Assignment! CN

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Q.1:- Numericals:-

(i) Based on Frequency:-

(a) An Em wave has wavelength $\lambda = 150m$ and propogates $v = 3 \times 10^8$ m/s find its frequency.

(b) A digital clock signal operates at $f = 2GHz$. find its time period T.

(c) The bit duration in digital link is 250 ns. Find the clock frequency of transmitter.

(ii) Based on Amplitude:-

(a) The voltage of a sineware is given by:
$v(t) = A \sin(2\pi \cdot 50t + 90^\circ)$ At $t=0$, the measured voltage is 5V. find the amplitude A.

(b) A sineware has period $T = 4ms$ and is given by:
$V(t) = A \sin(2\pi ft + 0^\circ)$
At $t = 1ms$, the voltage is 3V. Find A.

(c) The sineware $r(t) = A \sin(2\pi \cdot 60t + 30^\circ)$. At $t=0$, the voltage is 4V. Find A.

(iii) Based on phase:-

(a) A sineware is of offset $\frac{1}{6}$ cycle wrt zero. what is its phase in degree and radian.

(b) A Component has impedance $z = R + jx$ with $R = 30\Omega$ and $x = 40\Omega$ find the phase angle of Z.

(c) A phase is -144°. What fraction of a cycle is this?

(iv) Based on Period:-

(a) A sineware has a frequency of $f = 50$ Hz. Find its Period T in Seconds.

(b) A sineware has angular frequency $\omega = 628$ rad/s. find its period T.

(c) An AC signal has frequency $f = 2\,kHz$. Find T

(v) Based on wavelength

a) A sound wave travels at a speed of $v = 340\,m/s$ and has a frequency $f = 170\,Hz$. find its wavelength.

b) A radio wave travels at the speed of light ($3 \times 10^8\,m/s$) and has a frequency of 100 MHz. find λ.

(c) A light wave in vaccum has frequency $6 \times 10^{14}\,Hz$. find its wavelength.

Q2. Define Nyquist formula and define Shenon formula.

Q. Explain data link protocols i.e HDLC and PPP.