001. The radar range equation relates: **A**

A Radar cross-section and target distance
B Transmitted power and target velocity
C Received signal strength and target altitude
D Transmitter frequency and atmospheric conditions

002. According to the radar range equation, how does the received signal strength change with increasing target distance? **B**

A Signal strength increases linearly
B Signal strength decreases linearly
C Signal strength remains constant
D Signal strength follows an inverse-square law

003. Which component in the radar block diagram generates the radio waves? **A**

A Transmitter
B Receiver
C Antenna
D Duplexer

004. The main function of the duplexer in a radar system is to: **D**

A Generate radio waves
B Receive echo signals
C Amplify the received signal
D Switch between transmit and receive modes

005. The Doppler effect in radar is used to measure: **C**

A Temperature of the target
B Range to the target
C Velocity of the target
D Altitude of the target

006. What is the maximum unambiguous range of a radar system? **C**

A The maximum range at which a target can be detected
B The maximum range at which a target 's velocity can be measured
C The maximum range without range ambiguity in target detection
D The maximum range without Doppler ambiguity in velocitymeasurement

007. What does the term "Radar" stands for? **A**

A Radio Detection and Ranging
B Remote Aerial Detection and Ranging
C Radar Amplification and Ranging
D Radio Amplification and Detection

008. Which physical principle is fundamental to radar operation? **D**

A Reflection of sound waves
B Refraction of light waves
C Absorption of radio waves
D Reflection of radio waves

009. Radar is commonly used for: **C**

A Measuring wind speed
B Observing stars
C Detecting and tracking objects
D Measuring ocean salinity

010. The minimum detectable signal in radar refers to the: **A**

A Weakest target that can be detected
B Largest target that can be detected
C Fastest target that can be tracked
D Slowest target that can be tracked

011. Receiver noise in radar systems primarily arises from **C**

A Target reflections
B Atmospheric conditions
C Electronic components
D Transmitting antennas

012. A radar system transmits a pulse with a width of 2 microseconds. What is the range resolution of the radar? **B**

A 150 meters
B 300 meters
C 600 meters
D 1200 meters

013. If radar has a maximum unambiguous range of 150 km and a pulse repetition frequency (PRF) of 1000 Hz, what is the maximum target velocity that can be measured without ambiguity? **B**

A 150 m/s
B 300 m/s
C 600 m/s
D 1200 m/s

014. Range performance prediction in radar involves estimating **C**

A Target velocity B Target altitude
C Maximum unambiguous range D Doppler shift

015. What parameter can be adjusted to improve the radar 's range prediction accuracy? **B**
A Receiver sensitivity B Pulse repetition frequency
C Target size D Antenna gain

016. Which frequency band is commonly used for weather radar? **A**
A VHF (Very High Frequency) B UHF (Ultra High Frequency)
C X-band D L-band

017. Radar systems operating in the X-band are often used for: **B**
A Weather monitoring B Air traffic control
C Satellite communication D Long-range target tracking

018. The primary advantage of using higher radar frequencies (e.g., millimeter-wave frequencies is: **C**
A Longer maximum range B Better penetration through obstacles
C Smaller antenna size D Reduced atmospheric interference

019. Radar cross-section (RCS) is a measure of **C**
A The radar 's ability to detect moving targets B The target 's ability to emit radio waves
C The target 's reflectivity of radio waves D The radar 's ability to measure altitude

020. The term "clutter" in radar refers to **C**
A The background noise in the receiver B Targets moving at high speeds
C Unwanted echoes from stationary or slow-moving objects D The Doppler effect observed in radar signals

021. Which type of radar is typically used for measuring the speed of vehicles on highways? **A**
A Continuous Wave (CW) radar B Pulse-Doppler radar
C Tracking radar D Synthetic Aperture Radar (SAR)

022. The process of combining multiple radar echoes to improve target detection and localization is known as **B**
A Clutter reduction B Fusion processing
C Doppler filtering D Beamforming

023. In a radar system, if the receiver noise power is -110 dBm and the target reflection power is -90 dBm, what is the signal-to-noise ratio (SNR) in decibels? **B**
A 10 dB B 20 dB
C 30 dB D 40 dB

024. Which of the following radar parameters affects the radar 's ability to distinguish between two closely spaced targets? **B**
A Antenna gain B Pulse width
C Transmitted power D Pulse repetition frequency (PRF)

025. A radar system operating at 10 GHz has an antenna with a gain of 25 dB. If the transmitted power is 1 kW, what is the power density at a distance of 5 km from the radar? **C**
A 2.5 mW/m B 5 mW/m
C 10 mW/m D 20 mW/m

026. The radar cross-section (RCS) of a target is 10 m. If the received power at the radar is 10 dBm and the transmitted power is 100 W, what is the range to the target? **C**
A 5 km B 10 km
C 20 km D 40 km

027. A radar system operating in the S-band (3 GHz) has a pulse width of 1 μs and a peak transmitted power of 10 kW. Calculate the minimum detectable signal power if the receiver noise figure is 3 dB and the receiver bandwidth is 1MHz **B**
A -164 dBm B -157 dBm

C -150 dBm D -143 dBm

028. The modified radar range equation takes into account **A**

A Atmospheric absorption B Doppler shifts

C Target 's shape D Target 's speed

029. Signal-to-Noise Ratio (SNR) in radar is a measure of **B**

A Target 's reflectivity B Received signal strength relative to noise level

C Target 's speed D Radar 's pulse width

030. The probability of detection in radar refers to the probability of **A**

A Correctly detecting a target B Detecting a target at a specific range

C Detecting multiple targets simultaneously D Incorrectly detecting a noise signal

031. The probability of false alarm in radar represents the likelihood of **A**

A Incorrectly identifying a target B Not detecting a target

C Detecting a target 's velocity D Doppler shifts

032. The primary purpose of the "range gates" in pulse-Doppler radar is to **A**

A Reduce clutter B Enhance the radar cross-section (RCS) of targets

C Prevent range ambiguity D Minimize atmospheric interference

033. Over-the-horizon radar systems exploit which phenomenon to detect targets beyond the radar 's line of sight? **C**

A Atmospheric refraction B Ground reflection

C Ionospheric propagation D Doppler shift

034. The "range gates" in a radar display represent **B**

A Different radar frequencies used for target detection B Specific ranges where targets are detected

C Angular positions of targets in azimuth D Doppler shifts of detected targets

035. Which of the following radar applications is used for monitoring ocean surface conditions, including wave height and wind speed? **C**

A Airborne radar B Ground-penetrating radar

C Maritime radar D Spaceborne radar

036. In pulse compression radar, the main advantage of using long pulse widths and frequency modulation (chirping) is to **B**

A Increase the maximum unambiguous range B Improve range resolution

C Enhance target reflectivity D Reduce the receiver noise

037. Transmitter power in radar affects **C**

A Target 's speed B Range resolution

C Receiver sensitivity D Target 's altitude

038. Pulse Repetition Frequency (PRF) determines **B**

A Target 's velocity B Maximum unambiguous range

C Atmospheric conditions D Target 's reflectivity

039. System losses in radar can be caused by **C**

A High transmitter power B Receiver sensitivity

C Atmospheric absorption D Pulse compression

040. Calculate the SNR for a radar system with a received signal power of -10 dBm and a receiver noise power of -80 dBm. **A**

A 70 dB B 90 dB

C -70 dB D -90 dB

041. The radar cross-section (RCS) of a target refers to **D**

A The size of the target in radar units
B The ratio of received power to transmitted power
C The target 's ability to emit radio waves
D The target 's reflectivity of radio waves

042. Creeping wave in radar is associated with **B**

A Target 's movement
B Atmospheric refraction
C Pulse compression
D Phase modulation

043. In radar, integrating multiple pulses can improve **A**

A Range resolution
B Target 's reflectivity
C Doppler shifts
D Atmospheric conditions

044. Range ambiguities in radar occur when **B**

A The target 's shape is irregular
B The transmitted power is low
C The target is moving at a high speed
D Pulse repetition frequency (PRF) is too high

045. Radar cross-section (RCS) depends on **C**

A Target 's speed
B Atmospheric conditions
C Target 's size, shape, and reflectivity
D Target 's altitude

046. The Signal-to-Noise Ratio (SNR) can be improved by **D**

A Increasing the receiver noise
B Decreasing the transmitted power
C Reducing the pulse width
D Increasing the receiver bandwidth

047. The probability of detection can be increased by **A**

A Increasing the receiver threshold
B Decreasing the target 's RCS
C Reducing the pulse repetition frequency (PRF)
D Increasing the probability of false alarm

048. The probability of false alarm is affected by **B**

A Increasing the SNR
B Increasing the receiver threshold
C Reducing the target 's size
D Decreasing the receiver bandwidth

049. Integrating radar pulses improves the radar 's ability to **D**

A Detect slow-moving targets
B Reduce atmospheric absorption
C Increase target 's RCS
D Distinguish closely spaced targets

050. A Radar system uses a PRF of 2000 Hz and a pulse width of 1 μs. What is the maximum unambiguous range of the radar? **B**

A 150 km
B 300 km
C 600 km
D 1200 km

051. In the radar equation, an increase in the transmitted power will directly affect the **A**

A Signal-to-Noise Ratio (SNR)
B Maximum unambiguous range
C Target 's RCS
D Receiver sensitivity

052. If the probability of detection is 0.85 and the probability of false alarm is 0.1, what is the radar 's reliability? **A**

A 0.75
B 0.85
C 0.9
D 0.95

053. A radar system with a PRF of 1000 Hz detects a target at a range of 10 km. Calculate the range ambiguity? **A**

A 1 km
B 2 km
C 5 km
D 10 km

054. A Radar has an antenna with a gain of 20 dB and transmits at a power of 500 W. If the target 's RCS is 10 m and the received power is -60 dBm, what is the target 's range? **C**

A 10 km
B 20 km
C 50 km
D 100 km

055. The radar equation relates which of the following parameters to determine the received signal strength? **C**

A Transmitted power and target 's velocity
B Transmitted frequency and receiver sensitivity
C Target 's reflectivity and receiver noise
D Target 's distance and atmospheric conditions

056. What phenomenon is responsible for the frequency shift observed in radar echoes from moving targets? **C**

A Refraction
B Reflection
C Doppler effect
D Diffraction

057. The Doppler effect is the change in frequency of a wave due to **D**

A Absorption
B Refraction
C Reflection
D Relative motion between source and observer

058. A radar system detects a moving target. If the target is approaching the radar, the observed frequency shift will be **A**

A Positive
B Negative
C Unchanged
D Zero

059. Creeping wave phenomena in radar occur due to **C**

A Target 's high velocity
B Atmospheric scattering
C Ground reflection
D Target 's small size

060. Increasing the transmitter power can lead to **B**

A Improved range resolution
B Decreased target reflectivity
C Increased atmospheric absorption
D Reduced receiver sensitivity

061. Range ambiguities can be reduced by **D**

A Increasing the pulse width
B Decreasing the transmitter power
C Increasing the receiver bandwidth
D Adjusting the PRF

062. A radar cross-section (RCS) that is large indicates that **B**

A The target is moving very fast
B The target has a strong reflectivity
C The radar 's pulse width is large
D The receiver noise is high

063. A cone-sphere target is commonly used to represent **A**

A Ships at sea
B Airplanes in flight
C Rocks on the ground
D Weather patterns

064. The primary purpose of a duplexer in a radar system is to **C**

A Generate the local oscillator signal
B Mix the received signal with the transmitted signal
C Isolate the transmitter and receiver paths
D Enhance the radar 's power efficiency

065. What is the advantage of using a non-zero intermediate frequency (IF) receiver in a radar system? **C**

A Improved range resolution
B Higher power output
C Reduced susceptibility to clutter
D Elimination of Doppler effect

066. In a radar receiver, the intermediate frequency (IF) is **C**

A Equal to the transmitted frequency
B Zero
C Greater than zero
D Equal to the Doppler frequency

067. The purpose of the IF filter in a radar receiver is to **D**

A Generate the local oscillator signal
B Amplify the received signal
C Isolate the transmitter and receiver paths
D Selectively amplify the desired frequency components

068. In a radar system, why is isolation between the transmitter and receiver important? **C**

A To prevent frequency modulation
B To eliminate Doppler effect
C To avoid interference between transmitted and received signals
D To increase the radar 's power output

069. Which component ensures proper isolation between the transmitter and receiver in a radar system? **A**

A Duplexer
B Mixer
C Local oscillator
D Antenna

070. Which component in a CW radar system generates a continuous waveform? **B**

A Mixer
B Local Oscillator
C Antenna
D Duplexer

071. In CW radar, which block performs the task of transmitting and receiving signals alternately? **C**

A Transmitter
B Receiver
C Duplexer
D Antenna

072. What is the primary advantage of using a CW radar system? **A**

A High range resolution
B Ability to track multiple targets
C Improved weather performance
D Long pulse duration

073. What advantage does CW radar have over pulsed radar in terms of target tracking? **C**

A Higher peak power
B Better weather performance
C Continuous wave transmission
D Lower cost

074. A radar system emits a continuous wave at 10 GHz. A car approaches the radar at a speed of 100 km/h. What is the Doppler frequency shift? (Use speed of light = 3 x 10^8 m/s) **B**

A 10 Hz
B 100 Hz
C 1 kHz
D 1 MHz

075. In a CW radar system, the transmitter frequency is 5.8 GHz and the receiver frequency is 5.9 GHz. What is the IF frequency? **B**

A 100 kHz
B 200 kHz
C 1 MHz
D 100 MHz

076. A radar system has a receiver bandwidth of 50 kHz. What is the maximum target speed that can be accurately measured using the Doppler effect? (Assume transmitted frequency = 10 GHz) **C**

A 100 m/s
B 500 m/s
C 1 km/s
D 5 km/s

077. Continuous Wave (CW) radar is commonly used for **A**

A High-resolution imaging
B Weather forecasting
C Long-range communication
D Terrain mapping

078. Which of the following applications can benefit from the use of CW radar? **A**

A Air traffic control
B AM radio broadcasting
C Optical fiber communication
D Digital television broadcasting

079. What determines the required receiver bandwidth in a radar system? **D**

A Transmitter power
B Target 's range
C Frequency modulation
D Desired range resolution

080. For improved range resolution, a radar receiver should have **B**

A Wide bandwidth
B Narrow bandwidth
C Low frequency
D High frequency

081. A radar system with a narrow receiver bandwidth is more suitable for detecting **B**

A Slow-moving targets
B Fast-moving targets
C Stationary targets
D Distant targets

082. Continuous Wave (CW) radar is commonly used in which of the following fields? **D**

A Space exploration
B Underwater communication

C Seismic analysis D Target tracking and surveillance

083. In which scenario would a CW radar be particularly useful compared to a pulsed radar? **B**

A Detecting distant satellites B Monitoring heart rate in medical applications

C Mapping the ocean floor D Identifying weather patterns

084. An aircraft is flying at a constant speed towards a CW radar. What can be inferred about the Doppler frequency shift? **A**

A It will increase continuously. B It will decrease continuously.

C It will remain constant. D It will fluctuate randomly.

085. Why is Continuous Wave radar not typically used for short-range applications? **A**

A Limited target discrimination B Low power output

C Inaccurate range measurements D Complex signal processing

086. What is the purpose of a duplexer in a radar system? **C**

A To generate the radar waveform B To transmit and receive simultaneously

C To isolate the transmitter and receiver paths D To filter out noise from the received signal

087. In a CW radar system, what is the role of the local oscillator? **B**

A To generate the carrier frequency B To mix the transmitted and received signals

C To amplify the received signal D To provide isolation between transmitter and receiver

088. A CW radar system has a narrowband receiver with a bandwidth of 10 kHz. What is its approximate range resolution? (Use speed of light = 3 x 10^8 m/s) **B**

A 15 m B 30 m

C 150 m D 300 m

089. Which application benefits from CW radar 's ability to measure target velocity accurately? **B**

A Weather forecasting B Navigation of aircraft

C Geological surveying D Radio broadcasting

090. The primary advantage of using a non-zero intermediate frequency (IF) receiver in radar is: **C**

A Improved target detection range B Enhanced target discrimination

C Reduced susceptibility to clutter D Higher transmitter power

091. In what application would a narrowband CW radar system excel? **C**

A Detecting small insects B Tracking fast-moving missiles

C Identifying distant galaxies D Measuring ocean tides

092. Which of the following is a disadvantage of using a non-zero IF receiver in a radar system? **B**

A Reduced sensitivity to target velocity B Increased susceptibility to clutter

C Limited range measurement accuracy D Larger system complexity

093. The primary purpose of the duplexer in a radar system is to: **D**

A Mix the received signal with the transmitted signal B Generate the local oscillator signal

C Filter out noise from the received signal D Isolate the transmitter and receiver paths

094. What advantage does a CW radar have over a pulsed radar when it comes to measuring target velocity? **A**

A Higher accuracy B Wider bandwidth

C Simpler hardware D Longer range

095. If a CW radar receiver has a bandwidth of 20 kHz and a transmitted frequency of 3 GHz, what is the maximum measurable target speeds using the Doppler effect? **D**

A 1 m/s B 10 m/s

C 100 m/s D 1000 m/s

096. A CW radar has a receiver bandwidth of 5 kHz. What is the range resolution of the radar system? (Assume speed of light = 3 x 10^8 m/s) **B**

A 30 m
B 60 m
C 150 m
D 300 m

097. A CW radar emits a frequency of 24.125 GHz. A moving vehicle creates a Doppler shift of 250 Hz. Calculate the vehicle 's speed relative to the radar. (Use speed of light = 3 x 10^8 m/s) **B**

A 7.5 m/s
B 12.5 m/s
C 25 m/s
D 37.5 m/s

098. If a CW radar system operates at a frequency of 5.6 GHz and the received frequency is 5.5995 GHz, what is the Doppler frequency shift due to a moving target? (Assume speed of light = 3 x 10^8 m/s) **B**

A 0.5 kHz
B 1 kHz
C 2 kHz
D 3 kHz

099. A CW radar has a transmitter frequency of 9.4 GHz and a receiver frequency of 9.6 GHz. What is the intermediate frequency (IF) in MHz? **B**

A 100 MHz
B 200 MHz
C 400 MHz
D 600 MHz

100. The primary advantage of FM-CW radar in terms of target resolution is: **A**

A Improved Doppler resolution
B Better range accuracy
C Higher maximum range
D Reduced transmitter power

101. What is the purpose of the mixer in an FM-CW radar receiver? **C**

A To generate the local oscillator signal
B To modulate the received signal
C To mix the transmitted and received signals
D To filter out noise from the received signal

102. An FM-CW radar altimeter is primarily used for measuring **C**

A Target velocity
B Atmospheric pressure
C Sea surface height
D Relative humidity

103. What is the main advantage of using FM-CW radar for altimetry over traditional altimeters? **C**

A Higher accuracy in measuring atmospheric pressure
B Simpler hardware requirements
C Improved resistance to multipath interference
D Ability to measure target velocity

104. FM-CW radar measures range based on the: **A**

A Time delay between transmitted and received signals
B Frequency shift in the transmitted signal
C Phase difference between transmitted and received signals
D Amplitude modulation of the received signal

105. In FM-CW radar, what does the frequency ramp generator control? **C**

A The pulse width of the transmitted signal
B The carrier frequency of the transmitted signal
C The frequency modulation of the transmitted signal
D The range of the radar system

106. A CW radar system with a transmitter frequency of 34 GHz detects a moving car with a Doppler shift of 150 Hz. Calculate the car 's speed relative to the radar. (Use speed of light = 3 x 10^8 m/s) **C**

A 5 m/s
B 10 m/s
C 15 m/s
D 20 m/s

107. FM-CW radar is capable of simultaneously measuring **C**

A Only range
B Only Doppler frequency
C Both range and Doppler frequency
D Neither range nor Doppler frequency

108. What is the primary advantage of FM-CW radar over traditional pulsed radar for range measurement? **D**

A Higher power output
B Simpler hardware
C Improved Doppler resolution
D Accurate range measurement without ambiguous range ambiguities

109. In an FM-CW radar system, if the frequency ramp is swept over a range of 100 MHz and the target 's range is 500 meters, what is the round-trip delay time of the radar signal? **C**

A 0.5 μs
B 1 μs
C 2 μs
D 4 μs

110. An FM-CW radar measures a Doppler shift of 500 Hz from a moving car. If the radar frequency ramp duration is 5 ms and the speed of light is 3 x 10^8 m/s, what is the car 's speed? **B**

A 3 m/s
B 15 m/s
C 30 m/s
D 150 m/s

111. A Multiple Frequency CW radar transmits at two frequencies: 5.8 GHz and 6.2 GHz. If the Doppler shift measured at 5.8 GHz is 200 Hz and at 6.2 GHz is 300 Hz, what is the target 's true Doppler shift? **B**

A 200 Hz
B 250 Hz
C 300 Hz
D 350 Hz

112. An FM-CW altimeter transmits a frequency ramp from 5.6 GHz to 5.8 GHz in 100 μs. If the received frequency is 5.71 GHz, what is the altitude of the radar system above the sea surface? (Use speed of light = 3 x 10^8 m/s) **A**

A 50 meters
B 100 meters
C 150 meters
D 200 meters

113. Multiple Frequency CW radar is particularly useful for distinguishing targets with **B**

A Similar range and Doppler shifts
B Different Doppler shifts and similar range
C High range and low Doppler shifts
D Low range and high Doppler shifts

114. An FM-CW radar emits a frequency ramp from 9.5 GHz to 10.5 GHz during a time period of 0.1 ms. Calculate the frequency sweep rate. **B**

A 100 kHz/ms
B 1 MHz/ms
C 10 MHz/ms
D 100 MHz/ms

115. FM-CW altimeters are commonly used for: **C**

A Navigating submarines
B Monitoring aircraft engine performance
C Determining the altitude of aircraft above the ground or sea surface
D Detecting fast-moving targets

116. Multiple Frequency CW radar uses different frequencies to **D**

A Achieve higher Doppler resolution
B Increase the maximum range
C Improve target detection in rain
D Enhance target discrimination

117. How does Multiple Frequency CW radar improve target discrimination? **A**

A By reducing the receiver bandwidth
B By using narrower frequency ramps
C By transmitting multiple pulses simultaneously
D By avoiding frequency modulation

118. The range beyond which targets appear as second time around echoes is called the **C**

A minimum unambiguous range
B neither minimum nor maximum
C maximum unambiguous range
D either minimum or maximum

119. RF spectrum is very scarce and as such Radars are allotted only a certain frequency bands for their operation by **D**

A Image Transfer Unit
B Institute for Trans uranium Elements
C InternationalTransfer Unit
D InternationalTelecom Union

120. What is the primary goal of MTI and Pulse Doppler radar systems? **B**

A Enhance target range measurement accuracy
B Detect and track moving targets while suppressing clutter
C Achieve higher transmitter power output
D Increase the radar 's maximum range

121. MTI and Pulse Doppler radar techniques are particularly useful in environments with: **D**

A Stationary targets only
B Low clutter environments
C Slow-moving targets only
D High clutter environments

122. 1 nautical mile = **A**

A 1.15078 miles or 1.8412 km
B 1.8412 miles or 1.15078 km
C 1.1848 miles or 1.8412 km
D 1.15078 miles or 1. 1502 km

123. The echoes that arrive after the transmission of next pulse are called **B**

A thirdtime return echoes
B second time around echoes
C first return echoes
D first time around echoes

124. In an FM-CW radar altimeter, why is the frequency ramp duration critical for accurate altitude measurements? **C**

A It affects the transmitter power output.
B It determines the receiver bandwidth.
C It affects the range measurement accuracy.
D It determines the Doppler frequency shift.

125. Multiple Frequency CW radar is effective in reducing **C**

A Range resolution
B Doppler resolution
C Clutter interference
D Target velocity accuracy

126. A radar system transmits two frequency ramps, one from 8.5 GHz to 9.5 GHz and the other from 9.5 GHz to 10.5 GHz. If the target range is 2 km and the speed of light is 3 x 10^8 m/s, what is the difference in the round-trip delay times? **B**

A 2 μs
B 4 μs
C 6 μs
D 8 μs

127. How is the clutter rejection achieved in MTI radar with a power amplifier transmitter? **B**

A By using multiple frequency bands
B By transmitting multiple pulses in quick succession
C By modulating the transmitted pulses
D By using adaptive filters

128. The primary disadvantage of an MTI radar with a power amplifier transmitter is **B**

A High susceptibility to Doppler shift
B Limited target range
C Limited clutter suppression
D Reduced transmitter power

129. In MTI radar with a power oscillator transmitter, what is the key characteristic of the transmitted pulses? **D**

A They have a high peak power
B They are frequency modulated
C They are amplitude modulated
D They have a low duty cycle

130. How does MTI radar with a power oscillator transmitter suppress clutter? **C**

A By transmitting a continuous waveform
B By using Doppler filters
C By transmitting alternate pulses with a phase difference
D By using a narrowband receiver

131. What is the main advantage of using Pulse Doppler radar over MTI radar? **C**

A Lower cost
B Simpler hardware
C Improved clutter suppression
D Longer maximum range

132. In MTI radar with a power amplifier transmitter, what is the key characteristic of the transmitted pulses? **C**

A They are unmodulated continuous waves
B They are frequency modulated
C They have a high peak power
D They have a low duty cycle

133. What is the key challenge that MTI and Pulse Doppler radar address? **D**

A Eliminating Doppler shift
B Suppressing interference from atmospheric conditions

C Detecting stationary targets D Separating moving targets from clutter

134. The Doppler frequency shift in radar signals occurs due to **C**

A Absorption by the atmosphere B Reflection from stationary objects

C Reflection from moving targets D Refraction by the ionosphere

135. In Pulse Doppler radar, how is the Doppler frequency shift detected? **C**

A By measuring the phase difference between transmitted and received pulses B By analyzing the received signal 's amplitude

C By comparing the received signal 's frequency to the transmitted frequency D By measuring the time delay between transmitted and received pulses

136. Blind speeds occur when the Doppler frequency shift equals **C**

A Zero B The radar 's operating frequency

C The radar 's pulse repetition frequency D The target 's speed

137. The presence of blind speeds in MTI radar systems can lead to **A**

A False target detections B Clutter suppression

C Improved range measurement accuracy D Increased transmitter power

138. Double cancellation in MTI radar involves **B**

A Canceling both stationary and moving clutter B Canceling two consecutive pulses with opposite phase shifts

C Using two delay line cancellers in series D Transmitting two pulses simultaneously

139. What is the primary advantage of double cancellation in MTI radar systems? **B**

A Improved range accuracy B Enhanced clutter suppression

C Higher transmitter power D Lower receiver noise

140. The effectiveness of delay line cancellers in MTI radar systems is affected by **B**

A The radar 's transmitter power B The Doppler shift of the target

C The target 's range D The radar 's receiver bandwidth

141. Blind speeds in MTI radar are related to **C**

A Targets moving at very high speeds B Targets moving at very low speeds

C The radar 's pulse repetition frequency D The radar 's operating frequency

142. An advantage of using an MTI radar with a power oscillator transmitter is **B**

A Improved range resolution B Better clutter rejection

C Higher target velocity accuracy D Reduced susceptibility to jamming

143. What is the purpose of delay line cancellers in MTI radar systems? **C**

A To delay the received signal for accurate range measurement B To filter out stationary clutter

C To cancel out Doppler shifts from moving targets D To improve transmitter power efficiency

144. In delay line cancellers, the length of the delay line determines the cancellation of signals with specific **D**

A Amplitude B Frequency

C Phase D Doppler shift

145. The filter characteristics of delay line cancellers are designed to attenuate signals with specific **A**

A Doppler frequencies B Range values

C Phase differences D Transmit frequencies

146. In an MTI radar system with a pulse repetition frequency of 10 kHz, what is the blind speed for the radar? **B**

A 150 km/h B 300 km/h

C 500 km/h D 1000 km/h

147. The concept of blind speeds is closely related to the radar 's **D**

A Maximum range B Pulse duration

C Antenna gain D Pulse repetition frequency

148. Double cancellation in MTI radar is effective at **A**

A Removing stationary clutter B Tracking fast-moving targets

C Reducing the radar 's duty cycle D Enhancing range resolution

149. The key advantage of an MTI radar with a power oscillator transmitter is its **C**

A Ability to measure Doppler frequency accurately B Enhanced target discrimination

C Resistance to jamming D High transmitter power efficiency

150. In an MTI radar with delay line cancellers, the cancellation performance can be affected by **B**

A The target 's altitude B The target 's shape

C The radar 's antenna gain D The range between the radar and the target

151. What is the purpose of the range gate in MTI radar with a power amplifier transmitter? **A**

A To determine the target 's range B To eliminate stationary clutter

C To measure Doppler frequency D To control the transmitter power

152. The advantage of an MTI radar with a power amplifier transmitter is its ability to **B**

A Track multiple targets simultaneously B Detect weak stationary targets

C Accurately measure target velocity D Transmit continuous waveforms

153. What is the primary limitation of an MTI radar with a power oscillator transmitter? **B**

A Reduced transmitter power B Limited target detection range

C Poor range resolution D Susceptibility to Doppler shift

154. What is the advantage of using double cancellation in MTI radar over single cancellation? **C**

A Reduced susceptibility to jamming B Improved range measurement accuracy

C Better suppression of moving clutter D Enhanced sensitivity to weak signals

155. What is the primary purpose of Nth cancellation in MTI radar? **A**

A To eliminate stationary clutter B To reduce receiver bandwidth

C To increase transmitter power D To improve target velocity accuracy

156. Nth cancellation in MTI radar involves transmitting pulses with **D**

A Different frequencies B Varying phase shifts

C Alternating polarizations D Staggered pulse repetition frequencies

157. What is the effect of Nth cancellation on blind speeds in MTI radar? **A**

A It eliminates blind speeds B It increases the number of blind speeds

C It has no impact on blind speeds D It reduces the radar 's maximum range

158. In an MTI radar system, why is the width of the delay line canceler 's frequency response important? **D**

A To determine the target 's range accurately B To achieve maximum transmitter power

C To suppress Doppler frequencies D To eliminate stationary clutter effectively

159. Blind speeds can cause ambiguity in MTI radar when **B**

A Stationary clutter is strong B Moving targets exceed the blind speed

C The pulse repetition frequency is low D Doppler frequencies are outside the radar 's bandwidth

160. What can be a potential challenge when implementing double cancellation in MTI radar? **B**

A Increased receiver sensitivity B Overcoming blind speeds

C Achieving higher transmitter power D Preventing interference from atmospheric conditions

161. In MTI radar with a power amplifier transmitter, what technique is used to remove unwanted clutter signals? **D**

A Pulse compression B Phase modulation

C Frequency modulation D Doppler filtering

162. The power oscillator transmitter in an MTI radar produces pulses with **D**

A High peak power and long pulse width
B Low peak power and short pulse width
C Low peak power and long pulse width
D High peak power and short pulse width

163. What radar parameter is adjusted to control the range resolution in MTI radar? **A**

A Pulse duration
B PRF
C Receiver bandwidth
D Transmitter power

164. What is the main limitation of MTI radar in detecting slow-moving targets? **B**

A High susceptibility to Doppler shift
B Blind speeds
C Limited receiver bandwidth
D Poor clutter suppression

165. Multipath interference can negatively impact MTI radar 's performance by causing **C**

A Blind speeds
B Range ambiguities
C False target detections
D Decreased transmitter power

166. One of the limitations of MTI radar is its susceptibility to **A**

A Clutter interference
B Atmospheric refraction
C Frequency modulation
D Stationary targets

167. What parameter in MTI radar determines the minimum unambiguous range? **B**

A Pulse duration
B Pulse repetition frequency
C Pulse bandwidth
D Pulse amplitude

168. The pulse repetition frequency (PRF) of an MTI radar affects the **D**

A Target range accuracy
B Target velocity measurement
C Receiver sensitivity
D Clutter suppression

169. Range gated Doppler filters are used to **C**

A Suppress Doppler frequencies
B Measure target range accurately
C Separate moving and stationary targets
D Increase the radar 's maximum range

170. How do range gated Doppler filters help in clutter suppression? **B**

A They apply time-delay filters
B They focus on specific range intervals
C They filter out stationary targets
D They amplify low Doppler frequencies

171. The bandwidth of range gated Doppler filters is determined by the **C**

A Target 's velocity
B Target 's range
C Pulse repetition frequency
D Target 's shape

172. How does the range gate in range gated Doppler filters affect clutter suppression? **A**

A It eliminates clutter reflections within a specific range interval
B It enhances clutter echoes within a specific range interval
C It amplifies clutter echoes at all ranges
D It eliminates stationary clutter completely

173. What is the relationship between pulse duration and range resolution in MTI radar? **A**

A Inversely proportional
B Directly proportional
C No relationship
D Exponential

174. A limitation of MTI radar performance is its difficulty in distinguishing closely spaced **A**

A Moving targets
B Blind speeds
C Reflective surfaces
D Doppler frequencies

175. Staggered Pulse Repetition Frequencies (PRFs) in Nth cancellation are designed to **B**

A Increase the radar 's maximum range
B Minimize the effects of Doppler shift
C Improve target range accuracy
D Reduce the radar 's duty cycle

176. In terms of target detection, Pulse Doppler radar outperforms MTI radar by **B**

A Better Doppler filtering
B Greater immunity to atmospheric conditions
C Improved clutter suppression
D Higher peak power transmission

177. In Nth cancellation with staggered PRFs, what is the main goal of using staggered pulse repetition frequencies? **D**

A To achieve higher target range resolution
B To eliminate all Doppler shifts
C To remove stationary clutter
D To mitigate the effects of blind speeds

178. In comparison to Pulse Doppler radar, MTI radar is more effective in suppressing **B**

A Stationary targets
B Clutter interference
C Moving targets
D Atmospheric noise

179. One advantage of Pulse Doppler radar over MTI radar is its ability to **D**

A Suppress Doppler shift
B Eliminate stationary clutter
C Accurately measure target range
D Detect slow-moving targets

180. Compared to Pulse Doppler radar, MTI radar is generally better at detecting **B**

A Weak signals
B Fast-moving targets
C Targets in all weather conditions
D Targets with low reflectivity