Q.2.   DOPPLER   SHIFT   IN   MOBILE (WIRELESS)
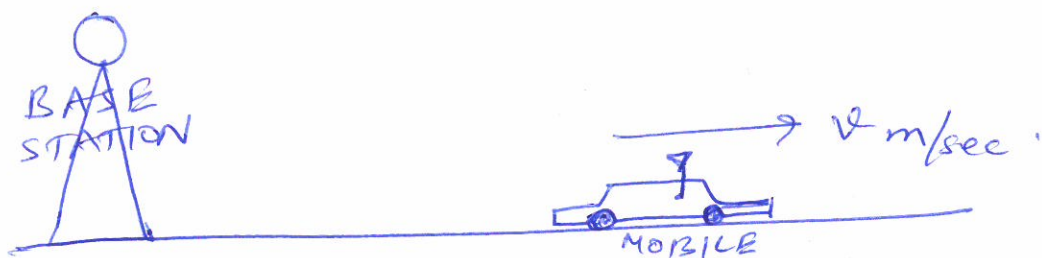
COMMUNICATION.

consider a far away mobile user moving away

from the base station at a speed of

V meters/second. the channel (passband)

between the base station and the mobile

user is "time-variant". let $x_p(t)$

denote the narrow band passband signal transmitted

by the base station.

$$x_p(t) = x^I(t) \cos 2\pi f_c t - x^Q(t) \sin 2\pi f_c t$$

$$, \ t \in [0, T].$$

assume $f_c \gg W$, and $\dfrac{VT}{c} \ll \dfrac{1}{2W}$

where $c = 3 \times 10^8$ m/sec is

the speed of light.