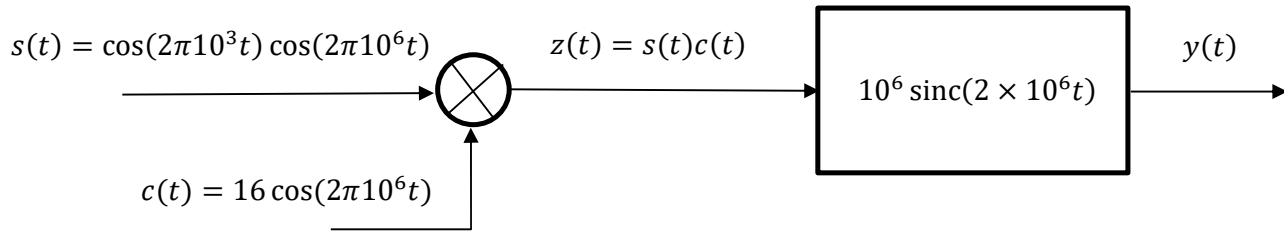


Question 1: This question relates to Fourier Transform.

a) For the following system

[16 marks]i) Find the expression for the Fourier transform of the intermediate signal $z(t)$.

(4 marks)

ii) Plot the Fourier transform of the intermediate signal $z(t)$.

(4 marks)

iii) Plot the Fourier transform of the output signal $y(t)$.

(4 marks)

iv) Find the expression for the output signal $y(t)$.

(4 marks)

b) For the following signal in time domain

[9 marks]

$$g(t) = \text{rect}\left(\frac{t-8}{8}\right) \text{rect}\left(\frac{t-12}{12}\right) \text{rect}\left(\frac{t-16}{16}\right)$$

i) Plot $g(t)$.

(4 marks)

ii) Find the expression for the Fourier transform of $g(t)$.

(5 marks)