

School: SOETCampus: VZMAcademic Year: 2025 Subject Name: Analog Communication Subject Code: \_\_\_\_\_Semester: 4<sup>th</sup> Program: B.Tech Branch: ECE Specialization: \_\_\_\_\_

Date: \_\_\_\_\_

## Classroom Learning

(Learning by Listening and Observations)

**Note:** Learning outcome will be measured through gain in knowledge, skill & attitude. **Knowledge** gain will be indicated through an answer to the question such as "why, when and where (application)". **Skill** gain will be reflected through an answer to the question "how to do things". **Attitude** change will be observed through visible alteration in behavior.

**Name of the Topic:** Amplitude Demodulation

**Learning Outcome:**

**Concepts learned (Mention 2/3 principles):**

Am Demodulation :- It is the process of extracting the original message signal from an Amplitude modulated wave. This is essential in communication systems, as AM signals contain both the carrier wave and modulated information.

There are two types of Demodulation.

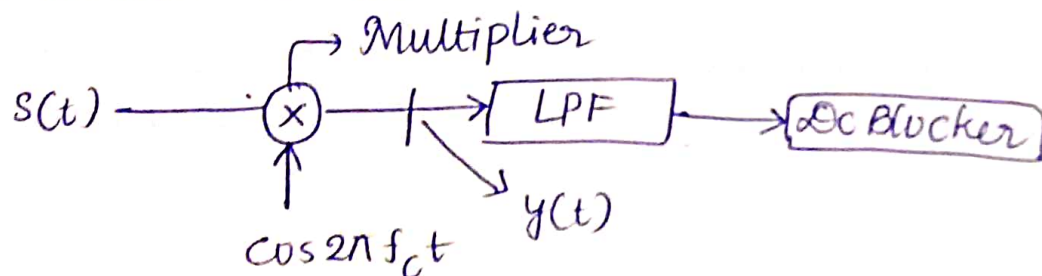
→ Synchronous Demodulation.

→ Asynchronous Demodulation.

\* **New techniques learned:**

Synchronous Demodulation :: (Coherent Detection).

The carrier used in the modulation technique has to be used in the demodulation.



$$\therefore y(t) = S(t) \cdot C(t)$$

\* Related Project/Practice work experienced and learned:

\* New Software/Machine/Tool/Equipment/Experiment learned:

\* Application of concept(s) (preferably real life scenario):

\* Aviation Communication:

Aircraft and Aircraft Control communicate using AM in the VHF band (118-137 MHz)

It Ensures clear communication between pilots and ground Control, reduces interference issue in aviation system.

\* Case Studies/Examples:

Biomedical Signal processing in ECG Monitoring:

AM Demodulation using a square law detector was implemented to extract the clean ECG signal from the modulated high frequency carrier wave. Advanced synchronous detection techniques further improved accuracy by rejecting unwanted noise components.

**Assessment:**

Marks Obtained: ..... / 10

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\* As applicable according to the topic.  
One sheet per topic (10-20) to be used.

Signature of the Faculty:





School: SOG7

Campus: VZM

Academic Year: 2025 Subject Name: Analog Communications Subject Code: .....

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## Classroom Learning

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**Name of the Topic:** Double sideband Suppressed carrier Modulation

**Learning Outcome:** (DSBSC)

**Concepts learned (Mention 2/3 principles):**

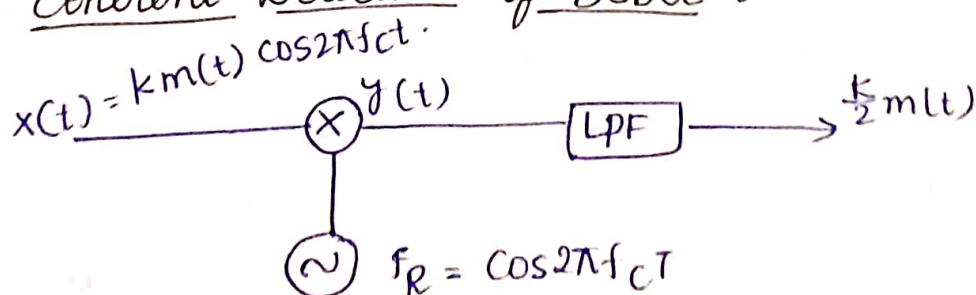
DSBSC Modulation :- It is a type of Amplitude Modulation where both sidebands are transmitted, but the carrier is suppressed to improve power efficiency.

characteristics :-

1. No carrier Transmission because, it reduces power consumption.
2. The bandwidth is required twice the message signal bandwidth.

\* **New techniques learned:**

Coherent Detection of DSBSC :-



$$y(t) = k m(t) \left( \frac{1 + \cos 4\pi f_c t}{2} \right)$$

$$\Rightarrow \frac{K}{2} m(t) + \frac{K}{2} m(t) \cos 4\pi f_c t$$

$$\text{O/p of LPF} = \frac{K}{2} m(t)$$

\* Related Project/Practice work experienced and learned:

\* New Software/Machine/Tool/Equipment/Experiment learned:

\* Application of concept(s) (preferably real life scenario):

\* Stereo FM Transmission :-

In Stereo FM, the left right audio signal is transmitted using DSB sc at a subcarrier frequency.

→ It allows stereo signals to be efficiently encoded while maintaining compatibility with mono receivers.

\* Case Studies/Examples:

\* Underwater Communication :-

\* It is used to transmit sensor data, sonar signals or remote control commands for submarines and underwater drones.

→ Improves Transmission Efficiency and Reduce power Consumption.

**Assessment:**

Marks Obtained: ..... / 10

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