

2072

M.E. Electronics and Communication Engineering  
Second Semester  
ECE-1203: Wireless and Mobile Communication

Time allowed: 3 Hours

Max. Marks: 50

**NOTE:** Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Part. Use of scientific calculator is allowed.

x-x-x

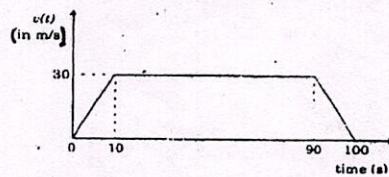
- I. (a) What is antenna diversity. (2)  
 (b) What are the different air-interfaces in WCDMA systems? (2)  
 (c) What is network service part of SS7? (2)  
 (d) What are the differences between small scale and large scale fading. (2)  
 (e) What do you mean by handover in GSM systems? (2)

**Part- A**

- II. (a) Explain how signal propagates against free space attenuation and reflection. (5)  
 (b) Compare FDMA, TDMA and CDMA air interfaces. (5)
- III. A cellular service provider decides to use digital TDMA scheme which can tolerate a signal to interference ratio of 15dB in the worst case. Find the optimal value of N for (10)  
 1) omni-directional antennas  
 2) 120° sectoring  
 3) 60° sectoring
- IV (a) What are the different power control strategies allowed in GSM systems. (5)  
 (b) Explain how we achieved same power level at base station receiver for each user in spread spectrum systems. (5)

**Part-B**

- V. An automobile moves with velocity  $v(t)$  shown below. The received mobile experiences multipath Rayleigh fading on a 900MHz CW carrier. What is the average crossing rate and fade duration over 100s interval. Assume  $p=0.1$  and ignore large scale fading effects. (10)



- VI. (a) Explain Okumura model for large urban microcells. Give its significance. (5)  
 (b) Explain fading effects due to multi-path time delay spread. (5)
- VII.(a) Differentiate between (5)  
 (i) soft and hard hand-off  
 (ii) Bluetooth and Wi-Fi
- (b) What do you mean by LTE. Explain its architecture. (5)

x-x-x