDMA Based cellular networks, the near-far effect may appear due to:

- (A) Distant users
- (B) Imperfect orthogonality between codes
- (C) Interfering signals
- (D) Orthogonal codes

i. Which of the following angle is suitable for sectorization

- (A) 45^0
- (B) 60^0
- (C) 100^0
- (D) 80^0

j. Cellular theory is applicable to

- (A) WLL
- (B) GSM
- (C) Mobile satellite
- (D) All of these

**Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.**

- Q.2** a. What are the comparison factors between first generation wireless communication network and modern wireless communication network. (6)
- b. List some perspective application areas for sensor networks. (4)
- c. Define Poisson distribution, Geometric distribution and Binomial distribution. (6)
- Q.3** a. What do you mean by fading? Explain the fading effects due to multipath time delay spread. (8)
- b. Explain linear block code and cyclic code with example. (8)
- Q.4** a. Determine the maximum throughput that can be achieved using Aloha and slotted Aloha Protocols. (8)
- b. What do you mean by Interference? Explain the CCI and ACI in terms of system capacity. (8)
- Q.5** a. What is the fundamental difference in concept for calculating the capacity of CDMA cellular system over FDMA system? (8)
- b. Explain with neat sketch, Overlapped cells- based channel allocation. (8)
- Q.6** a. Explain Home Agents, Foreign Agents & Mobile IP. (8)
- b. Explain GEO satellite beam footprint. (8)
- Q.7** a. Draw the architecture and signalling system for the GSM and Explain each block. (8)

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b. Explain the IMT-2000 system and AMPS.

Q.8 a. What is the basic concept of MANET and explain the architecture of MANET. (8)

b. What are the difference between wireless sensor networks and fixed wireless sensor networks? (8)

Q.9 Write short note on any **TWO**: (2×8=16)

- (i) Directional and smart antennas
- (ii) Ultra Wideband Technology
- (iii) WPAN 'S'