Assignment - 1

The due date for submitting this assignment has passed.

Due on 2016-08-02, 02:30 IST.

Submitted assignment

1) \( y(n) = u(n) \ast x(n) \), where \( \ast \) stands for the convolution operator, and, \( u(n) \) and \( x(n) \) are shown in the Figure 1. The value of \( y(7) \) = ?

![Figure 1](image)

Figure 1: \([u(n)] \) (the unit step sequence) at the top, and \([x(n)] \) at the bottom

- (a) 0
- (b) 1
- (c) 3
- (d) 7

No, the answer is incorrect.

Score: 0

Accepted Answers:

- (c) 3

2) Examine whether the following system is linear/non-linear and time-invariant/time-varying [\( y(n) \) and \( x(n) \) are the output and the input respectively]: \( y(n) = x(n) \cos(\omega_0 n) \)
3) Examine whether the following system is causal/non-causal and stable/unstable \([y(n)\) and \(x(n)\) are the output and the input respectively]:
\[ y(n) = \sum_{k=-\infty}^{n^2} x(k) \]
- (a) causal and stable
- (b) causal and unstable
- (c) non-causal and stable
- (d) non-causal and unstable

No, the answer is incorrect.
Score: 0
Accepted Answers:
(d) non-causal and unstable

4) Find the impulse response of the overall system as shown in Figure 2, where \(h_1(n) = \beta \delta(n - 1)\), and \(h_2(n) = \alpha^n u(n)\).

![Figure 2](image1)

- (a) \(\alpha^n u(n) + \beta \alpha^n u(n - 1)\)
- (b) \(\beta \alpha^n u(n - 1)\)
- (c) \(\alpha^n u(n) + \beta \alpha^{n-1} u(n - 1)\)
- (d) \(\beta \alpha^{n-1} u(n - 1)\)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(c) \(\alpha^n u(n) + \beta \alpha^{n-1} u(n - 1)\)

5) If \(T(x(n)) = x(n-k)\), then \(T(x(-n)) =?\)
- (a) \(x(n + k)\)
- (b) \(-x(n-k)\)
- (c) \(x(-n + k)\)
- (d) \(x(-n - k)\)

No, the answer is incorrect.
Score: 0
Accepted Answers:
No, the answer is incorrect.
Score: 0
Accepted Answers:
(e) \( x(-n + k) \)