Assignment 4

The deadline for submitting the assignment has passed. As per our record, you have not submitted this assignment.

1. What is the co-sinusoidal phase difference between the 11 elements of a linear array with spacing of $0.5 \lambda_0$ for covering the beams at an angle of $30^\circ$ from the broadside.
   - $60^\circ$
   - $90^\circ$
   - $180^\circ$
   - $270^\circ$

   The answer is incorrect.

   Corrected Answer: $270^\circ$

2. An antenna array is required to scan up to an angle $5^\circ$ to $60^\circ$ measured from the broadside. To avoid grating lobes, the maximum allowed separation is

   a) $0.7\lambda_0$
   b) $0.8\lambda_0$
   c) $0.9\lambda_0$
   d) $1.0\lambda_0$

   The answer is incorrect.

   Corrected Answer: $0.7\lambda_0$

3. Complete the following: 2 points
   - $\text{Gain of the array in dB}$
   - $\text{Gain of the antenna}$

   Corrected Answer: $10 \text{ dB}$

4. Determine the directive gain of an array of 10 elements.

   a) $5.7\text{ dB}$
   b) $6.2\text{ dB}$
   c) $6.7\text{ dB}$
   d) $7.2\text{ dB}$

   The answer is incorrect.

   Corrected Answer: $6.2\text{ dB}$

5. Approximate direction of first null from broadside is

   a) $15^\circ$
   b) $18^\circ$
   c) $30^\circ$
   d) $45^\circ$

   The answer is incorrect.

   Corrected Answer: $30^\circ$

6. The distance of the side lobe level from broadside is

   a) $10^\circ$
   b) $30^\circ$
   c) $45^\circ$
   d) $60^\circ$

   The answer is incorrect.

   Corrected Answer: $45^\circ$

7. Approximate magnitude of first side lobe level in dB is

   a) $-10^\circ$
   b) $-12^\circ$
   c) $-14^\circ$
   d) $-16^\circ$

   The answer is incorrect.

   Corrected Answer: $-12^\circ$

8. A rectangular planar antenna array of isotropic elements has 10 elements in a direction with inter-element spacing of $0.5\lambda_0$ and 8 elements in a direction with inter-element spacing of $0.7\lambda_0$, respectively. The two elements are fed with equal amplitude and phase. Approximate gain of the array in dB is

   a) $-14^\circ$
   b) $16^\circ$
   c) $20^\circ$
   d) $24^\circ$

   The answer is incorrect.

   Corrected Answer: $16^\circ$

9. Complete the following: 2 points

   - $\text{Gain of the array in dB}$
   - $\text{Gain of the antenna}$

   Corrected Answer: $10 \text{ dB}$

10. Approximate gain of the array in dB is

   a) $10^\circ$
   b) $12^\circ$
   c) $14^\circ$
   d) $16^\circ$

   The answer is incorrect.

   Corrected Answer: $12^\circ$