

Exam 3

Started: Jul 9 at 11:49pm

Quiz Instructions

Dear students,

It was a pleasure meeting every single one of you. I really appreciate you taking this course with me. I hope you enjoy your summer and please stay safe. Good luck with the exam.

Notes on this exam:

- Exam is closed books and notes.
- No calculators or website should be used since I am asking for the answers in a particular format.
- there are 16 questions and you have about 7 minutes per question. please manage your time
- This is a timed exam and you have 120 minutes to finish it.
- You can only take the exam one time.
- Read each question carefully before answering each question
- each question needs to be solved on a paper to get the correct answer.
- manage to finish the exam on time since I do not open the exam under any condition.
- you will not get to see the correct answers on this exam through Canvas



Question 1

3 pts

Convert the decimal value of 234 to its binary number.

- a. $2^7 + 2^4 + 2^5 + 2^3 + 2$
- b. $2^7 + 2^6 + 2^5 + 2^3 + 2^2$
- c. $2^7 + 2^6 + 2^5 + 2^3 + 2$
- d. $2^7 + 2^6 + 2^5 + 2^3 + 2^2$

☒ c

☐ a

☐ d

☐ b



Question 2

3 pts

what is the two's complement for -12 using 8 bits. Convert it to a binary two's complement then write it in base 16.

- a. 0C
- b. F4
- c. F3
- d. F1

☐ c

☐ d

☐ a

☒ b



Question 3

3 pts

Convert the value 5836 to its base 8 and represent it in the following format

- a. $1 * 8^4 + 1 * 8^3 + 4 * 8^2 + 2 * 8 + 4 * 8^0$
- b. $1 * 8^4 + 2 * 8^3 + 3 * 8^2 + 1 * 8 + 5 * 8^0$
- c. $1 * 8^4 + 2 * 8^3 + 8^2 + 1 * 8 + 4 * 8^0$
- d. $1 * 8^4 + 3 * 8^3 + 3 * 8^2 + 1 * 8 + 4 * 8^0$

☐ b

☒ d

☐ a

☐ c



Question 4

3 pts

Convert the decimal value 25.62 to its binary in the given format

a. $2^4 + 2^3 + 2^0 \cdot 2^{-1} + 2^{-2} + 2^{-4} + 2^{-5} + 2^{-6} + 2^{-7}$

b. $2^4 + 2^3 + 2^0 \cdot 2^{-1} + 2^{-2} + 2^{-5} + 2^{-6} + 2^{-7}$

c. $2^4 + 2^3 + 2^0 \cdot 2^{-1} + 2^{-4} + 2^{-5} + 2^{-6} + 2^{-8}$

d. $2^4 + 2^3 + 2^0 \cdot 2^{-1} + 2^{-4} + 2^{-5} + 2^{-6} + 2^{-7}$

☐ b

☐ a

☐ c

☒ d



Question 5

3 pts

Convert the 8-bit floating point number represented by the hex value 35 to its binary scientific notation(1 bit for sign, 3 bits for exponent, 4 bits mantissa) .

what is the Mantisa , what is the biased exponent , what is the value in scientific notation

a. 1100, 2, $1.1100 \cdot 2^5$

b. 0110 , 5 , $1.0110 \cdot 2^2$

c. 0011, 5, $1.0011 \cdot 2^3$

d. 0111, 4, $1.111 \cdot 2^2$

☒ b

☐ a

☐ d

☐ c



Question 6

3 pts

Convert the following 8-bit floating point number to its scientific notation. (1 bit for the sign, 3 bits for the exponent, 4 bits for the mantissa)

11011111

a. $-1.1011 \cdot 2^7$

b. $1.1011 \cdot 2^4$

c. $1.1011 \cdot 2^7$

d. $-1.1111 \cdot 2^2$

☐ b

☐ c

☐ a

☒ d



Question 7

3 pts

There are 5 different flights going from LA to Sacramento today. How many people do we need so that at least two of them are in the same flight?

☐ 18

☐ 11

☐ 10

☒ 6



Question 8

3 pts

we have 50 chairs in which 4 are red

In how many ways can we select a set of 6 non-red chairs?

☒ $46!/(6! \cdot 40!)$

☐ $46! / 50!$

☐ $50!/46!$

☐ $50! / (4! \cdot 46!)$



Question 9

3 pts

we have 50 chairs, In how many ways can we select a set of 8 chairs containing exactly two red chairs.

☐ $50!/(8! \cdot 42!)$

☒ $4!/(2! \cdot 2!) \cdot 46!/(6! \cdot 40!)$

☐ $50!/48!$

☐ $50!/42!$



Question 10

3 pts

we have 50 chairs. In how many ways can we select a set of four chairs containing at least one red chair?

☐ $46!/(4! * 42!)$

☐ $46!/42!$

☒ $50!/(4!*46!) - 46!/(4! -42!)$

☐ $50!/46! - 46! / 42!$



Question 11

3 pts

Jack has **three** pair of pants which are gray, blue and black. Jack also has **6** different shirts.

- a. How many different choices does he have every time he wants to dress up.
- b. in a month with thirty days, at least _____ days in the month he needs to wear the same thing.

☐ 9,3

☐ 18,3

☐ 9,2

☒ 18, 2



Question 12

3 pts

Find the number of ways 5 large books , 4 medium-size books and 3 small-size books can be placed on a shelf where there are no restrictions

☒ $3! * 4! * 5!$

☐ $5! + 4! + 3!$

☐ $12! / 4!$

☐ $12!$



Question 13

3 pts

Find the number of ways 5 large books , 4 medium-size books and 3 small-size books can be placed on a shelf where all books of the same size are together.

☐ $5! * 4! * 3!$

☐ $5! * 4! * 3! * 3!$

☒ $5! + 4! + 3!$



Question 14

3 pts

In a survey of 155 people, it was found that 65 visited France , 45 visited Germany, 42 visited England, 20 visited both France and Germany, 25 visited both France and England, 15 visited both Germany and England, 8 visited all three countries.

How many people did not visit any country?

☐ 53

☒ 55

☐ 52

☐ 50



Question 15

3 pts

which one of the following is a partition for the set {red, blue, green, orange}

- a. {red} , {blue, green}, {orange}
- b. {red, blue}, {blue, orange, green}
- c. {red},{blue}, {green},{orange}
- d. {}, {red, blue, green, orange}

☒ a,c,d

☐ a

☐ b

☐ c

☐ d



Question 16

3 pts

which one of the following relations on $A = \{1,2,3\}$ is an equivalence relation

- a. $\{(1,1),(2,2),(3,3)\}$
- b. $\{(1,1), (2,2),(3,3),(2,3), (3,3)\}$
- c. $\{(1,2),(2,1),(1,1),(2,2),(3,3)\}$

d. $\{(1,2),(2,1)\}$

☐ a,c

☐ a

☒ b,c

☐ a, b

Quiz saved at 1:29am

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