GANPAT UNIVERSITY
M. TECH SEM- I (E.C) CBCS (REGULAR)EXAMINATION– NOV-DEC-2014
3EC103: MODERN DIGITAL COMMUNICATION SYSTEMS

TIME: 3 HRS

MAX. MARKS: 60

Instructions: (1) This Question paper has two sections. Attempt each section in separate answer book.
(2) Figures on right indicate marks.
(3) Be precise and to the point in answering the descriptive questions.

SECTION: I

Q.1 A What is mean by synchronization? Explain the Frequency and Phase synchronization. (5)
B Differentiate the multiplexing and multiple access system. Also explain the FDMA and TDD. (5)

OR

Q.1 A What is mean by spread spectrum? Explain the frequency hopping technique using block diagram. (6)
B Explain the Early/Late gate data synchronizer. (4)

Q.2 A Calculate the cipher text for plain text **01001100** and key **11111111** for **one** round only using DES. (5)
B Differentiate the demodulation and detection. Also Explain the two basic steps in the demodulation/detection of digital signals. (5)

OR

Q.2 A A 32-level symbol is transmitted through a channel without incurring ISI. The corresponding bit rate for transmission is 15 Mbits/s. Determine the filter roll-off factor if the allowable system bandwidth is 5 MHz. (5)
B List the advantage of digital communication over analog communication and derive the equation for relation between Normalized total traffic and throughput for Slotted Aloha. (5)

Q.3 A What is mean by orthogonal signal? Also Derive the equation for bit error probability for orthogonal signal. (5)
B Draw the block diagram of typical digital communication system and explain the essential component of digital communication system (5)

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SECTION: II

Q.4 A Draw the block diagram of Generation of QPSK signal and explain each field in detail. (5)
B Write short note on Trellis Coded Modulation. (5)

OR

Q.4 A Draw and explain the block diagram of Reception of non-coherently detected FSK signal using Quadrature receiver. (6)
B Write short note on matched filter. (4)

Q.5 A What is mean by ISI? Explain the Raised Cosine filter technique to reduce ISI. (5)
B Differentiate the coherent and non- coherent detection and explain the Generation of MSK signal using block diagram. (5)

OR

Q.5 A Draw the BANDWIDTH-EFFICIENCY Plane and explain it in detail. (5)
B What principle of ASK and PSK? Explain how the ASK signal is generated? (5)

Q.6 A Derive the equation for bit error probability for PSK signal. (5)
B Determine the efficiency of Huffman code for '' GOOD MORNING''. (5)

--END OF PAPER--

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