```
fm = 60 ; fc = 6000 ;

t = 0 : 0.001 : 1 ;

M = Cos (2 * pi * fc * t) ;

N = Cos (2 * pi * fm * t) ;

m = Am / Ac ;

O = Ac * (1 + m * M) .* N ;
P = M .* N * Am * Ac ;
Subplot (4, 1, 1),

plot (t, N) ;

title ('Base band signal') ;

Subplot (4, 1, 2) ;

plot (t, M) ;

title ('Carrier band signal') ;

Subplot (4, 1, 3)

plot (t, O) ;

title ('Amplitude Modulated Signal') ;

Subplot (4, 1, 4)
```

```
plot (t, P) ;
title (' DSB-SC Modulated Signal') ;
```

2. $\phi_{FM}(t) = A_c \cos(\omega_c t + (B \sin(\omega_m t)))$

$A_c = 1$, $f_c = 5000$ Hz, $B = 0.998$, $f_m = 60$ Hz, $\omega_m = 377$ rad/s

$A_m = 0.5$

Matlab program :-

```
clc
clear all
close all
Ac = 1 ;
fc = 5000 ;
B = 0.998 ;
fm = 60 ;
Am = 0.5
t = 0 : 0.001 : 1 ;

m = Am * cos (2 * pi * fm * t) ;
c = Ac * cos (2 * pi * fc * t) ;
FM = Ac * cos (2 * pi * fc * t + ( B * cumsum (m))) ;

Subplot (3, 1, 1) ;
plot (t, m) ;
title (' base band signal') ;
Subplot (3, 1, 2) ;
plot (t, c) ;
title (' Carrier Signal') ;
Subplot (3, 1, 3)
plot (t, FM) ;
title (' FM Modulated Signal') ;
```