

COMP4336/9336 Mobile data networking
W9 Quiz: RF Sensing

1. What is the resolution of an FMCW radar utilising the frequency band 77GHz-81GHz?
 - a) 7.5cm
 - b) 3.75cm**
 - c) 30cm
 - d) 60cm
 - e) 90cm

2. What is the resolution of pulse radar operating with 100ns pulses?
 - a) 5m
 - b) 10m
 - c) 15m**
 - d) 20m
 - e) 100m

3. A 60GHz radar is likely to
 - a) Have better resolution than a 24GHz radar**
 - b) Have worse resolution than a 24GHz radar
 - c) Have better resolution than a 77GHz radar
 - d) Have a resolution on the order of a few μm
 - e) None of these

4. For a $\text{CSI}=3+j4$, the amplitude response is
 - a) 4
 - b) 6
 - c) 5**
 - d) 7
 - e) None of these

5. More subcarriers per channel means
 - a) More CSI values available per packet**
 - b) More RSS values available per packet
 - c) More CSI and more RSS values available per packet
 - d) More RSS values but less CSI values available per packet
 - e) More CSI values but less RSS values available per packet

6. Which of the following statements is true?
 - a) Pulse radars estimate range by sending chirps.
 - b) FMCW radars estimate range by transmitting ultra-short pulses
 - c) FMCW radars transmit signals whose frequency changes over time**
 - d) FMCW radars cannot work with mmWave signals
 - e) Pulse bandwidth increases proportionally with increasing pulse width

7. An UWB radar operating in the band 1.5GHz-2.5GHz can separate two objects along the same bearing if
- a) The difference of distances of the two objects from the radar is 10cm
 - b) The difference of distances of the two objects from the radar is 12cm
 - c) The difference of distances of the two objects from the radar is 16cm**
 - d) The difference of distances of the two objects from the radar is less than 15cm
 - e) The difference of distances of the two objects from the radar is less than 10cm
8. Radars are often used for both communication and sensing.
- a) True
 - b) False
9. RSS can detect more fine-grained human activities compared to CSI
- a) True
 - b) False**
10. CSI is used by radars to detect and estimate the range of target objects.
- a) True
 - b) False**

End of W9 Quiz
