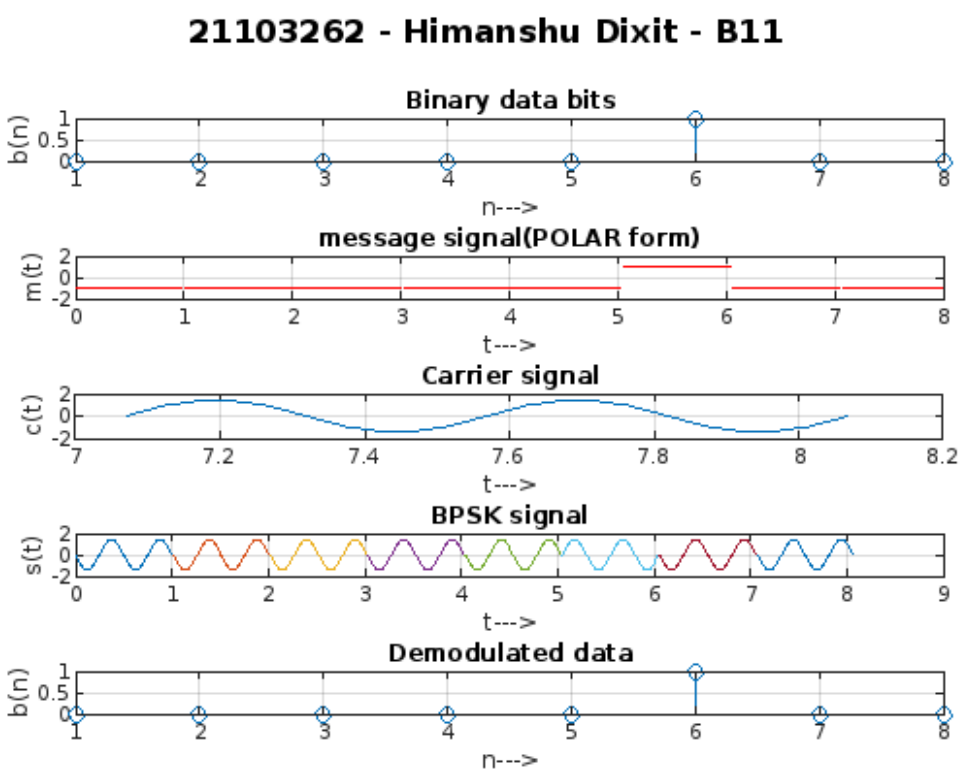
```
% PSK modulation
% Generate carrier signal
Tb=1;
t=0:Tb/100:Tb;
fc=2;
c=sqrt(2/Tb)*sin(2*pi*fc*t);
% Generate message signal
N=8;
m=rand(1,N);
t1=0;
t2=Tb;
for i=1:N
t=[t1:.01:t2];
if m(i)>0.5
m(i)=1;
m_s=ones(1,length(t));
else
m(i)=0;
m_s=-1*ones(1,length(t));
end
message(i,:)=m_s;
% Product of carrier and message signal
bpsk_sig(i,:)=c.*m_s;
% Plot the message and BPSK modulated signal
subplot(5,1,2);
axis([0 N -2 2]);
plot(t,message(i,:),'r');
title('message signal(POLAR form)');
xlabel('t--->');
ylabel('m(t)');
grid on;
hold on;
subplot(5,1,4);
plot(t,bpsk_sig(i,:));
title('BPSK signal');
xlabel('t--->');
ylabel('s(t)');
grid on;
hold on;
t1=t1+1.01;
t2=t2+1.01;
end
hold off
% Plot the input binary data and carrier signal
subplot(5,1,1);
stem(m);
title('Binary data bits');
xlabel('n--->'); ylabel('b(n)');
grid on;
subplot(5,1,3);
plot(t,c);
title('Carrier signal');
```

```
xlabel('t--->');
ylabel('c(t)');
grid on;
% PSK Demodulation
t1=0;
t2=Tb;
for i=1:N
t=[t1:.01:t2];
% Correlator
x=sum(c.*bpsk_sig(i,:));
% Decision device
if x>0
demod(i)=1;
else
demod(i)=0;
end
t1=t1+1.01;
t2=t2+1.01;
end
% Plot the demodulated data bits
subplot(5,1,5);
stem(demod);
title('Demodulated data');
xlabel('n--->');
ylabel('b(n)');
grid on;
sgtitle('21103262 - Himanshu Dixit - B11 ', ...
'FontSize',12, 'FontWeight', 'bold', 'HorizontalAlignment', ...
'center', 'FontName', 'Times New Roman');
```



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