

**GANPAT UNIVERSITY**  
**B. Tech. Semester VI (EC) Engineering**  
**Regular (CBCS) Examination April – June 2015**  
**2EC605 Digital Communication**

Time: 3 Hours

Total Marks: 70

**Instruction:**

1. Attempt all questions.
2. Answer **each** section in **separate** answer books.
3. Figures to the right indicate **full** marks.
4. Standard terms and notations are used. **Assume** data, if necessary.

**Section - I****Que. – 1**

- (A) Convert the following random bit sequence into HDB3 line codes. Also indicate the bipolar line code sequence. 06  
*0101110000101101000000000010111010100001*
- (B) State and explain the following properties of line codes: Transparency, Power Spectral Density, Synchronization. 06

OR

**Que. – 1**

- (A) Using suitable diagram explain the polar, unipolar and bipolar line codes using NRZ, RZ and Manchester pulse shape. 06
- (B) Draw the decision regions for BPSK and QPSK. Explain the significance of decision regions. 06

**Que. – 2**

- (A) What is a Duobinary pulse? Explain the differential encoding using Duobinary pulse. 06
- (B) How to detect a bit in digital communication when it is corrupted by additive white Gaussian noise? 05

OR

**Que. – 2**

- (A) Compare ASK and FSK in all respect. 06
- (B) Write short note on Regenerative repeaters and timing extraction in line codes. 05

**Que. – 3**

- (A) Define bandwidth in three different ways and explain with the help of diagram. 06
- (B) Explain in detail regarding Rician channel in wireless communication. 06

## Section – II

Que. – 4

- (A) Explain in detail regarding T1 time division multiplexing system. 06
- (B) What is the importance of non linear companding? Explain in detail. 06

OR

Que. – 4

- (A) Prove that delta modulator receiver is an adder. 06
- (B) What is principle of DPCM? Give briefing on the concept. 06

Que. – 5

- (A) Write short note on quantization error in PCM. 06
- (B) Draw PCM system diagram and explain each block's importance. 05

OR

Que. – 5

- (A) Compare PWM with PPM. 06
- (B) Explain practical issues of signal reconstruction in digital communication. 05

Que. – 6

- (A) Define Nyquist interval. Explain its importance in sampling. 06
- (B) Give the concept of practical signal reconstruction (non ideal) in digital communication. 06

END OF PAPER