

Solution : Echantillonnage

Exercice 1

$$u = U_m \sin \omega t = U_m \sin(2\pi f t) ; u_3 = U_m \sin(2\pi f \cdot 3T_E)$$

$$\text{avec } f = 1 \text{ kHz et } f_E = 10 \text{ KHz} = 10 \cdot f, T_E = 1/f_E = 1/(10 \cdot f)$$

$$\rightarrow u_3 = U_m \sin(2\pi \cdot 3/10) = U_m \sin(0,6 \cdot \pi) = 0,951 V$$

Exercice 2

$$1- f_E = 12f \text{ c'est-à-dire } T_E = T/12$$

Donc il y a $N=12$ échantillons par période

$$2- U(0)=0 ; u(T_E) = U_m \sin(2\pi \cdot f \cdot T_E) = U_m \sin(2\pi \cdot f / f_E) = U_m \sin(2\pi/12) = U_m \sin(\pi/6) \\ = 10,0,5 = 5V$$

$$u(2 \cdot T_E) = U_m \sin(2\pi \cdot /6) = 8,66V \text{ etc...}$$

t	0	T _E	2T _E	3T _E	4T _E	5T _E	6T _E	7T _E	8T _E	9T _E	10T _E	11T _E
U(V)	0	5	8.66	10	8.66	5	0	-0.5	-8.66	-10	-8.66	-0.5

3-

