## Tutorial Sheet No. 1

## AC Fundamentals

1. Find the periods of a periodic voltages that have frequencies of *( i )* 0.2 Hz, *( ii )* 12 kHz, and ( ( iii ) 4.2 MHz.

Ans: (i) 5S, (ii) 83.3µS (iii) 238nS

2. What are the period and frequency of a periodic voltage that has 12 cycles in 46 ms?

Ans: 3.83mS, 261Hz

3. Find the period, the frequency, shown for the periodic wave illustrated in Fig.1

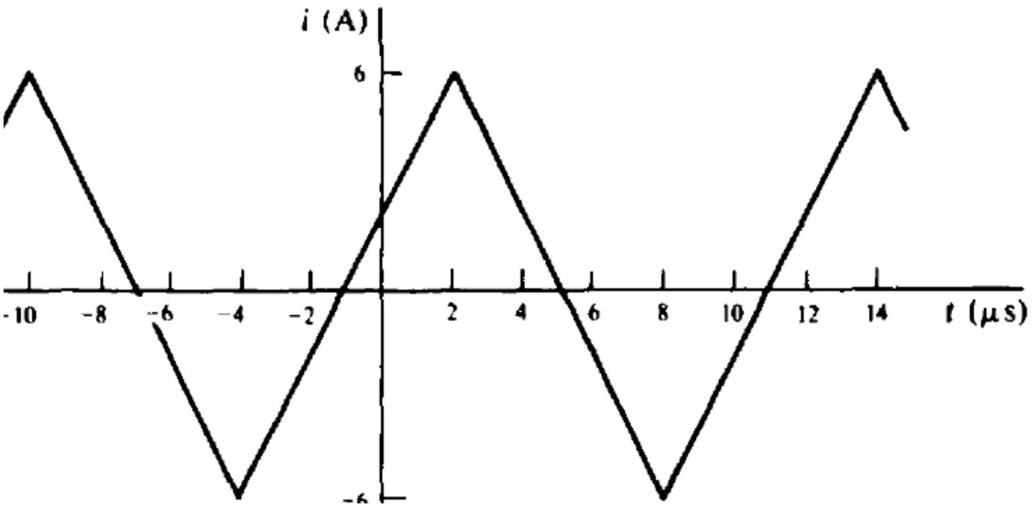


Fig.1

Ans:12 µS, 83.3kHz

4. Convert the following angles in degrees to angles in radians: *( a )* $49^0$, (h) – $130^0$, and (c) $435^0$.

Ans: 0.855 rad,-2.27 rad, 7.59 rad

5. Convert the following angles in radians to angles in degrees: *( a )* $\pi/18$ rad, (b) -0.562 rad.

Ans: $10^0$ ,$-32.2^0$

6. Find the periods and frequencies of sinusoidal currents that have radian frequencies of (a) 9 $\pi$ rad/s, (b) 0.042 rad/s

Ans: (a) 4.5Hz, 0.222 S, (b) 6.68mHz, 150S

7. Find the amplitudes and frequencies of **(a)** 42.1 sin ($377t + 30^0$) and *( b )* - 6.39 cos ( $10^5t-20\ ^0$).

Ans: (a) 42.1, 60Hz (b) 6.39, 15.9kHz

8. Evaluate (a) $v = 200 \sin (3393t + \pi /7)$ V and *( b )* $i = 67 \cos (3016t – 42^0)$ mA at $t$ = 1.1 ms.

Ans:- (a) -172V (b) -56.9mA