

DiplETE – ET (Current & New Scheme)

Time: 3 Hours

JUNE 2016

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. Which of the following is/are the main part(s) of basic cellular system?
 - (A) A mobile Unit
 - (B) A cell Site
 - (C) A mobile Telephone Switching Office
 - (D) All of the above
- b. Fading of the received radio signals in a mobile communication environment occurs because of.....
 - (A) Direct propagation
 - (B) Multipath Propagation
 - (C) Bi-path Propagation
 - (D) None of these
- c. State whether True or False.
 - (i) The cells or subdivisions of a geographical area are always hexagonal.
 - (ii) A land to Mobile call originates through the Telephone exchange.
 - (A) True, False
 - (B) False, True
 - (C) False, False
 - (D) True, True
- d. In..... Frequency Spectrum is divided into smaller spectra and is allocated to each user.
 - (A) TDMA
 - (B) CDMA
 - (C) FDMA
 - (D) FGMA
- e. In multiple access is achieved by allocating different time slots for the different users.
 - (A) TDMA
 - (B) CDMA
 - (C) FDMA
 - (D) FGMA
- f. State whether True or False.
 - (i) In GSM only TDMA is used.
 - (ii) There is zero inter-channel interference in CDMA.
 - (A) True, False
 - (B) False, True
 - (C) False, False
 - (D) True, True
- g. The basic GSM is based on _____ traffic channels.
 - (A) connection oriented
 - (B) connection less
 - (C) packet switching
 - (D) circuit switching

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- h. are typically characterized by very small cells, especially in densely populated areas.
 (A) 2G system (B) 3G system
 (C) 2.5G system (D) 3.5G system
- i. A antenna which attempts to direct all its energy in a particular direction is called as a
 (A) Directional Antenna (B) One to One Antenna
 (C) Propagation Antenna (D) Single Direction Antenna
- j. Which mode is used for installing networks in wireless communication device characteristics?
 (A) Fixed and wireless (B) Mobile and wired
 (C) Fixed and wired (D) Mobile and wireless

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

- Q.2** a. Explain the fundamentals of cellular systems. (8)
 b. Explain fading effects due to multipath time delay spread. (8)
- Q.3** The generator polynomial for a (7, 4) cyclic Hamming code is given by, $G(p)=1+p+p^2$. Determine all the systematic and non-systematic code vectors. (16)
- Q.4** a. Explain the concept of cell splitting and cell sectoring in brief. (8)
 b. Explain the working of binary phase shift keying with the help of waveforms. (8)
- Q.5** a. Explain the various channel borrowing techniques. (8)
 b. Explain characteristics of LEO and MEO types of satellite systems. (8)
- Q.6** Explain the cellular system infrastructure alongwith registration, handoff parameters & underlying support as well as roaming support in detail. (16)
- Q.7** a. Explain the structure of AMPS in detail. (10)
 b. Define intersymbol and cochannel interference. (6)
- Q.8** a. Design the CRC code for the data word of 110010101. The divisor is 10101. (8)
 b. Compare the characteristics of IS-95 and IMT-2000. (8)
- Q.9** a. What are the recent trends in ultra-wideband technology? Also explain the characteristics of smart antenna. (8)
 b. Discuss in brief about wireless LAN, MAN and PAN. (8)