قائمة الاسئلة

نظم المعلومات والترميز- كلية الهندسة - قسم الكهرباء- المستوى الخامس - اتصالات-ساعتان - درجة هذا الاختبار (60)

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1) It is a scientific study of the quantification, storage, and communication of information

a) Information systems
b) Information theory
c) Coding theory
d) Else

1) - a
2) + b
3) - c
4) - d

2) The example of lossless data compression is

a) ZIP files
b) JPEG files
c) DSL
d) Else

1) + a
2) - b
3) - c
4) - d

3) Data compression is used for

a) Increasing the size of data
b) Equalization the size of data
c) Decreasing the size of data
d) Else

1) - a
2) - b
3) + c
4) - d

4)

When heigh compression is used, then

a) Details are less
b) Details remain the same
c) Details are increasing
d) Else

1) + a
2) - b
3) - c
4) - d

5)

When low compression is used, then

a) Details are less
b) Details don't change
c) Details are increasing
d) Else

1) - a
2) - b
3) + c
4) - d

6) It is a function which measures the amount of information after observing the symbol

a) Mutual information
b) Self-information
c) Relative information
d) Else

1) - a
2) + b
3) - c
4) - d

7)

When the probability of symbol increase, the self-information

a) Increasing
b) Decreasing
c) Don't change
d) Else

1) - a
2) + b
3) - c
4) - d

8) The example of lossy data compression is

a) ZIP files
b) JPEG files
c) DSL
d) Else

1) - a
2) + b
3) - c
4) - d

9) The average number of bits per symbol required to describe a source information content called

a) Self-information
b) Mutual information
c) Entropy
d) Else

1) - a
2) - b
3) + c
4) - d

10) If the symbol probability equal "0", then the entropy equal

a) 1
b) 0
c) 0.5
d) Else

1) - a

2) + b
3) - c
4) - d

11) If the symbol probability equal "1", then the entropy equal

a) 0
b) 1
c) 0.5
d) Else

1) + a
2) - b
3) - c
4) - d

12) If the symbol probability equal "0.5", then the entropy equal

a) 0
b) 0.5
c) 1
d) Else

1) - a
2) - b
3) + c
4) - d

13) If you have a message contains four variables, the probability of x_1 and x_2 is 0.2 and the probability of x_3 is 0.3, then the entropy is

a) 1.88
b) 1.97
c) 2.06
d) Else

1) - a
2) + b
3) - c
4) - d

14) The amount of information, that is contains in x and y is called

a) Joint entropy
b) Relative entropy
c) Entropy
d) Else

1) + a

2) - b
3) - c
4) - d

15) The joint entropy of flip a coin and a dice is

a) 3.564
b) 3.574
c) 3.584
d) Else

1) - a
2) - b
3) + c
4) - d

16) The maximum rate at which we can send information over the channel and recover the information at the output which a vanishing by low probability of error

a) Capacity
b) Data rate
c) Symbol rate
d) Else

1) + a
2) - b
3) - c
4) - d

17) Measure of information transmission through noisy channel by measuring the amount of information shared between X and Y

a) Self-information
b) Mutual information
c) Entropy
d) Else

1) - a
2) + b
3) - c
4) - d

18)

The boundary of optimal code length is

a) $H(X) \leq L < H(X) + 1$
b) $H(X) < L \leq H(X) + 1$
c) $H(X) < L < H(X) + 1$
d) Else

1) + a
2) - b
3) - c
4) - d

19) The class of the code (10, 00, 11, 110) is

a) Prefix
b) Singular
c) Uniquely decodable
d) Not uniquely decodable

1) - a
2) - b
3) + c
4) - d

20) The class of the code (0, 010, 01, 10) is

a) Prefix
b) Singular
c) Nonsingular
d) Uniquely decodable

1) - a
2) - b
3) + c
4) - d

21)

Using Huffman code, if we have a random variable X taking values in the set X = {1, 2, 3, 4, 5} with probabilities 0.25, 0.25, 0.2, 0.2, 0.1, respectively. The codewords will be

a) 10, 01, 00, 111, 111
b) 01, 00, 10, 000, 101
c) 10, 000, 101, 01, 00
d) 01, 10, 11, 000, 001

1) - a
2) - b
3) - c
4) + d

22) Using Shannon-Fano code, if we have a random variable X taking values in the set Y = {1, 2, 3, 4, 5} with probabilities 0.5, 0.2, 0.1, 0.1, 0.1, respectively. The codewords will be

a) 1, 01, 000, 0111, 1110
b) 0, 00, 110, 0001, 1111
c) 0, 10, 110, 1110, 1111
d) 1, 10, 111, 1000, 0001

1) - a
2) - b
3) + c
4) - d

23) The minimum number of places in which two codewords differ is called

a) Hamming distance
b) Minimum distance
c) Minimum weight
d) Else

1) - a
2) + b
3) - c
4) - d

24) The minimum number of 1's in any codeword is called

a) Minimum weight
b) Hamming distance
c) Minimum distance
d) Else

1) + a
2) - b
3) - c
4) - d

25) The block length n of Hamming code is

a) 2^m
b) 2^m+1
c) $2^m - 1$
d) Else

1) - a
2) - b
3) + c
4) - d

26) The information bits k of Hamming code is

a) 2^m-1-m
b) 2^m-1
c) 2^m+1
d) Else

1) + a
2) - b
3) - c
4) - d

27) The number of parity bits m of Hamming code is

a) n-k
b) n+k
c) n^k
d) Else

1) + a
2) - b
3) - c
4) - d

28)

The minimum distance d_{min} of Hamming code is

a) 1
b) 2
c) 3
d) Else

1) - a
2) - b
3) + c
4) - d

29) Hamming code designed to correct

a) Double-error
b) Single- error
c) Triple-error
d) Else

1) - a
2) + b
3) - c
4) - d

30) Hamming code designed to detect

a) Single-error
b) Double- error
c) Triple-error
d) Else

1) - a
2) + b
3) - c
4) - d