**e) To analyze the frequency components of the given signal s(t)s(t)s(t) using the Fast Fourier Transform (FFT) in Python,**

import numpy as np

import matplotlib.pyplot as plt

# Parameters

f1 = 50 # Frequency of the first sine wave

f2 = 120 # Frequency of the second sine wave

sampling\_rate = 1000 # Sampling rate in Hz

duration = 1.0 # Duration of the signal in seconds

# Time vector

t = np.linspace(0, duration, int(sampling\_rate \* duration), endpoint=False)

# Signal

s = np.sin(2 \* np.pi \* f1 \* t) + np.sin(2 \* np.pi \* f2 \* t)

# Compute FFT

fft\_result = np.fft.fft(s)

fft\_freqs = np.fft.fftfreq(len(s), 1 / sampling\_rate)

# Take only the positive half of the frequencies and amplitudes

positive\_freqs = fft\_freqs[:len(fft\_freqs)//2]

positive\_amplitudes = np.abs(fft\_result[:len(fft\_result)//2])

# Plotting the signal

plt.figure(figsize=(12, 6))

plt.subplot(2, 1, 1)

plt.plot(t, s)

plt.title('Time Domain Signal')

plt.xlabel('Time (s)')

plt.ylabel('Amplitude')

# Plotting the FFT result

plt.subplot(2, 1, 2)

plt.plot(positive\_freqs, positive\_amplitudes)

plt.title('Frequency Domain Signal')

plt.xlabel('Frequency (Hz)')

plt.ylabel('Amplitude')

plt.tight\_layout()

plt.show()