

X

NPTEL

reviewer3@nptel.iitm.ac.in ▼

Courses » Principles of Digital Communications

Announcements **Course** Ask a Question Progress Mentor FAQ

Unit 2 - Week 1

Course outline

How to access the portal

Week 1

- Lecture 1 : Course Overview
- Lecture 2 : Introduction to Information Theory
- Lecture 3 : Entropy and its properties
- Lecture 4 : Lossless Source Coding Theorem
- Lecture 5 : Prefix Codes and Kraft's Inequality
- Lecture 6 : Huffman Coding
- Quiz : Assignment 1
- Download Videos
- Weekly Feedback
- Assianment 1 -

Assignment 1

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment. **Due on 2018-08-15, 23:59 IST.**

Short answer questions for assignment 1.

1) A source has two symbols – s_1 and s_2 . The probability of s_2 is half that of s_1 . The duration of the s_1 is 0.2 and the s_2 is 0.4 seconds. What is the information rate of the source (in bits/sec) ?

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Range) 3.4, 3.5

1 point

2) A discrete memoryless source has an alphabet of 5 symbols. The symbol probabilities are as following.

$$P(s_0) = 0.55, P(s_1) = P(s_2) = 0.15, P(s_3) = 0.10, P(s_4) = 0.05.$$

What is the average codeword length of a Huffman code for this source ?

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Range) 1.85, 1.95

1 point

Multiple choice questions in assignment 1.

3) X and Y are discrete jointly distributed discrete valued random variables. The relation between their joint entropy $H(X, Y)$ and their individual entropies $H(X), H(Y)$ is

1 point

© 2014 NPTEL - Privacy & Terms - Honor Code - FAQs -



A project of



NPTEL

National Programme on
Technology Enhanced Learning

In association with



Funded by

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

Week 12



$H(X, Y) \geq H(X) + H(Y)$, equality holds when X, Y are uncorrelated

No, the answer is incorrect.

Score: 0

Accepted Answers:

$H(X, Y) \leq H(X) + H(Y)$, equality holds when X, Y are independent

4) Let X, Y be discrete random variables related as $Y = g(X)$, where g is a deterministic function. The ordering of their entropies satisfies **1 point**



$H(X) \leq H(Y)$, equality holds if g is a one to one mapping



$H(X) \geq H(Y)$, equality holds if g is a one to one mapping



$H(X) \leq H(Y)$, equality holds when $H(X|g(X)) = 0$



$H(X) \geq H(Y)$, equality holds when $H(X|g(X)) = 0$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$H(X) \geq H(Y)$, equality holds if g is a one to one mapping

$H(X) \geq H(Y)$, equality holds when $H(X|g(X)) = 0$

5) The mutual information $I(X, Y) = H(X) - H(X|Y)$ between two random variables X and Y satisfies **1 point**



$I(X, Y) > 0$



$I(X, Y) \geq 0$



$I(X, Y) \geq 0$, equality holds when X and Y are uncorrelated



$I(X, Y) \geq 0$, equality holds when X and Y are independent

No, the answer is incorrect.

Score: 0

Accepted Answers:

$I(X, Y) \geq 0$

$I(X, Y) \geq 0$, equality holds when X and Y are independent

Previous Page

End

