
Amplitude Modulation function (Question-2)

Table of Contents

V_AM	1
Dirac delta function	2

V_AM

`%_V_AM()_ is the function to generate Conventional AM signals`

`% Concept is ->`

`% message wave(mw)=Am*cos(2*pi*fm.*t);`

`% carrier wave(cw)=cos((2*pi*fc.*t)+ PHIc);`

`% V_AM in time(vt)=A.*mw.*cw + Ac.*cw;`

`function [vt,vf,amod,u]=V_AM(fc,fm,PHIc,A,Ac,Am,t,f)`

`vt=((A*Am*cos(2*pi*fm.*t))+Ac).*cos((2*pi*fc.*t)+PHIc); % generating time
domain signal`

`mn=A*Am;`

`Not enough input arguments.`

`Error in V_AM (line 10)`

`vt=((A*Am*cos(2*pi*fm.*t))+Ac).*cos((2*pi*fc.*t)+PHIc); % generating time
domain signal`

Calculating modulation Index and proposing of Ac value

`amod=A*Am/Ac;`

`if(Ac>mn)`

`u="Ac should be greater than "+mn+" . Here Ac=1 works!!";`

`elseif(A==mn)`

`u="Ac should be greater than "+mn+" . Here Ac=1 just worked but still
it is not advisable to use it. Ac= "+(mn+1)+" will work here !!";`

`else`

`u="Ac should be greater than "+ mn+" . Here Ac=1 does not work. Ac=
"+(mn+1)+" will work here !!" ;`

`end`

For freq domain it is just F.T of vt

`vf=(A*Am*(1/4)).*(exp(1i*PHIc).*(D_D(f,(fc-fm))+D_D(f,(fc
+fm)))+exp(-1i*PHIc).*(D_D(f,(-fc-fm))+D_D(f,(-fc+fm)))))+(Ac*(1/2).*(D_D(f,
(-fc))+D_D(f,(fc)))); % generating freq domain signal`

`end`

Dirac delta function

```
function vf=D_D(f,fx)
% fx is the point at which d_d is to be plotted
vf=zeros(size(f));
if(ismember(fx,f)) % if fx is in f
    vf(fx+1-f(1))=1; % at point fx vf=1
end
end
```

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