

PROBLEM:

Circle the correct answer to each of these short answer questions:

1. A signal $x(t)$ is defined by: $x(t) = \Re\{(1 + j)e^{j\pi t}\}$. Its shortest period (T) is
 - (a) $T = 1$ sec.
 - (b) $T = 2$ sec.
 - (c) $T = 0.5$ sec.
 - (d) $T = \pi$ sec.
 - (e) none of the above
2. A sinusoidal signal $x(t)$ is defined by: $x(t) = \Re\{(1 + j)e^{j\pi t}\}$. When plotted versus time (t), its maximum value will be:
 - (a) $A = 1$
 - (b) $A = 1 + j$
 - (c) $A = \sqrt{2}$
 - (d) $A = 0$
 - (e) none of the above
3. Determine the amplitude (A) and phase (ϕ) of the sinusoid that is the sum of the following three sinusoids: $10 \cos(6t + \pi/2) + 7 \cos(6t - \pi/6) + 7 \cos(6t + 7\pi/6)$,
 - (a) $A = 10$ and $\phi = \pi/2$.
 - (b) $A = 7$ and $\phi = \pi/2$.
 - (c) $A = 3$ and $\phi = 0$.
 - (d) $A = 3$ and $\phi = \pi/2$.
 - (e) $A = 24$ and $\phi = \pi/2$.
4. Evaluate the complex number $z = \frac{j^{-1} - j^{-2}}{j^{-3} + j^{-4}}$.
 - (a) $z = 0$
 - (b) $z = j$
 - (c) $z = -j$
 - (d) $z = 1$
 - (e) $z = -1$