Prof. Donald Cox
Ph.D. Quals Question
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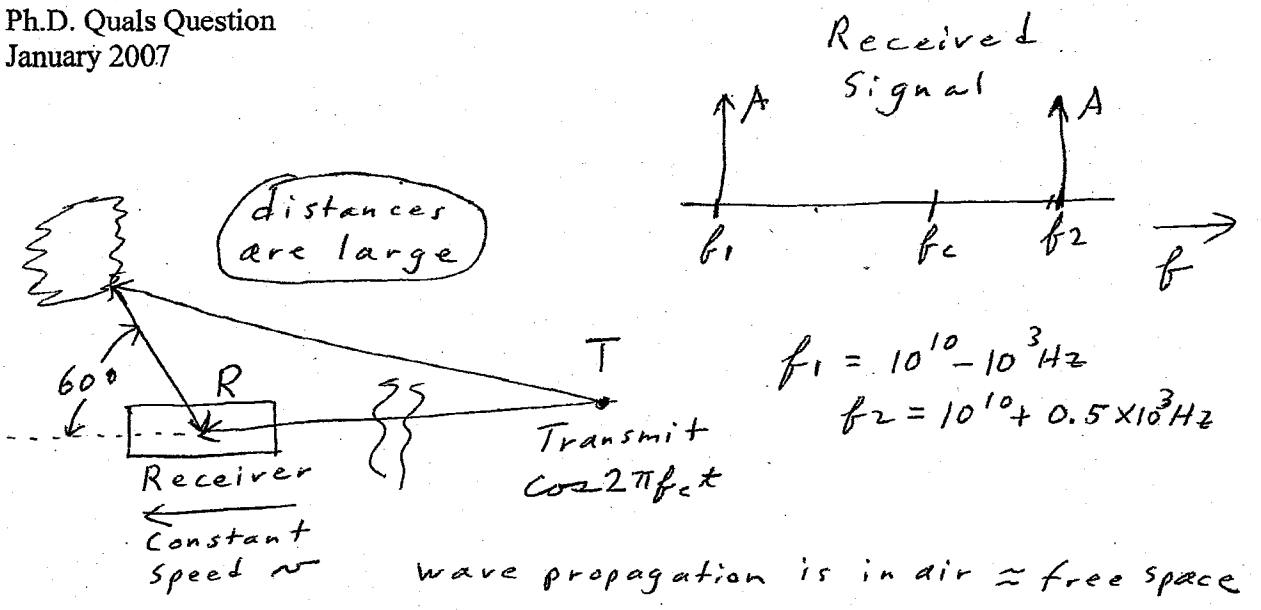

Figures above were on the white board. The situation was explained: one attenuated direct path and one reflected path. The received signal spectrum is shown with two spectral lines at f_1 and f_2. There is no signal at f_c.

Questions for discussion:

a) What is f_c?
(If student did not recognize or know Doppler relationship, he/she was coached to attempt to derive it from EM wave propagating as $\cos(2\pi f_c - kz)$.

b) What is Doppler shift frequency?
(resulted from work for a)

c) What is v?

d) Is v reasonable speed for a car?