Unit 13 - Week 11

**Week 11 Assignment 11**

**Objective:**
Learn about the magic of frequency modulation (FM).

**Instructions:**
1. Listen carefully to the radio signal for the next 30 minutes.
2. Write down the details of the signal you hear.
3. Analyze the signal using the provided software.
4. Submit your findings by the end of the week.

**Practice Problems:**

1. What is the effect of frequency modulation (FM) on audio signals?
   - a. It reduces bandwidth.
   - b. It increases bandwidth.
   - c. It distorts the audio signal.
   - d. It improves signal quality.
   - e. None of the above.

2. Describe the following statement: "Figure of merit (FOM) of FM shows that NT = 2π for more than 1."
   - a. True
   - b. False

3. State whether the following statement is true or false: "Phase modulated filter is a low pass filter."
   - a. True
   - b. False

4. State whether the following statement is true or false: "Phase modulated filter is a low pass filter."
   - a. True
   - b. False

5. State whether the following statement is true or false: "Figure of merit of carrier band FM is higher than that of sideband FM."
   - a. True
   - b. False

6. Click here to download the following modulation scheme:
   - a. OFM
   - b. PM
   - c. Both OFM and PM
   - d. None of these

7. State whether the following statement is true or false: "In order to minimize distortion, an increase in bandwidth results in higher order of figure of merit."
   - a. True
   - b. False

8. If the transfer function of the demodulator filter is given by $H_1(f) = 1 + f^2$, then the transfer function of the demodulator filter is given by:
   - a. $H_1(f) = 1 + f^2$
   - b. $H_1(f) = 1 + f^3$
   - c. None of these

9. If the transfer function of the pre-amplifier filter is given by $H_2(f) = 1 + f^2$, find the power output of the filter.
   - a. $P_{out} = 0$
   - b. $P_{out} = 1$
   - c. None of these

10. If $X$ is applied to the input port of the filter whose transfer function is given by $H(f) = 1 + f^2$, find the power output of the filter.
    - a. $P_{out} = 0$
    - b. $P_{out} = 1$
    - c. None of these

Due by 2019-10-16, 11:59 AM/PT.