Code: DE66   **Subject: WIRELESS & MOBILE COMMUNICATIONS**

DipIETE – ET

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. The received power at the receiver is

  (A) Inversely proportional to distance
  (B) Directly proportional to distance
  (C) Inversely proportional to the square of distance
  (D) None of these

b. Ethernet is a protocol that controls data transmission over a

  (A) LAN   **(B)** WAN
  (C) PAN   **(D)** MAN

c. In CRC, of the data unit is 111111 and the divisor is 1010, then the dividend at the transmitter is

  (A) 1111111000   **(B)** 1111110000
  (C) 111111   **(D)** 11111000

d. Frequency reuse may introduce

  (A) Fading of signal   **(B)** Path loss
  (C) Interference   **(D)** Doppler shift

e.   In a time dispersion medium transmission rate R must justify

  (A) $R < \dfrac{1}{2\tau_d}$ **(B)** $R < \dfrac{1}{\tau_d}$

  (C) $R > \dfrac{1}{2\tau_d}$ **(D)** $R > \dfrac{1}{\tau_d}$

f. The satellites in the GPS form a set of

  (A) Celestial bodies   **(B)** Triangular points
  (C) Orbital position points   **(D)** Reference points

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g. IMT-2000 stands for

(A) Interim Mobile Telecommunications - 2000
(B) International Mobile Technology - 2000
(C) Indian Mobile Telecommunications - 2000
(D) International Mobile Telecommunications - 2000

h. Fast Fading in Wireless communication follows

(A) Gaussian PDF   **(B)** Random PDF
(C) Rayleigh PDF   **(D)** Ricin PDF

i. TORA Routing protocol is used in

(A) WSN   **(B)** MANET
(C) WIMAX   **(D)** LTE

j. Which of these is preferred in wireless communication?

(A) HTML   **(B)** XML
(C) WML   **(D)** SGML

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

Q.2 a. Explain the first, second and third generation wireless system and services in brief.   **(8)**

b. Discuss wireless MANs, LANs and PANs.   **(4)**

c. Compare WSN (Wireless Sensor Network) and MANET.   **(4)**

Q.3 a. In a cellular system, diffraction, reflection and direct path take a different amount of time for the signal to reach a MS. How do you differentiate and use these signals.   **(8)**

b. Find the linear block encoder G and all possible code words if code generator polynomial $S(x) = 1 + x + x^3$ for a (7, 4) code, if received codeword's is 1001001, find the correct decoded message.   **(8)**

Q.4 a. Write a short note on:
(i) Frequency reuse
(ii) Formation of cluster
(iii) Cell sectoring
(iv) $D = R\sqrt{3N}$ **(8)**

b. Explain in detail, co-channel and adjacent channel interference. How it will affect the system capacity?   **(8)**

Q.5   a.   Compare SDMA, CDMA & TDMA in cellular system.

      b.   What are the specific advantages of static channel allocation over dynamic channel allocation strategies?   **(8)**

Q.6   a.   What do you mean by handoff? Explain the different Hand off strategies, required to make the Hand off efficient.   **(10)**

      b.   What are the differences between orbital and elevation angles of a satellite?

                                                                            (6)

Q.7   a.   How do you compare AMPS and GSM system in terms of coverage area, transmitting time, power and error control? Explain.   **(10)**

      b.   Explain the various logical channels in IS-95.   **(6)**

Q.8   a.   What are the differences between cellular and mobile Adhoc Networks.   **(4)**

      b.   How do you use a 'data centric' approach in a sensor network?   **(4)**

      c.   What do you mean by proactive and reactive routing in Mobile-Adhoc Networks? Explain on demand routing with neat diagram.   **(8)**

Q.9   Write short notes on.   **(8×2)**

      (i) ALOHA
      (ii) Basic function of smart antennas.