**AKGEC/IAP/FM/02**

**Ajay Kumar Garg Engineering College, Ghaziabad**

**Department of ECE**

**Sessional Test-2**

Course: B.Tech Semester: VII

Session: 2017-18 Section: EN-1,2

Subject: Analog & Digital Communication Sub. Code:NEC-702

Max Marks: 50 Time: 2 hour

***Note*** : Answer **all** the sections.

**Section-A**

1. Attempt **all** the parts. **(5x2 =10)**
2. Differentiate NBFM and WBFM.
3. Define frequency sensitivity for Frequency modulator & a Phase modulator.
4. An analog signal is sampled at 36 kHz and quantized into 256 levels. Find the time duration of a bit of the binary coded signal is
5. Define Carson’s rule.
6. Apply (1) Unipolar Return-to-Zero and (2) Bipolar NRZ , Line coding techniques on bit string [1 0 0 1 0 1 0 1 ]

**Section-B**

1. Attempt **all** the parts. **(5x5 = 25)**
2. What do you mean by Angle modulation? Derive a relationship between FM and PM using suitable expressions and Block diagrams.
3. What are the advantages of Digital communication over Analog communication?

An FM signal has a resting frequency of 210 MHz and highest frequency of 210.04 when modulated by a signal of frequency of 20KHz. Determine

1. Frequency deviation
2. Carrier swing
3. Modulation index
4. Percent modulation
5. Lowest frequency reached by the FM
6. What do you mean by SNR? Analyze noise performance of AM receiver using Envelope Detection.
7. What is Delta modulation? Explain about the types of Quantization errors in it .
8. Explain Sampling theorem. Draw and explain the working of Sample & Hold circuit.

**Section-C**

C. Attempt **all** the parts. **(2x7.5 = 15)**

1. What is PCM ?Draw The block diagram representing all the elements of a PCM system and explain functionality of each block.
2. Explain the indirect method for FM generation. Support your answer with suitable block diagram.