C 21431 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, APRIL 2017

EC/PTEC 09 802—WIRELESS MOBILE COMMUNICATION

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. Prove that for a hexagonal cell geometry, the co-channel reuse ratio is given by $Q = \sqrt{(3N)}$.
2. What is cell splitting in mobile communication ?
3. What is scattering of radio signal ?
4. List the characteristics of TDMA.
5. Mention the standards of wireless communication systems.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Discuss the various channel assignment strategies used in mobile communication.
7. What is Grade of Service ? How are Erlang B formula and Erlang C formula used in cellular systems ?
8. Draw the basic layout of radio wave propagation in free space and discuss the effect of doppler spread.
9. Explain the various issues involved in radio wave propagation of wireless system.
10. Explain the principle of WCDMA.
11. Write brief notes on the types of logical channels in GSM network.

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*

12. (a) Explain the design methods of hexagonal cellular structure. Consider the concept of interference for cell size and frequency reuse factor determination. Also explain the effect of cluster size on system efficiency.

Or

Turn over

(b) Explain the methods for improving capacity in wireless cellular systems.

13. (a) Explain with block diagram, the functionality of rake receiver.

Or

(b) (i) What is the received power in dBm in free space of a signal whose transmit power is 1W and carrier frequency is 2.4 GHz if the receiver is at a distance of 1 mille (1 .6 Km.) from the transmitter. What is the path loss in dB ?

(5 marks)

(ii) What are the types of small scale fading ? Explain each of the fading effects in detail.

(5 marks)

14. (a) Define multiple access techniques and briefly explain them.

Or

(b) Explain the operation of multiuser frequency hopped spread spectrum system.

15. (a) Explain the GSM services and the reference architecture of GSM cellular networks with neat diagram.

Or

(b) Explain the IMT-2000 standard with suitable structure.

[4 × 10 = 40 marks]