A-005-009-009 **(D)**

What is direct-sequence spread spectrum?

A The carrier is amplitude modulated over a range called the spread
B The carrier is frequency-companded
C The carrier is altered in accordance with a pseudo-random list of channels
D The carrier is phase-shifted by a fast binary bit stream

A-005-009-010 **(C)**

Why are received spread-spectrum signals so resistant to interference?

A If interference is detected by the receiver, it will signal the transmitter to change frequencies
B The high power used by a spread-spectrum transmitter keeps its signal from being easily overpowered
C Signals not using the spectrum-spreading algorithm are suppressed in the receiver
D The receiver is always equipped with a special digital signal processor (DSP) interference filter

A-005-009-011 **(D)**

How does the spread-spectrum technique of frequency hopping work?

A If interference is detected by the receiver, it will signal the transmitter to change frequency
B If interference is detected by the receiver, it will signal the transmitter to wait until the frequency is clear
C A pseudo-random bit stream is used to shift the phase of an RF carrier very rapidly in a particular sequence
D The frequency of an RF carrier is changed very rapidly according to a particular pseudo-random sequence

A-006-001-001 **(C)**

What are the advantages of the frequency conversion process in a superheterodyne receiver?

A Automatic soft-limiting and automatic squelching
B Automatic squelching and increased sensitivity
C Increased selectivity and optimal tuned circuit design
D Automatic detection in the RF amplifier and increased sensitivity

A-006-001-002 **(A)**

What factors should be considered when selecting an intermediate frequency?

A Image rejection and responses to unwanted signals
B Noise figure and distortion
C Interference to other services
D Cross-modulation distortion and interference

A-006-001-003 **(B)**

One of the greatest advantages of the double-conversion over the single-conversion receiver is that it:

A produces a louder signal at the output
B greater reduction of image interference for a given front end selectivity
C is much more stable
D is much more sensitive

A-006-001-004 **(A)**

In a communications receiver, a crystal filter would be located in the:

A IF circuits
B local oscillator
C audio output stage
D detector

A-006-001-005 **(B)**

A multiple conversion superheterodyne receiver is more susceptible to spurious responses than a single-conversion receiver because of the:

A AGC being forced to work harder causing the stages concerned to overload
B additional oscillators and mixing frequencies involved in the design
C poorer selectivity in the IF caused by the multitude of frequency changes
D greater sensitivity introducing higher levels of RF to the receiver

A-006-001-006 **(C)**

In a dual-conversion superheterodyne receiver what are the respective aims of the first and second conversion:

A selectivity and dynamic range
B image rejection and noise figure
C image rejection and selectivity
D selectivity and image rejection

A-006-001-007 **(D)**

Which stage of a receiver has its input and output circuits tuned to the received frequency?

A The local oscillator
B The audio frequency amplifier
C The detector
D The RF amplifier

A-006-001-008 **(D)**

Which stage of a superheterodyne receiver lies between a tuneable stage and a fixed tuned stage?

A Radio frequency amplifier
B Intermediate frequency amplifier
C Local oscillator
D Mixer

A-006-001-009 **(B)**

A single conversion receiver with a 9 MHz IF has a local oscillator operating at 16 MHz. The frequency it is tuned to is:

A 9 MHz
B 7 MHz
C 16 MHz
D 21 MHz

A-006-001-010 **(A)**

A double conversion receiver designed for SSB reception has a beat frequency oscillator and:

A two IF stages and two local oscillators
B one IF stage and one local oscillator
C two IF stages and three local oscillators
D two IF stages and one local oscillator

A-006-001-011 **(C)**

The advantage of a double conversion receiver over a single conversion receiver is that it:

A is a more sensitive receiver
B produces a louder audio signal
C suffers less from image interference for a given front end sensitivity
D does not drift off frequency

A-006-002-001 **(D)**

The mixer stage of a superheterodyne receiver is used to:

A allow a number of IF frequencies to be used
B remove image signals from the receiver
C produce an audio frequency for the speaker
D change the frequency of the incoming signal to that of the IF

A-006-002-002 **(C)**

A superheterodyne receiver designed for SSB reception must have a beat-frequency oscillator (BFO) because:

A it reduces the pass-band of the IF stages
B it beats with the receiver carrier to produce the missing sideband
C the suppressed carrier must be replaced for detection
D it phases out the unwanted sideband signal

A-006-002-003 **(C)**

The first mixer in the receiver mixes the incoming signal with the local oscillator to produce:

A a radio frequency
B a high frequency oscillator (HFO) frequency
C an intermediate frequency
D an audio frequency

A-006-002-004 **(B)**

If the incoming signal to the mixer is 3 600 kHz and the first IF is 9 MHz, at which one of the following frequencies would the local oscillator (LO) operate?

A 21 600 kHz
B 5 400 kHz
C 3 400 kHz
D 10 600 kHz

A-006-002-005 **(C)**

The BFO is off-set slightly (500 - 1 500 Hz) from the incoming signal to the detector. This is required:

A to provide additional amplification
B to protect the incoming signal from interference
C to beat with the incoming signal
D to pass the signal without interruption

A-006-002-006 **(C)**

It is very important that the oscillators contained in a superheterodyne receiver are:

A stable and sensitive
B selective and spectrally pure
C stable and spectrally pure
D sensitive and selective

A-006-002-007 **(A)**

In a superheterodyne receiver, a stage before the IF amplifier has a variable capacitor in parallel with a trimmer capacitor and an inductance. The variable capacitor is for:

A tuning of the local oscillator (LO)
B tuning both the antenna and the BFO
C tuning of the beat-frequency oscillator (BFO)
D tuning both the antenna and the LO

A-006-002-008 **(A)**

In a superheterodyne receiver without an RF amplifier, the input to the mixer stage has a variable capacitor in parallel with an inductance. The variable capacitor is for:

A tuning the receiver preselector to the reception frequency
B tuning both the antenna and the beat-frequency oscillator
C tuning the beat-frequency oscillator
D tuning both the antenna and the local oscillator

A-006-002-009 **(B)**

What receiver stage combines a 14.25-MHz input signal with a 13.795-MHz oscillator signal to produce a 455-kHz intermediate frequency (IF) signal?

A Multiplier
B Mixer
C BFO
D VFO

A-006-002-010 **(D)**

Which two stages in a superheterodyne receiver have input tuned circuits tuned to the same frequency?

A IF and local oscillator
B RF and IF
C RF and local oscillator
D RF and first mixer

A-006-002-011 **(B)**

The mixer stage of a superheterodyne receiver:

A demodulates SSB signals
B produces an intermediate frequency
C produces spurious signals
D acts as a buffer stage

A-006-003-001 **(B)**

What is meant by the noise floor of a receiver?

A The amount of noise generated by the receiver local oscillator
B The weakest signal that can be detected above the receiver internal noise
C The weakest signal that can be detected under noisy atmospheric conditions
D The minimum level of noise that will overload the receiver RF amplifier stage

A-006-003-002 **(C)**

Which of the following is a purpose of the first IF amplifier stage in a receiver?

A To increase dynamic response
B To improve noise figure performance
C To improve selectivity and gain
D To tune out cross-modulation distortion

A-006-003-003 **(D)**

How much gain should be used in the RF amplifier stage of a receiver?

A As much gain as possible, short of self-oscillation
B It depends on the amplification factor of the first IF stage
C Sufficient gain to keep weak signals below the noise of the first mixer stage
D Sufficient gain to allow weak signals to overcome noise generated in the first mixer stage

A-006-003-004 **(D)**

What is the primary purpose of an RF amplifier in a receiver?

A To vary the receiver image rejection by using the AGC
B To develop the AGC voltage
C To provide most of the receiver gain
D To improve the receiver noise figure

A-006-003-005 **(C)**

How is receiver sensitivity often expressed for UHF FM receivers?

A Noise Figure in decibels
B Overall gain in decibels
C RF level for 12 dB SINAD
D RF level for a given Bit Error Rate (BER)

A-006-003-006 **(A)**

What is the term used for the decibel difference (or ratio) between the largest tolerable receiver input signal (without causing audible distortion products) and the minimum discernible signal (sensitivity)?

A Dynamic range
B Design parameter
C Stability
D Noise figure

A-006-003-007 **(D)**

The lower the receiver noise figure becomes, the greater will be the receiver's _____:

A rejection of unwanted signals
B selectivity
C stability
D sensitivity

A-006-003-008 **(B)**

The noise generated in a receiver of good design originates in the:

A IF amplifier and detector
B RF amplifier and mixer
C detector and AF amplifier
D BFO and detector

A-006-003-009 **(B)**

Why are very low noise figures relatively unimportant for a high frequency receiver?

A Regardless of the front end, the succeeding stages when used on HF are very noisy
B External HF noise, man-made and natural, are higher than the internal noise generated by the receiver
C Ionospheric distortion of the received signal creates high noise levels
D The use of SSB and CW on the HF bands overcomes the noise

A-006-003-010 **(B)**

The term which relates specifically to the amplitude levels of multiple signals that can be accommodated during reception is called:

A noise figure
B dynamic range
C AGC
D cross-modulation index

A-006-003-011 **(C)**

Normally, front-end selectivity is provided by the resonant networks both before and after the RF stage in a superheterodyne receiver. This whole section of the receiver is often referred to as the:

A preamplifier
B pass-selector
C preselector
D preamble

A-006-004-001 **(D)**

What audio shaping network is added at an FM receiver to restore proportionally attenuated lower audio frequencies?

A A pre-emphasis network
B An audio prescaler
C A heterodyne suppressor
D A de-emphasis network

A-006-004-002 **(B)**

What does a product detector do?

A It detects cross-modulation products
B It mixes an incoming signal with a locally generated carrier
C It provides local oscillations for input to a mixer
D It amplifies and narrows band-pass frequencies

A-006-004-003 **(D)**

Distortion in a receiver that only affects strong signals usually indicates a defect in or mis-adjustment of the:

A IF amplifier
B AF amplifier
C RF amplifier
D automatic gain control (AGC)

A-006-004-004 **(B)**

In a superheterodyne receiver with automatic gain control (AGC), as the strength of the signal increases, the AGC:

A introduces limiting
B reduces the receiver gain
C increases the receiver gain
D distorts the signal

A-006-004-005 **(B)**

The amplified IF signal is applied to the _____ stage in a superheterodyne receiver:

A LO
B detector
C RF amplifier
D audio output

A-006-004-006 **(A)**

The low-level output of a detector is:

A applied to the AF amplifier
B grounded via the chassis
C fed directly to the speaker
D applied to the RF amplifier

A-006-004-007 **(B)**

The overall output of an AM/CW/SSB receiver can be adjusted by means of manual controls on the receiver or by use of a circuit known as:

A automatic load control
B automatic gain control
C automatic frequency control
D inverse gain control

A-006-004-008 **(D)**

AGC voltage is applied to the:

A AF and IF amplifiers
B RF and AF amplifiers
C detector and AF amplifiers
D RF and IF amplifiers

A-006-004-009 **(D)**

AGC is derived in a receiver from one of two circuits. Depending on the method used, it is called:

A RF derived or audio derived
B IF derived or RF derived
C detector derived or audio derived
D IF derived or audio derived

A-006-004-010 **(D)**

Which two variables primarily determine the behaviour of an automatic gain control (AGC) loop?

A Blanking level and slope
B Slope and bandwidth
C Clipping level and hang time
D Threshold and decay time

A-006-004-011 **(A)**

What circuit combines signals from an IF amplifier stage and a beat-frequency oscillator (BFO), to produce an audio signal?

A A product detector circuit
B An AGC circuit
C A power supply circuit
D A VFO circuit

A-006-005-001 **(C)**

What part of a superheterodyne receiver determines the image rejection ratio of the receiver?

A AGC loop
B IF filter
C RF amplifier pre-selector
D Product detector

A-006-005-002 **(A)**

What is the term for the reduction in receiver sensitivity caused by a strong signal near the received frequency?

A Desensitization
B Cross-modulation interference
C Squelch gain rollback
D Quieting

A-006-005-003 **(A)**

What causes receiver desensitization?

A Strong near frequency signals
B Squelch gain adjusted too high
C Squelch gain adjusted too low
D Audio gain adjusted too low

A-006-005-004 **(D)**

What is one way receiver desensitization can be reduced?

A Decrease the receiver squelch gain
B Increase the receiver bandwidth
C Increase the transmitter audio gain
D Use a cavity filter

A-006-005-005 **(D)**

What causes intermodulation in an electronic circuit?

A Too little gain
B Positive feedback
C Lack of neutralization
D Nonlinear circuits or devices

A-006-005-006 **(B)**

Which of the following is an important reason for using a VHF intermediate frequency in an HF receiver?

A To prevent the generation of spurious mixer products
B To move the image response far away from the filter passband
C To provide a greater tuning range
D To tune out cross-modulation distortion

A-006-005-007 **(C)**

Intermodulation interference is produced by:

A the high-voltage stages in the final amplifier of an amplitude or frequency-modulated transmitter
B the mixing of more than one signal in the first or second intermediate frequency amplifiers of a receiver
C the mixing of two or more signals in the front-end of a superheterodyne receiver
D the interaction of products from high-powered transmitters in the area

A-006-005-008 **(A)**

Which of the following is NOT a direct cause of instability in a receiver?

A Dial display accuracy
B Mechanical rigidity
C Feedback components
D Temperature variations

A-006-005-009 **(B)**

Poor frequency stability in a receiver usually originates in the:

A mixer
B local oscillator and power supply
C detector
D RF amplifier

A-006-005-010 **(B)**

Poor dynamic range of a receiver can cause many problems when a strong signal appears within or near the front-end bandpass. Which of the following is NOT caused as a direct result?

A Cross-modulation
B Feedback
C Desensitization
D Intermodulation