

Complex waveforms as a summation of sine wave forms. Digital signal for conveying information. Difference between analogue and digital waveforms.

2. definition of attenuation and amplification in terms of power ratios. Advantages of using logarithmic units. Definitions of the decibel, dBm, dBr, dBm₀. Conditions for expressing current and voltage ratios in decibels.

Signal noise power and power ratios in networks or cascaded networks and signal level at a point.

3. elements of analogue line communication. Need for amplification. Effects of attenuation, noise, frequency distortion. Signal to noise ratio.

Elements of Pulse communication over lines. Effects of attenuation, noise, frequency and delay / frequency distortions, Repeaters, regenerators.

Elements of radio transmission propagation properties of LF, MF, HF, VHF and Microwaves.

4. use of meters. Effect of instrument loading on circuits. Use of signal sources and oscilloscope to examine typical waveforms.

Suggested Learning and Teaching Approaches

This module encompasses the knowledge of basic techniques used in telecommunications and a didactic approach should be supplemented with practical activities using test equipment.

The use of films, slides, videos, etc would be useful in assisting the development of the learning process.

Assessment Procedures

All Learning Outcomes must be validly assessed.

The student must be informed of the tasks which contribute to summative assessment. Any unsatisfactory aspects of performance should, if possible, be discussed with the student as and when they arise.

Acceptable performance in the module will be satisfactory achievement of the performance criteria specified for each Learning Outcome.

The following abbreviations are used below:

LO Learning Outcome.
IA Instrument of Assessment.
PC Performance Criteria

- LO1 IA Written short answer test.
- PC The student correctly describes the nature of waveforms and their utilisation for conveying information.
- LO2 IA Analytical exercises.
- PC The student uses logarithmic units in practical problems in amplification and attenuation.
- LO3 IA Written/graphical exercise.
- PC Given a practical problem for the transmission of information, the student identifies the appropriate system required and accurately describes, with diagrams, the operation of the identified system, including the effects on transmission of attenuation, noise, distortion etc.
- LO4 IA(1) Written/graphical report based on a practical exercise taken from Learning Outcomes 1 and 3.
- PC The student:
- (a) records the exercises accurately;
 - (b) interprets results correctly;
 - (c) draws valid conclusions.
- IA(2) Observation checklist based on the operation of the practical exercises.
- PC The student:
- (a) uses the test instruments correctly;
 - (b) avoids damage to components and systems;
 - (c) observes approved safety precautions.

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