The University of Jordan
Faculty of Eng. & Tech.
Electrical Eng. Dept.

5/10

EE 421

Quiz #1, 2

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22/10/01

The audio tone shown in fig. 1. a and the carrier signal shown in fig. 1. b are the input to a DSB – SC modulator.

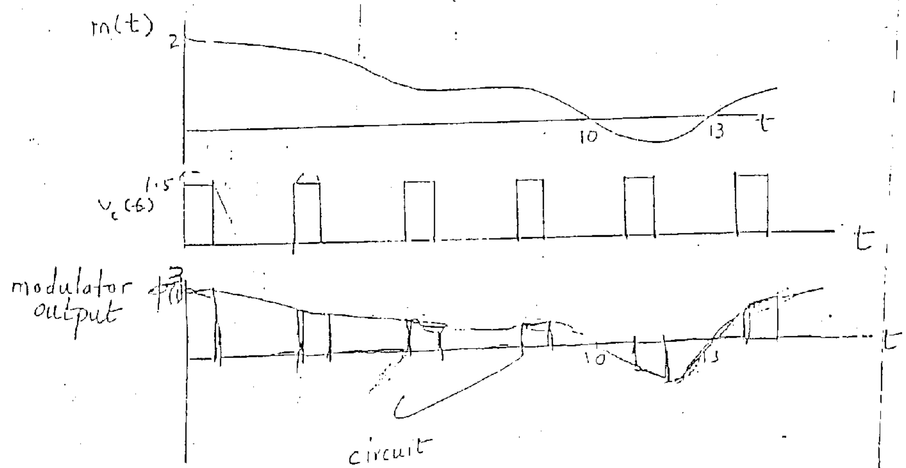

Fig. 1

a) Sketch the diagram of the modulator.

b) Sketch the time domain representation of the modulator output.

a)

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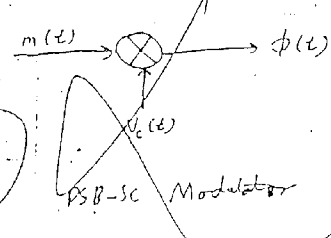

The Univ. of Jordan
Faculty of Eng. And Technology

Quiz # 2

982715

Date: 7/11/2001

EE 421

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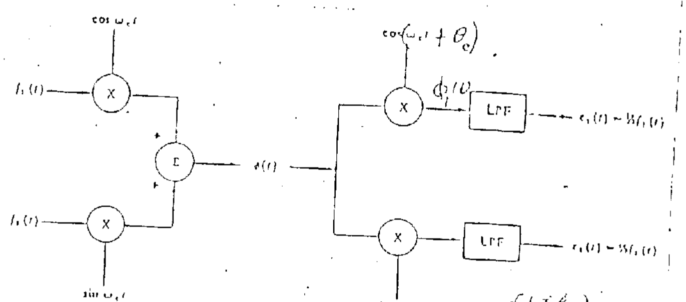
a) For the quadrature multiplexing system shown, evaluate $e_1(t)$.

b) Use your results to comment on the credibility of such a system.



$\phi(t) = f_1(t)\cos\omega_c t + f_2(t)\sin\omega_c t$

$\phi_1(t) = \phi(t)\cdot\cos(\omega_c t + \theta_0)$

$= f_1(t)\cos\omega_c t\cos(\omega_c t + \theta_0) + f_2(t)\sin\omega_c t\cos(\omega_c t + \theta_0)$

~~$= \frac{1}{2}f_1(t)(\cos\theta_0 + \cos(2\omega_c t + \theta_0)) + \frac{1}{2}f_2(t)(\sin\theta_0 + \sin(2\omega_c t + \theta_0))$~~

~~$\Phi_1(f) = K F_1(f - 2f_c - \theta_0) + K F_2(f + 2f_c + \theta_0) + K\delta_1(f) + K\delta_2(f)$~~

~~$\Rightarrow \Phi_1(f) = \frac{1}{2}F_1(f - 2f_c - \theta_0) + \frac{1}{2}F_1(f + 2f_c + \theta_0) + \frac{1}{2}F_2(f - 2f_c - \theta_0) + \frac{1}{2}F_2(f + 2f_c + \theta_0)$~~

$\Phi_1(f) = \frac{1}{2}F_1(f) + \frac{1}{2}F_1(f - 2f_c) + \frac{1}{2}F_2(f) + \frac{1}{2}F_2(f - 2f_c)$

$\Rightarrow e_1(f) = \frac{1}{2}F_1(f) + \frac{1}{2}F_2(t)$ #