Week 1 Assignment 1

The due date for submitting this assignment has passed. **Due on 2019-08-14, 23:59 IST.** As per our records you have not submitted this assignment.

1) According to CCIR, 1953, the range of frequencies in Very High Frequency band is

a. 30 MHz to 300 MHz  

b. 30 KHz to 300 KHz  

c. 3 MHz to 30 MHz  

d. 300 MHz to 3000 MHz  

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
a.  

2)
A radar antenna has a normalized radiation intensity \( U(\theta) = \cos^2(\theta) \cos^2(3\theta) \). The antenna has a scan rate of 10 revolutions per minute. The radar has a pulse repetition rate of 200 Hz. Determine the number of pulses available in the receiver for integration.

a. 97
b. 96
c. 95
d. 94

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

3) A X-band radar has a pulse repetition frequency of 300 Hz. Determine the maximum unambiguous range of the radar.

a. 1000 km
b. 500 km
c. 300 km
d. 100 km

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

4) An S-band radar antenna transmits pulses at PRF of 300 Hz with pulse width of 10 \( \mu \)s. Determine the minimum distance between the two closely spaced targets that can be identified by the radar.

a. 3.5 km
b. 2.8 km
c. 2.0 km
d. 1.5 km

No, the answer is incorrect.
Score: 0
Accepted Answers:
A radar antenna transmits 5 kW average power and has a gain of 30 dB. The transmitted pulse has 25% duty cycle. Determine the power intercepted by a target of RCS 1 sq-meter located at 200 km away from the radar.

a. -44 dBm
b. -14 dBm
c. -14 dBW
d. -5 dBm

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

PRF staggering is required for
a. discriminating multiple time around echoes from the unambiguous echoes
b. increasing range resolution
c. increasing the unambiguous range

da.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

A radar mounted on an automobile is to be used to determine the distance to a vehicle travelling directly in front of it. The radar operates at a frequency of 9.375 MHz with pulse width of 10 ns and has an antenna having a gain of 10 dB. Find the peak power required to detect without ambiguity a 10 square meters radar cross section vehicle at a range of 500 meters if the radar receiver has sensitivity of -93 dBm.

a. 6 W
b. 6 kW
c. 60 W
d. 60 kW

da.
8) **1 point**

For the radar system described in Q7, determine the average power transmitted by the radar antenna.

- a. 0.5 W
- b. 0.4 W
- c. 0.3 W
- d. 0.2 W

No, the answer is incorrect. 
Score: 0
Accepted Answers: c.

9) **1 point**

A radar is operating at 3 GHz and radiates 10 kW peak power. Determine the physical area of the radar antenna if the target of 10 sq-meters RCS located at 20 km away from the radar intercepts 0.2 Watt power. The antenna has an aperture efficiency of 90%.

- a. 8 sq-meters
- b. 9 sq-meters
- c. 10 sq-meters
- d. none of these

No, the answer is incorrect. 
Score: 0
Accepted Answers: b.

10) **1 point**

No, the answer is incorrect. 
Score: 0
Accepted Answers:
a.