



Answer all the following questions

Q1. (8 marks) Write a MATLAB Code to solve:

(i) The following system of equations:

$$2x - 4x^4 = 2$$

(ii) The inverse-Laplace transform of:

$$\frac{1}{s+a} + \frac{1}{s^2}$$

(iii) $\int_0^2 \sqrt{3} x^3 dx$

Q2. (8 marks) Looking to the given MATLAB code:

```
b=2.4; c=[linspace(0.5,1.5,2); ceil(2.1) round(3.4)];  
A= [prod([floor(b) max([1 0 0; 0 2 0; 0 0 3]))])]  
B=[[sum(c*inv(c))]'] rot90(reshape(transpose([2 6]),1,2))]
```

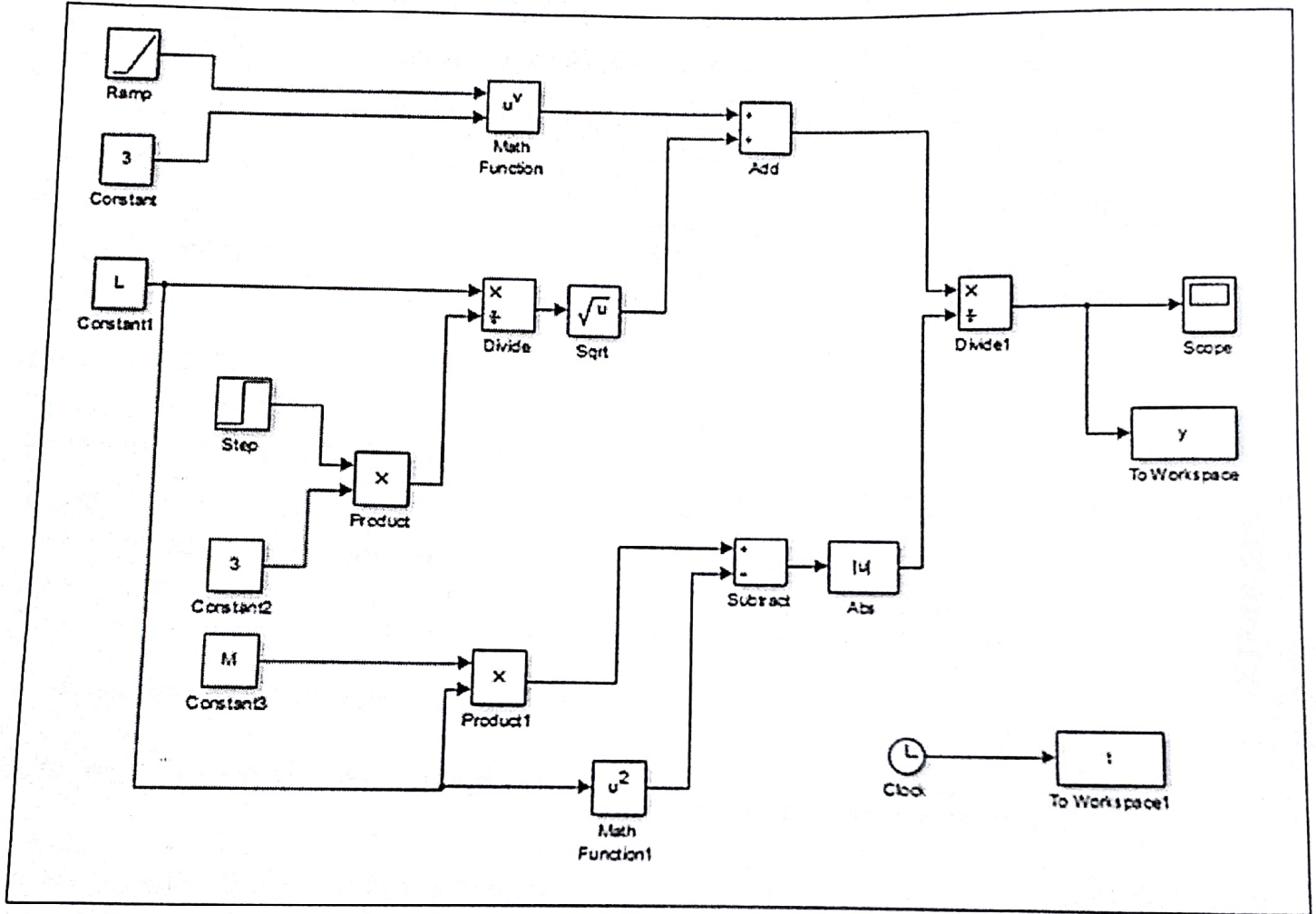
What are the expected results of the A and B?

Q3. (8 marks) Given the following MATLAB code:

- (i) What is the expected result of **c** when the design reference is entered 1 and **b** = 1.
- (ii) What will be displaying on the screen when the design reference is 2 and your Q.M is 25.
- (iii) What will be displaying on the screen when the design reference is entered 5.

```
d = input('design reference')  
switch d  
    case 1;  
        a=9;  
        b=input('b')  
  
        while b<=a+1  
            c=2*a+sqrt(a)  
            b=b+a^2+2;  
            a=a^2;  
        end  
    case 2;  
        q=input('your Q.M')  
        if q<50  
            disp('F')  
        elseif q>=50 && q<100  
            disp('P')  
        else  
            disp('W.I')  
        end  
    otherwise  
  
        disp('u r a star')  
  
end
```

Q4. (8 marks) Represent the following Simulink model as A Mathematical expression.



Q5. (8 marks) Given the following signals:

$$X1 = 1.5 \cos\left(\frac{1}{4}t + \frac{\pi}{2}\right)$$

$$X2 = 3 \cos\left(\frac{1}{100}\pi t\right)$$

$$X3 = X1 + X2$$

Where, $t = 0, 0.25, 0.5, \dots, 100$

Write a MATLAB Code to plot the signals as shown in Fig.1

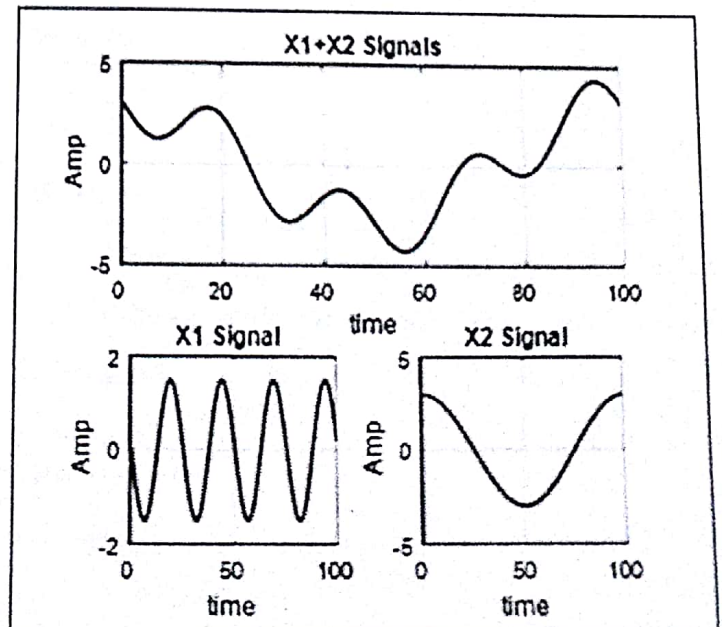


Fig.1