*Name* : .....

*Roll No.* : .....

*Invigilator's Signature* : .....

**CS/M.TECH/SEM-2/PGIT-204/2012**

**2012**

# COMMUNICATION SYSTEMS

*Time Allotted* : 3 Hours Full Marks : 70

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

Answer any *five* questions. 5 × 14 = 70

1. What is the difference between synchronous and asynchronous modes of communication ? Explain with an example how a data stream is transmitted via asynchronous transmission mode and thereby explaining the role of timing there with a clear example. What is a burst error ? How does it occur ? How does it affect the wireless communication ? 14

2. "Standard error correction methods are not appropriate for wireless application." Is this statement true ? Justify. Explain with neat block diagrams how an error detection and correction process works during communication of data over a network. 14

3. What are roles of DCE and DTE during communication ? Explain. What is significant spectrum ? What are the primary advantages of digital communication ? Explain different types of transmission impairments briefly. 14

4. What is isotopic transmission ? How can you classify different types of cells in a cellular communication environment ? Determine the number of channels per cluster and the total channel capacity for a cellular telephone area comprised of 10 clusters with seven cells in each cluster and 10 channels in each cell. What is adjacent channel interference ? Briefly explain. 14

5. Explain the basic principle of operation of asynchronous TDM. What is inverse multiplexing ? Where is it required ? How can you classify different types of digital services ? Briefly explain. 14

6. What is ISDN ? How does it differ from traditional access ? Show different reference points in an ISDN network with a neat diagram and describe them briefly. How data is encapsulated in *D* channel ? 14

7. What are major advantages and disadvantages of Geosynchronous orbits in a satellite communication network ? What is look angle ? How many look angles are used ? Define them. Explain the synchronization procedure in a satellite communication network. How using different CDMA techniques help in satellite communication ? Explain. 14

8. What is Nyquist Bandwidth ? How is it calculated for M-ary signals ? State and explain Shannon's capacity formula. What are different Biphase coding techniques ? Give an example. What are the advantages and disadvantages of Biphase encoding ? 14

9. Explain the significance of SGSN and GGSN for GPRS network. Comment on the scalability of VLR of a Mobile Network. 14