EEN 340
SIGNALS
& TRANSFORMS

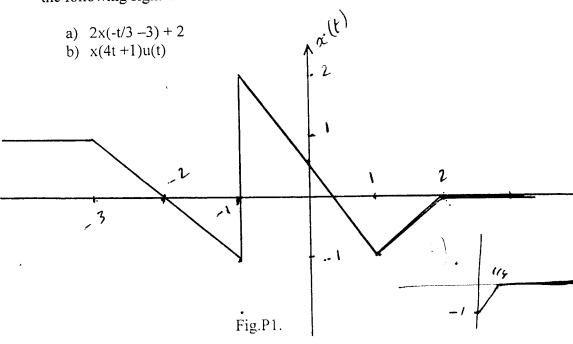TEST 1
60 MINUTES

ECCE DEPARTMENT
NDU

NOTE1: OPEN BOOK, OPEN NOTES.
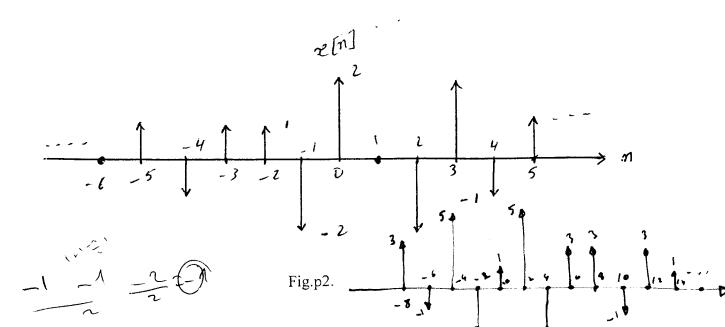NOTE2: SHOW ALL WORK IN ORDER TO RECEIVE FULL CREDIT.
NOTE3: START EACH PROBLEM ON A NEW PAGE.

1. 20 Pts. A continuous-time signal is shown in Fig.P1. Sketch and label carefully each of
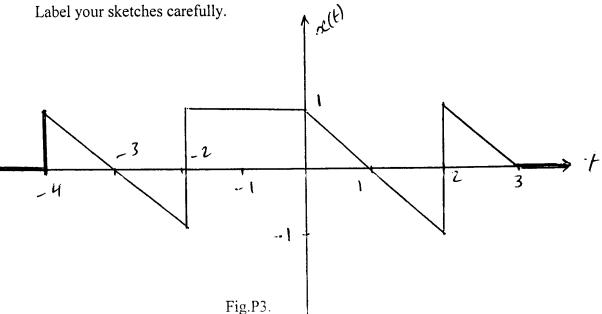   the following signals.

   a) $2x(-t/3 - 3) + 2$
   b) $x(4t + 1)u(t)$

Fig.P1.

2. 10 Pts. A discrete time signal is shown in Fig.P2. Sketch and label carefully the
   following signal.

   a) $2x[-n/2 + 1] + 1$

Fig.p2.

3. 20 Pts. Determine and sketch the even and odd parts of the signal depicted in Fig.P3. Label your sketches carefully.

Fig.P3.

4. 35 Pts. For the LTI system shown in Fig.P4, the input signal is x(t), the output signal is y(t), and the impulse response is h(t). Use the convolution integral to find the output y(t).
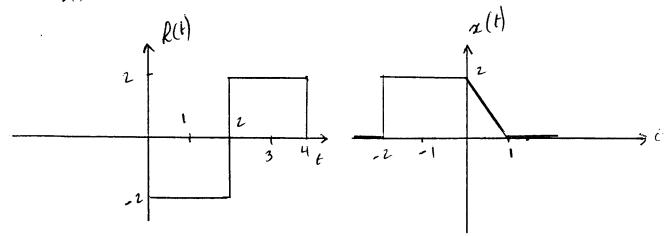

Fig.P4.

5. 15 Pts. Consider the LTI system of Fig.P5, express the system impulse response as a function of the impulse responses of the subsystems.

Let $h_1(t) = h_4(t) = u(t)$
$\quad h_2(t) = h_3(t) = 5\delta(t)$, $h_5(t) = e^{-2t} u(t)$

Find the impulse response of the system.

Fig.P5.