1.

```
clc;
clear all;
close all;
am=10;
fm=10;
fc=100;
ac=5;
t=0:0.001:1;
x=ams*in(2*pi*fm*t);
subplot(3,1,1);
plot(t,x);
xlabel('time');
ylabel('amplitude');
title('message signal/AA/21');

y=ac*sin(2*pi*fc*t);
subplot(3,1,2);
plot(t,y);
xlabel('time');
ylabel('amplitude');
title('Carrier signal/AA/21');

b=10;
z=ac*cos(2*pi*fc*t+b.*sin(2*pi*fm*t));
subplot(3,1,3),
plot(t,z),
xlabel('time');
ylabel('amplitude');
title('Under Modulation signal/AA/21');
```

2)

```
clc;
clear all;
close all;
am=5;
fm=10;
fc=100;
ac=10;
t=0:0.001:1;
x=ams*in(2*pi*fm*t);
subplot(3,1,1);
plot(t,x);
xlabel('time');
ylabel('amplitude');
title('message signal/AA/21');

y=ac*sin(2*pi*fc*t);
subplot(3,1,2);
plot(t,y);
xlabel('time');
ylabel('amplitude');
title('Carrier signal/AA/21');

b=10;
z=ac*cos(2*pi*fc*t+b.*sin(2*pi*fm*t));
subplot(3,1,3),
plot(t,z),
xlabel('time');
ylabel('amplitude');
title('Over Modulation signal/AA/21');
```

3)

```
clc;
clear all;
close all;
am=5;
fm=10;
fc=100;
ac=5;
t=0:0.001:1;
x=ams*in(2*pi*fm*t);
subplot(3,1,1);
plot(t,x);
xlabel('time');
ylabel('amplitude');
title('message signal/AA/21');

y=ac*sin(2*pi*fc*t);
subplot(3,1,2);
plot(t,y);
xlabel('time');
ylabel('amplitude');
title('Carrier signal/AA/21');

b=10;
z=ac*cos(2*pi*fc*t+b.*sin(2*pi*fm*t));
subplot(3,1,3),
plot(t,z),
xlabel('time');
ylabel('amplitude');
title('100% Modulation signal/AA/21');
```

4)

```
clc;
clear all;
close all;
am=10;
fm=5;
fc=100;
ac=5;
t=0:0.001:1;
x=ams*in(2*pi*fm*t);
subplot(3,1,1);
plot(t,x);
xlabel('time');
ylabel('amplitude');
title('message signal/AA/21');

y=ac*sin(2*pi*fc*t);
subplot(3,1,2);
plot(t,y);
xlabel('time');
ylabel('amplitude');
title('Carrier signal/AA/21');

b=10;
z=ac*cos(2*pi*fc*t+b.*sin(2*pi*fm*t));
subplot(3,1,3),
plot(t,z),
xlabel('time');
ylabel('amplitude');
title('Frequency signal/AA/21');
```

5)

```
clc;
clear all;
close all;
am=10;
fm=5;
fc=100;
ac=5;
t=0:0.001:1;
x=ams*in(2*pi*fm*t);
subplot(3,1,1);
plot(t,x);
xlabel('time');
ylabel('amplitude');
title('message signal/AA/21');

y=acs*in(2*pi*fc*t);
subplot(3,1,2);
plot(t,y);
xlabel('time');
ylabel('amplitude');
title('Carrier signal/AA/21');

b=10;
z=ac*cos(2*pi*fc*t+b.*cos(2*pi*fm*t));
subplot(3,1,3),
plot(t,z),
xlabel('time');
ylabel('amplitude');
title('Phase Modulation signal/AA/21');
```

1.

```
clc;
clear all;
close all;
am=5;
fp=4;
fc=50;
ac=10;
t=0:0.001:1;
x=am.*sin(2*pi*fc*t);
subplot(3,1,1);
plot(t,x);
xlabel('time');
ylabel('amplitude');
title('Amplitude/AA/21');
y=am/2.*square(2*pi*fp*t)+(am/2);
subplot(3,1,2);
plot(t,y);
xlabel('time');
ylabel('amplitude');
title('message signal/AA/21');

z=x.*y;
subplot(3,1,3);
plot(t,z);
xlabel('time');
ylabel('amplitude');
title('ASK/AA/21');
```

2.

```
clc;
clear all;
close all;
amp=5;
fp=4;

fc1=50;
fc2=100;
t=0:0.001:1;
c1=amp/2.*sin(2*pi*fc1*t);
c2=amp/2.*sin(2*pi*fc2*t);

subplot(4,1,1);
plot(t,c1);
grid on;
xlabel('time');
ylabel('amplitude');
title('Carrier 1/AA/21');
legend('carrier 1 wave');

subplot(4,1,2);
plot(t,c2);
grid on;
xlabel('time');
ylabel('amplitude');
title('Carrier 2/AA/21');
legend('carrier 2 wave');

m=amp/2.*square(2*pi*fp*t)+(amp/2);
subplot(4,1,3);
plot(t,m);
grid on;
xlabel('time');
ylabel('amplitude');
legend('message signal');

for i=0:1000
if m(i+1)==0
a(i+1)=c2(i+1);
else
a(i+1)=c1(i+1);
end
```

```
end
subplot(4,1,4);
plot(t,a);
grid on;
xlabel('angle');
ylabel('amplitude');
legend('FSK Signal');
title('Frequency shift keying/AA/21');
```

3.

```
clc;
clear all;
close all;
amp=5;
fp=4;

fc1=50;
fc2=100;
t=0:0.001:1;
c1=amp/2.*sin(2*pi*fc1*t);
c2=-amp/2.*sin(2*pi*fc1*t);

subplot(4,1,1);
plot(t,c1);
grid on;
xlabel('time');
ylabel('amplitude');
title('Carrier 1/AA/21');
legend('carrier 1 wave');

subplot(4,1,2);
plot(t,c2);
grid on;
xlabel('time');
ylabel('amplitude');
title('Carrier 2/AA/21');
legend('carrier 2 wave');

m=amp/2.*square(2*pi*fp*t)+(amp/2);
subplot(4,1,3);
plot(t,m);
grid on;
xlabel('time');
ylabel('amplitude');
legend('message signal');

for i=0:1000
if m(i+1)==0
a(i+1)=c2(i+1);
else
a(i+1)=c1(i+1);
end
```

```
end
subplot(4,1,4);
plot(t,a);
grid on;
xlabel('angle');
ylabel('amplitude');
legend('PSK Signal');
title('Phase shift keying/AA/21');
```