VIT®

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

WINTER SEMESTER 2019-2020
COURSE NAME: DIGITAL COMMUNICATION SYSTEMS
COURSE CODE: ECE4001
LAB MANUAL
TASK 4
MATLAB SIMULATIONS-ASK AND FSK

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SIMULATION OF ASK MODULATION AND DEMODULATION

AIM: To Simulate Amplitude Shift Keying Modulation and Demodulation.

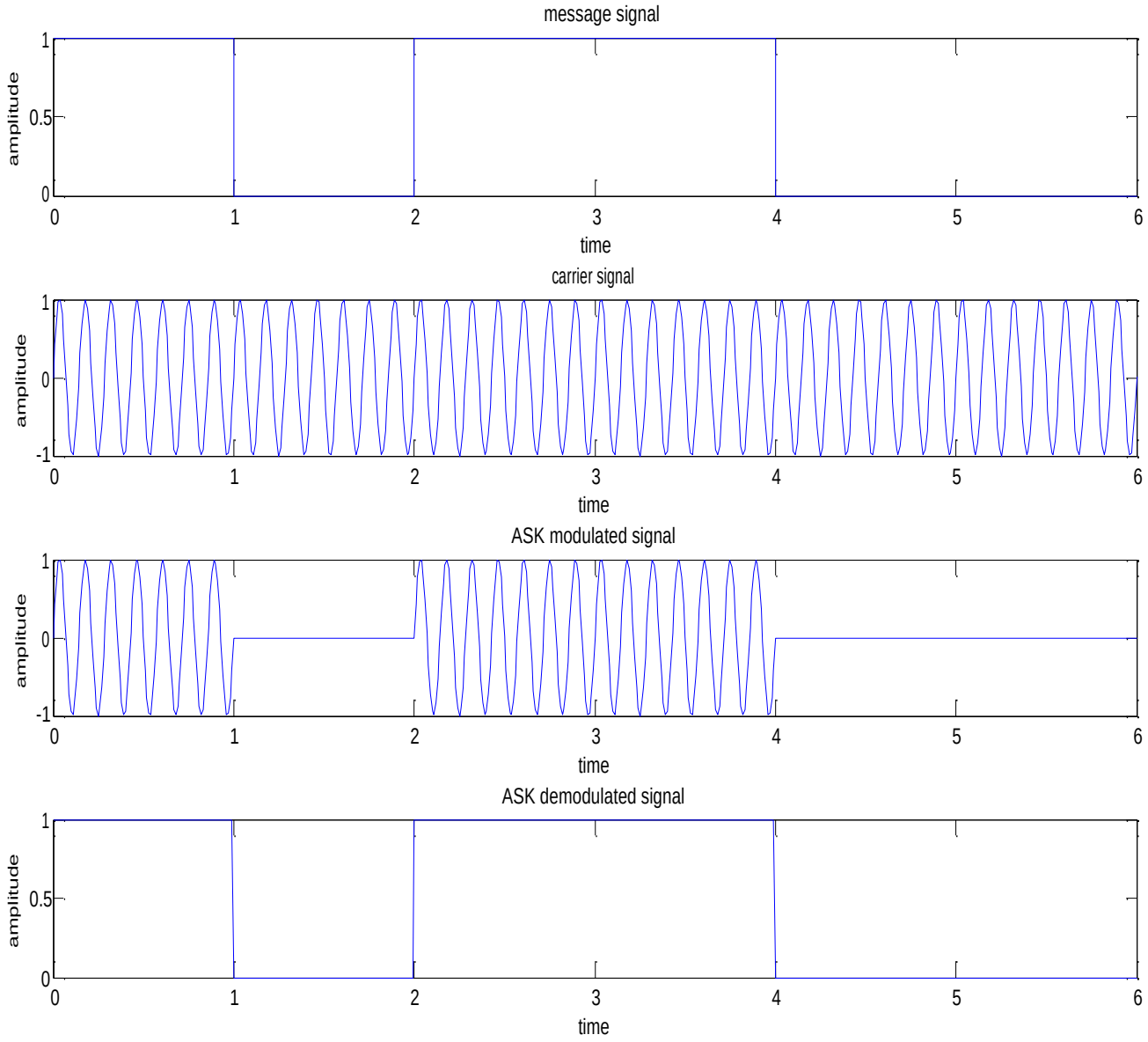
SOFTWARE REQUIRED: MATLAB 7.0

PROGRAM:

```
clc;
clear all;
close all;

%carrier frequency and amplitude
f=7;
a=1;

% 6 bits are used.
% THE BIT SEQUENCE IS 1,0,1,1,0,0 ==> 6 BITS.

n = [1 0 1 1 0 0];
l=length(n);
if n(l)==1
    n(l+1)=1
else
    n(l+1)=0
end
l1=length(n)
tn=0:l1-1;

%plot message signal

subplot(4,1,1);
stairs(tn,n);
title('message signal');
xlabel('time');
ylabel('amplitude');

%plot carrier signal

t=0:0.01:6;
y1=a*sin(2*pi*f*t);
subplot(4,1,2);
plot(t,y1);
title('carrier signal ');
xlabel('time');
ylabel('amplitude');
```

```
%modulation process

for i=1:6
    for j=(i-1)*100:i*100
        if(n(i)==1)
            s(j+1)=y1(j+1);
        else
            s(j+1)=0;
        end
    end
end

%plot ASK signal

subplot(4,1,3);
plot(t,s);
title('ASK modulated signal');
xlabel('time');
ylabel('amplitude');

%Demodulation process

for i=1:6
    for j=(i-1)*100:i*100
        if(s(j+1)==y1(j+1))
            x(j+1)=1;
        else
            x(j+1)=0;
        end
    end
end

%plot demodulated signal

subplot(4,1,4);
plot(t,x);
title('ASK demodulated signal');
xlabel('time');
ylabel('amplitude');
```

MODEL GRAPH:



RESULT: Simulation of Amplitude Shift Keying Modulation and Demodulation is done.

SIMULATION OF FSK MODULATION AND DEMODULATION

AIM: To Simulate Frequency Shift Keying Modulation and Demodulation.

SOFTWARE REQUIRED: MATLAB 7.0

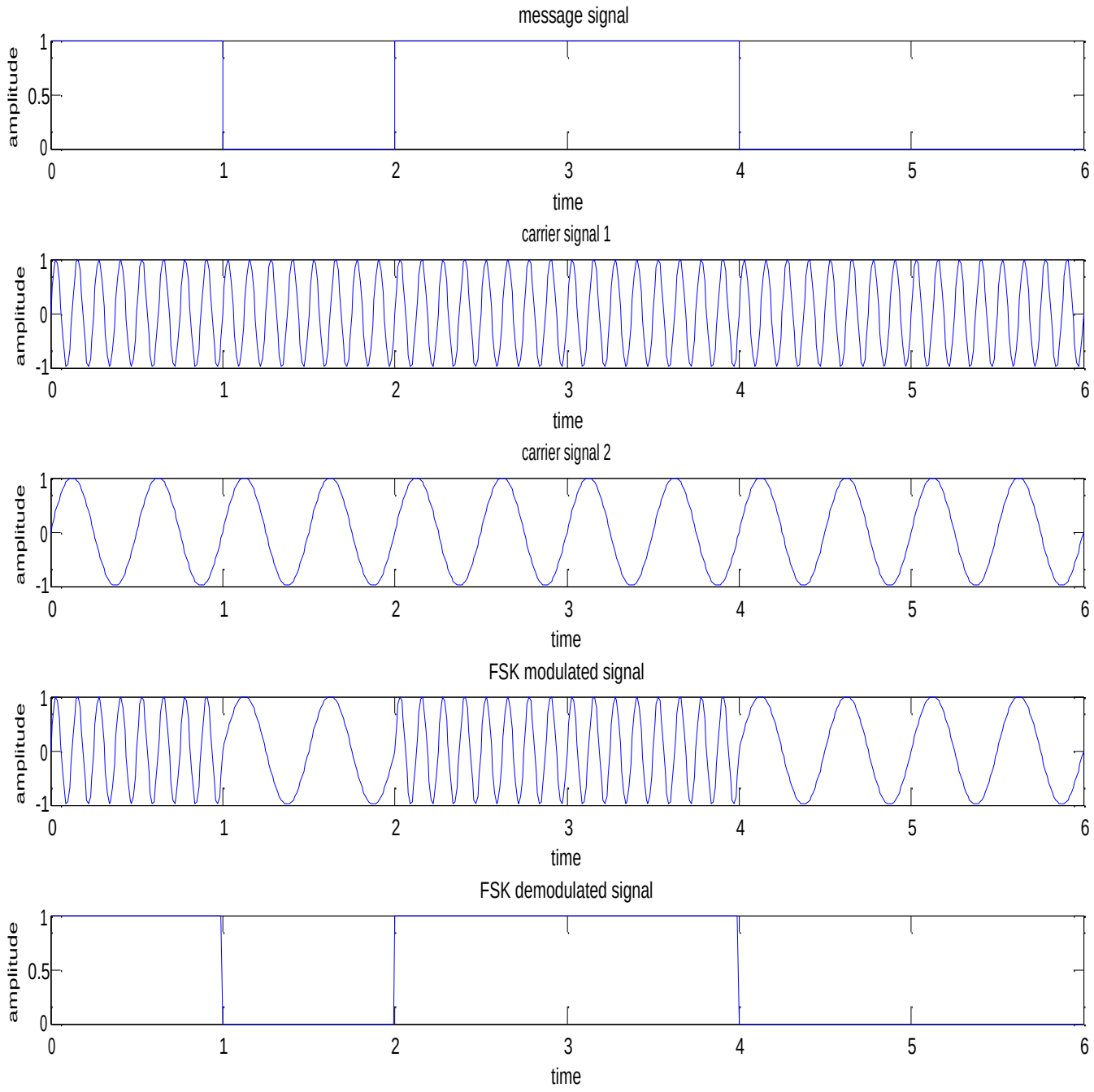
PROGRAM:

```
clc;
clear
all;
close
all;
%carrier frequency(s) and
amplitude f1=8;
f2=
2;
a=1
;

% 6 bits are used.
% THE BIT SEQUENCE IS 1,0,1,1,0,0 ==>6 BITS.

n=[1 0 1 1 0 0];
l=length(n
); if
n(l)==1
    n(l+1)=1
else
    n(l+1)=0
end
l1=length
(n)
tn=0:l1-
1;

%plot message

signal

subplot(5,1,1);
stairs(tn,n);
title('message
signal');
xlabel('time');
ylabel('amplitude');

%plot carrier

signal t=0:0.01:6;
```

```
y1=a*sin(2*pi*f1*
t);
y2=a*sin(2*pi*f2*
t);
subplot(5,1,2);
plot(t,y1);
title('carrier signal
1'); xlabel('time');
ylabel('amplitude');
```

```
subplot(5,1,3);
plot(t,y2);
title('carrier signal 2');
xlabel('time');
ylabel('amplitude');

%modulation process

for i=1:6
    for j=(i-1)*100:i*100
        if(n(i)==1)
            s(j+1)=y1(j+1);
        else
            s(j+1)=y2(j+1);
        end
    end
end

%plot FSK signal

subplot(5,1,4);
plot(t,s);
title('FSK modulated signal');
xlabel('time');
ylabel('amplitude');

%Demodulation process

for i=1:6
    for j=(i-1)*100:i*100
        if(s(j+1)==y1(j+1))
            x(j+1)=1;
        else
            x(j+1)=0;
        end
    end
end


%plot demodulated signal

subplot(5,1,5);
plot(t,x);
title('FSK demodulated signal');
xlabel('time');
ylabel('amplitude');
```

MODEL GRAPH:



RESULT: Simulation of Frequency Shift Keying Modulation and Demodulation is done.