This is a two-hour test. There are 11 questions for 70 marks. A score of 50 will be full marks.

1. You will see only one question at a time.
Once you have moved to the next question,
you cannot go back and change your answer
to a previous question.

2. Enter the exact numerical answer.

3. Do not enter units in your answer.

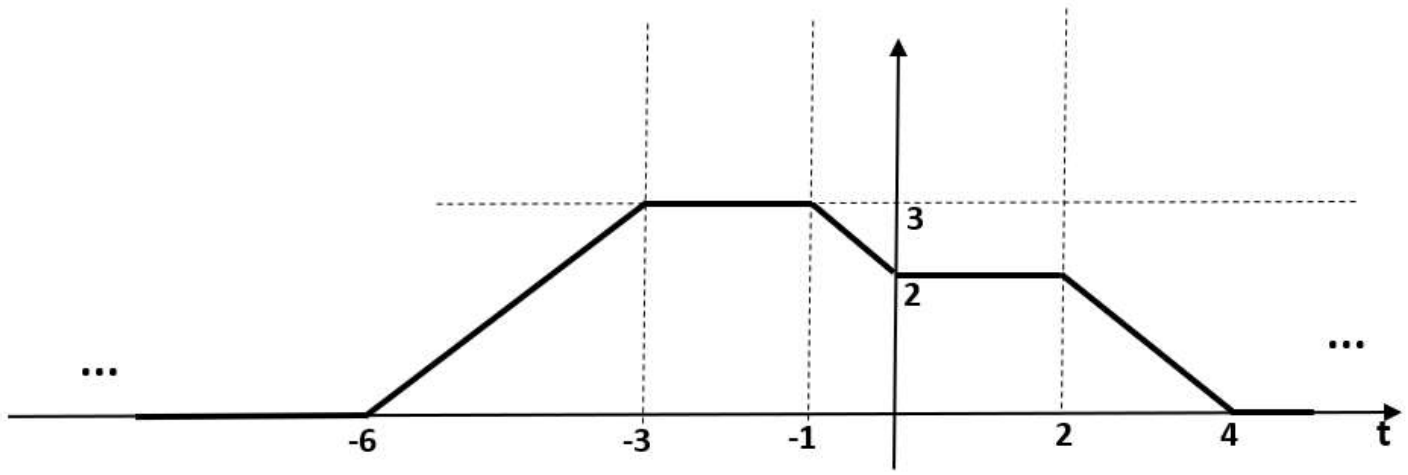
4. Enter your answer in normal number format
with a decimal point. Eg. 0.012 and not 1.2 x 10^{-2}

5. DT stands for Discrete Time and CT stands for
Continuous time.

Question 1

6 / 6

For the CT signal x(t) shown below, find y(t) = 2x(3-t) and determine $\int_1^5 y(t)\,dt$



Your Answer: 19

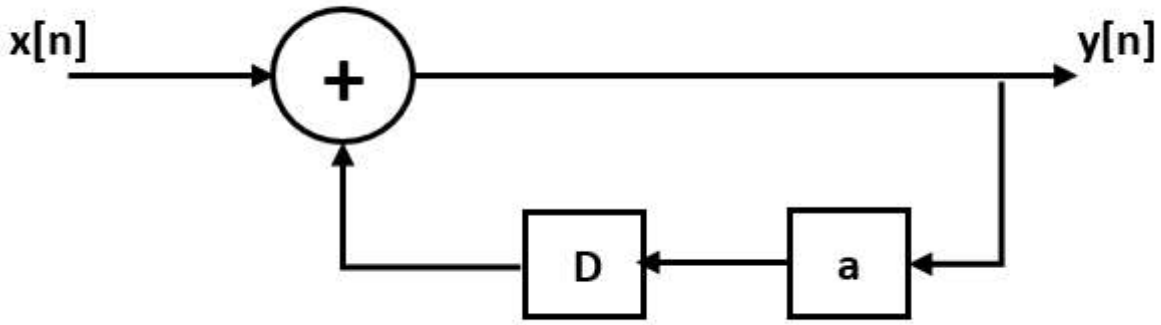
Correct

The answer is **19**.

Question 2

8 / 8

For the causal DT LTI system shown below with a = 0.7, find the response y[n] to input x[n] = 2u[n] and determine y[2].



Your Answer: 4.38

Correct

The answer is **4.38**.

Question 3

6 / 6

For the DT signal x[n] shown below, find y[n] = 2 x[-2-n] +1 and determine $\sum_{n=0}^{3} y[n]$

Your Answer: -4

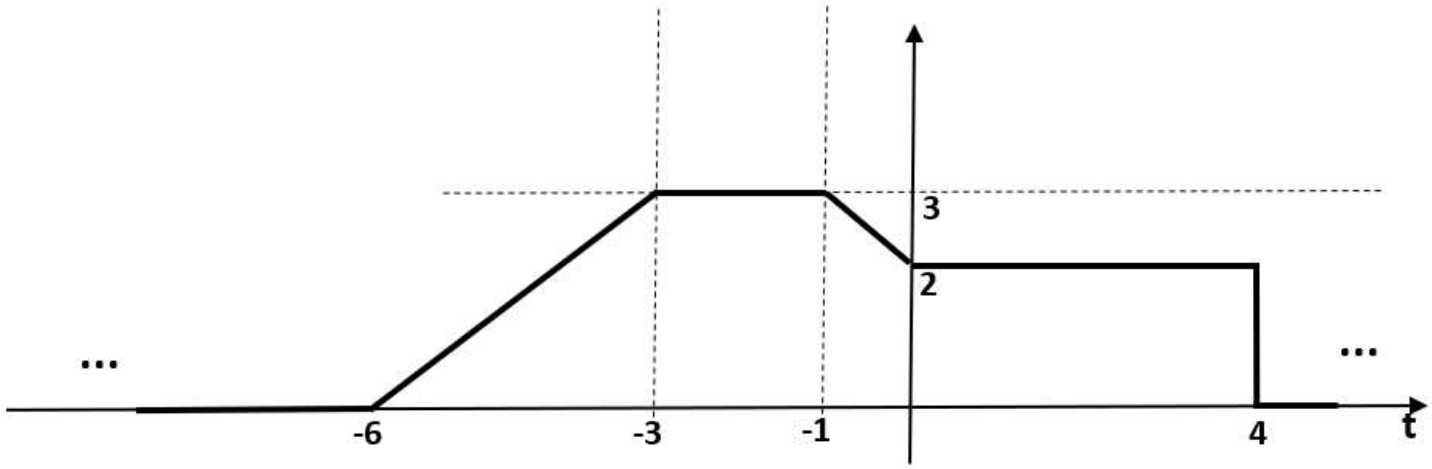
Correct

The answer is **-4**.

Question 4

7 / 7

For the CT signal shown below, find the even part $x_e(t)$ and determine $\int_{-3}^{3} x_e(t)\,dt$



Your Answer: 14.5

Correct
The answer is **14.5**.

Question 5

7 / 7

Find the odd part $x_o[n]$ for the DT signal x[n] shown below, and determine $\sum_{n=-1}^{4} x_o[n]$

Your Answer: 4

Correct

The answer is **4**.

Question 6

0 / 6

For a CT signal given by x(t) = 5u(t+4) + 2u(t+1) - 3u(t-3) - 4u(t-5) draw the signal and find

$$\int_{-2}^{3} x(t)\,\mathrm{d}t$$

Your Answer: 30

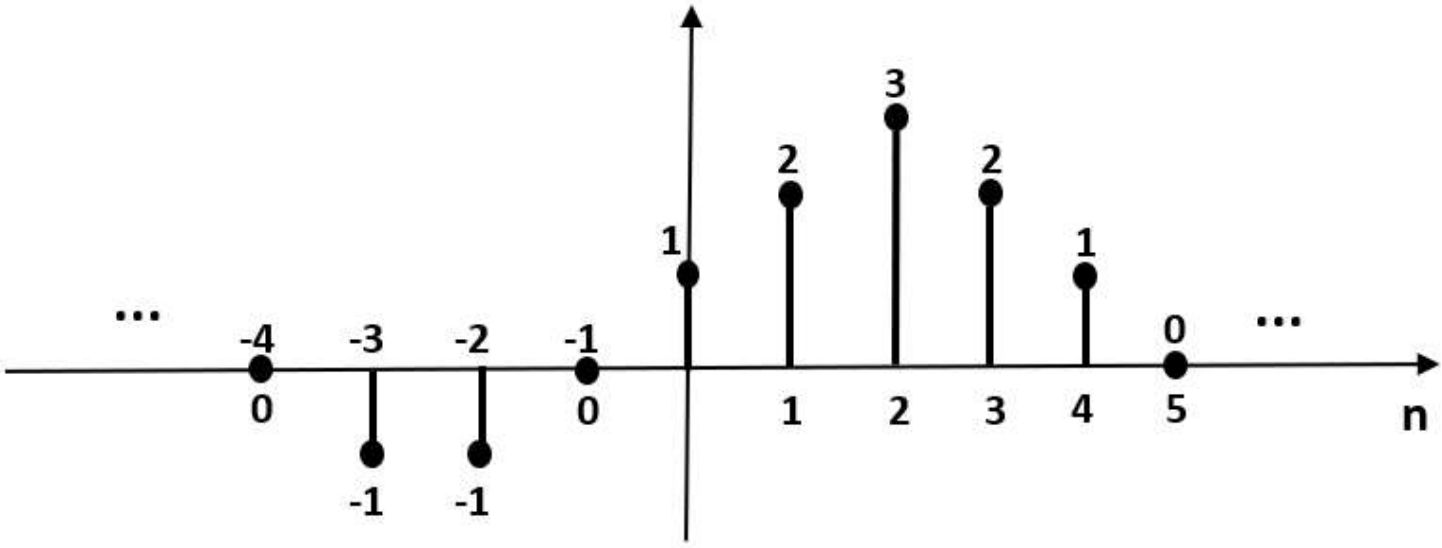
Incorrect

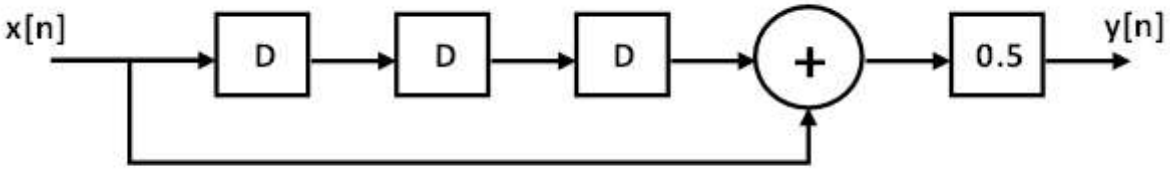
The answer is **33**.

Question 7

0 / 5

The DT signal x[n] shown below is the input of the system shown below. Find y[n] and determine $\sum_{n=-3}^{3} y[n]$





Your Answer: -4.5

htt

Incorrect

The answer is **2.5**.

Question 8

5 / 5

A CT LTI system has the response $y_1(t) = t\,u(t)$ to input $x_1(t) = u(t)$. Find the response $y_2(t)$ to input $x_2(t) = 4u(t-3)$ and then determine y2(11).

Round your answer to 0 decimal places.

Your Answer: 32

Correct
The answer is **32**.

Question 9

0 / 8

A CT LTI system has an impulse response h(t) = t u(t). Find the output y(t) when the input is x(t) = u(t-1) - u(t-3) and determine y(2).

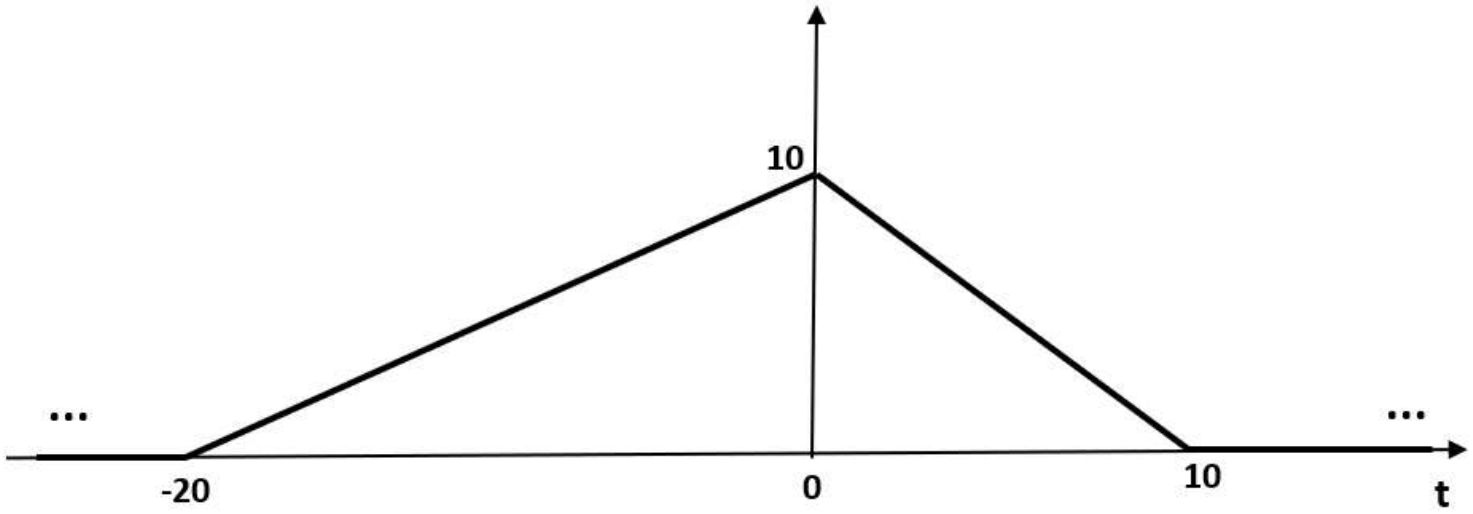
Your Answer: 1

Incorrect
The answer is **0.5**.

Question 10

0 / 4

Find $\int_{-\infty}^{\infty} \delta(t-3)\ x(t)\ dt$ for the CT signal x(t) shown below.



Your Answer: 8.5

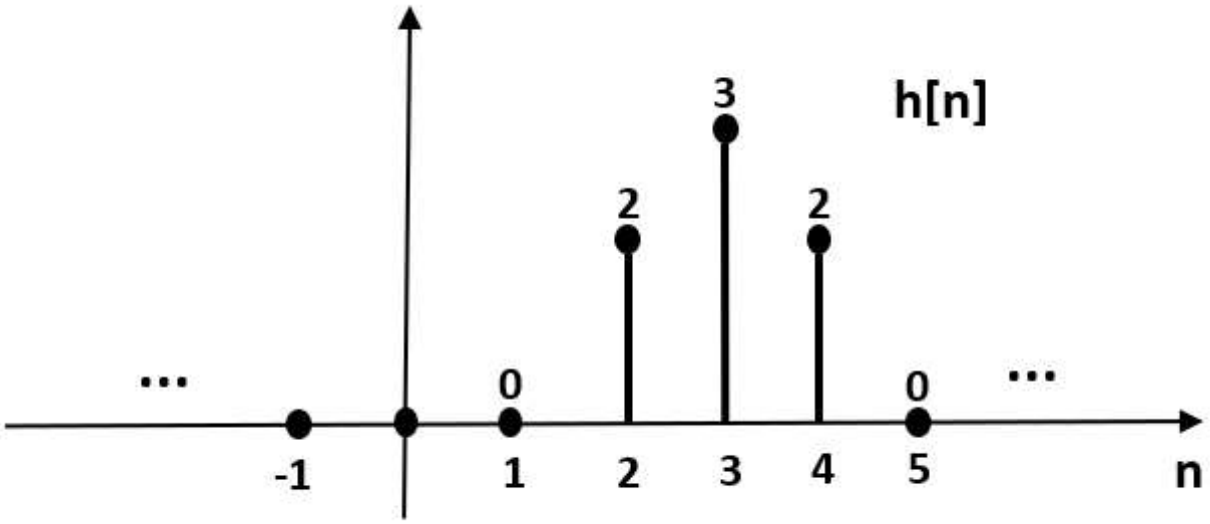
Incorrect

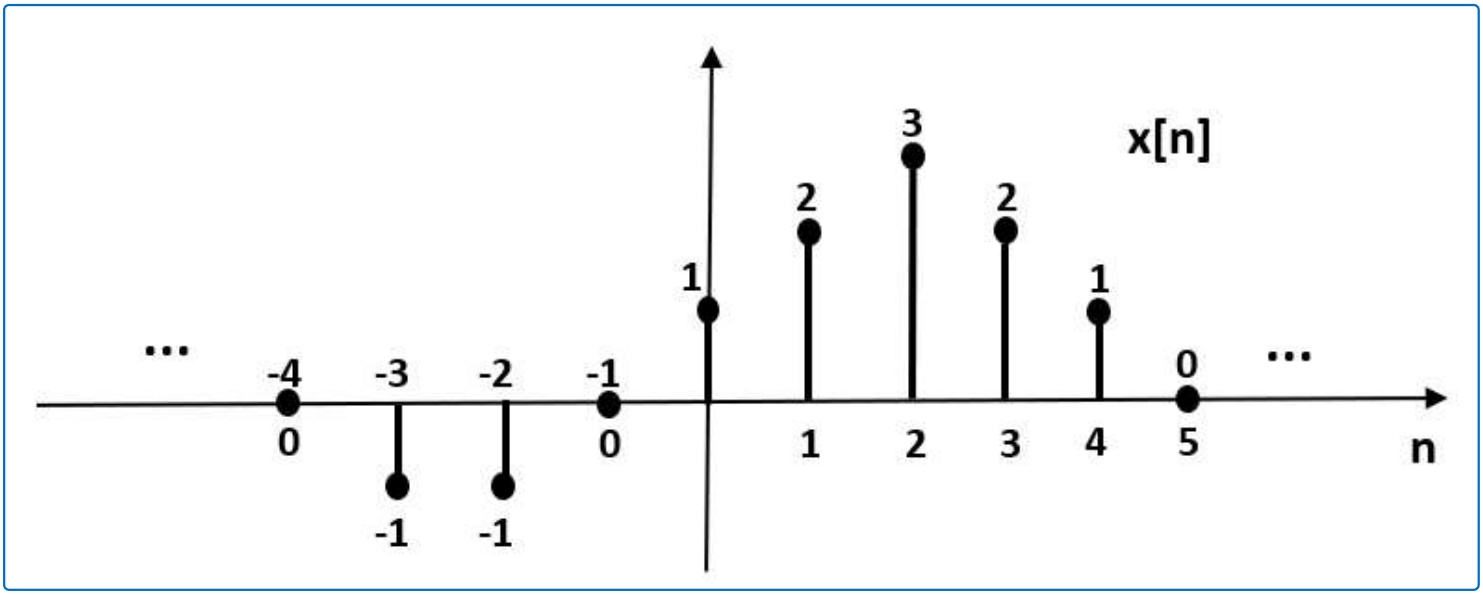
The answer is **7**.

Question 11

0 / 8

A DT system has an impulse response h[n] shown below and input x[n] shown below. Find the output y[n] and determine y[1].





Your Answer: 1

Incorrect

The answer is **-5**.