Q6)

```matlab
avg_SNR = 0:0.1:20; gamma_b_bar = 10.^(avg_SNR/10); m = [1 2 4];
line = ['-k', '-r', '-b'];
for i = 1:size(m,2)
for j = 1:size(gamma_b_bar, 2)
    syms phi
    out = (1 + gamma_b_bar(j)/(m(i)*(sin(phi).^2)) ).^(-m(i));
    answ = (1/pi)*vpaintegral(out,phi,[0 pi/2]);
    Pb_bar(i,j)=vpa(answ);
end
figure(1);
semilogy(avg_SNR,Pb_bar(i,:) , line(i));
hold on;
end
xlabel('Average SNR ( gamma_b ) in dB');
ylabel('Average bit error probability ( P_b )');
title('Plots of P_b for BPSK modulation in Nakagami fading for m = 1, 2, 4');
legend('m = 1',  'm = 2', 'm = 4');
fprintf('At SNR = 10dB \n')
fprintf('M      BER\n')
for i = 1:size(m,2)
    out = (1 + 10/(m(i)*(sin(phi).^2)) ).^(-m(i));
    answ = (1/pi)*vpaintegral(out,phi,[0 pi/2]);
    fprintf('%d     %f\n',m(i),answ)
end
```
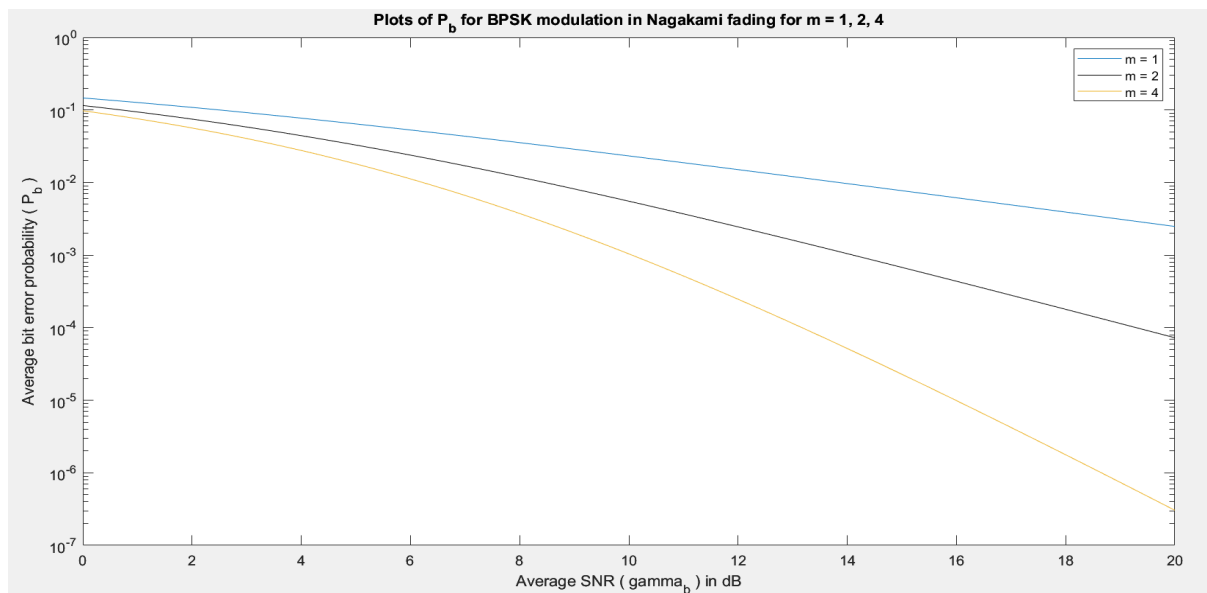
OUTPUT:

At SNR = 10dB
M   BER
1   0.023269
2   0.005528
4   0.001039