Exam. Code: 0931
Sub. Code: 6926

1128

**B.E. (Electronics and Communication Engineering)**
**Seventh Semester**
**EC-710: Wireless and Mobile Communication**

**Time allowed: 3 Hours** **Max. Marks: 50**

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

x-x-x

I. (a) Between a pager, a cellular phone and a cordless phone, which device/s will have the longest battery life and the shortest battery life? Justify your answer. (2)
(b) Describe the basic principle of diversity techniques. (2)
(c) In a bandwidth limited system, out of linear modulation and constant envelope modulation techniques, which is better? (1)
(d) What is dwell time? (1)
(e) What is FDD? (1)
(f) How power control can be used to reduce interference? (1)
(g) What is LTE? (1)
(h) What is VOIP? (1)

**Part- A**

II. (a) Explain various methods for reducing interference and increasing capacity of a mobile communication system. (6)
(b) Explain UMTS wireless standard. (4)

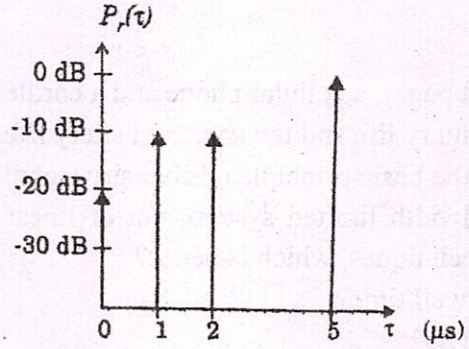
III. (a) Explain the cellular concept in Mobile Communication and illustrate with necessary expressions how the frequency reuse helps in increasing its capacity. (4)
(b) Explain handoff. Explain the factors which must be taken into account before attempting handoff. (4)
(c) Define the following terms:
(1) Forward channel
(2) Reverse channel
(3) Control channel
(4) Full duplex system (2)

IV. (a) Compare GPRS and EDGE technology. (4)

P.T.O.

(b) Clearly explain and compare various channel assignment strategies used in mobile communication. (3)

(c) Calculate the mean excess delay, rms delay spread and the maximum delay (10 dB) for the multipath power delay profile given in the table below. Estimate the 50% coherence bandwidth of the channel. Would this channel be suitable for GSM service without the use of an equalizer? (3)




## Part-B

V. (a) Explain small scale fading and its types. (5)

(b) Describe the features of TDMA. In a typical GSM frame structure, each time slot contains 156.25 bits, and data is transmitted at 270.833 kbps in the channel. Find

(1) the time duration of a bit

(2) the time duration of a slot

(3) the time duration of a frame

(4) how long must a user occupying a single time slot wait between two successive transmissions? (5)

VI. (a) What is MIMO system? What are its advantages? Which standard of mobile communication employs this technology? (3)

(b) Explain important differences between wireless and wired telephone networks. (3)

(c) What is spread spectrum modulation? What are its advantages in wireless scenario? (4)

VII. (a) What is equalization? Why is it required in wireless channels? Explain the principle of working of an equalizer in a mobile communication system. (5)

(b) Describe key features of IS-95 cellular standard. Explain frequency and channel specifications of this standard. (5)

x-x-x