Department of Computer Systems Engineering
University of Engineering & Technology
Peshawar, PAKISTAN

Subject: Digital Signal Processing (5th Semester)

Exam: Final Term (Fall 2020)

Total Marks: 20

Attempt All Questions. **Time allowed : by parts**

Question 1:

1) Determine if the following sinusoidal signals are periodic or aperiodic. In case the signal is periodic, find its fundamental period N. **(2 Marks)**

i. $x[n] = 2\sin\left(\frac{1}{\mathbf{U}}\pi n + \frac{\pi}{3}\right)$

ii. $x[n] = 3\cos\left(\frac{1}{\mathbf{T}}n + \frac{\pi}{2}\right)$

Where;

U = Digit at unit place of your registration number, however if it is Zero(0) or one(1) then use U=4.

T = Digit at tens place of your registration number, however if it is Zero or one(1) then use U=5.

2) Use convolution sum method to find the output y[n] when the signal x[n] is passed through the system with impulse response h[n]. **(4 Marks)**

$$x[n] = \{U,T,H,T_h\} \text{ and } h[n] = \{T_h,H,T,U\}$$

Where U, T, H and T_h are the digits at unit, tens, hundredth and thousandth place of your registration numbers, respectively.