ALGO
MCQ

1. **A list is a structure intrinsically ?**

   (a) Recursive
   (b) Iterative
   (c) Repetitive
   (d) Alternative

2. **For the declaration**

   ```
   TYPES  do
   USES   did, I
   ```

   the operation `what : did x I -> do` **is ?**

   (a) An observer
   (b) An internal operation
   (c) A reporter
   (d) An external operation
   (e) An observator

3. **An operation without an argument is ?**

   (a) impossible
   (b) a constant
   (c) a variable
   (d) partial

4. **Which operations do opé1 and opé2 represent in the following axiom (where e is an element and l a list)** `opé1(opé2 (e,l)) = l` **?**

   (a) opé1 = tail, opé2 = head
   (b) opé1 = cons, opé2 = tail
   (c) opé1 = tail, opé2 = cons
   (d) opé1 = cons, opé2 = head

5. **In an axiom, we must replace the variable by an internal operation when applying ?**

   (a) an observer to an internal operation which has two defined arguments
   (b) an observer to an internal operation which has only one predefined argument
   (c) an observer to an internal operation which has only one defined argument
   (d) an internal operation to an observer which has only one predefined argument

6. **Which operations define a vector ?**

   (a) integer
   (b) length
   (c) vect
   (d) modify

7. **What problems arise during the making of an abstract algebraic type ?**

- [x] (a) Completeness
- [ ] (b) Consequence
- [x] (c) Consistency
- [ ] (d) Complementation
- [ ] (e) Implementation

8. **Which elements are added to the signature to define an algebraic abstract type ?**

- [ ] (a) The TYPES
- [ ] (b) The OPERATIONS
- [x] (c) The PRECONDITIONS
- [x] (d) The AXIOMS
- [x] (e) The variables WITH

9. **Which operations do opé1 and opé2 represent in the following axiom (where e is an element and l a list)** `opé1(opé2 (e,l)) = e` ?

- [ ] (a) opé1 = first, opé2 = head
- [ ] (b) opé1 = cons, opé2 = first
- [x] (c) opé1 = first, opé2 = cons
- [ ] (d) opé1 = tail, opé2 = first

10. **The making of an iterative list is not based on ?**

- [x] (a) The insertion of an element at the first box of the list
- [x] (b) The recovery of the rest of the list
- [ ] (c) The insertion of an element at the K^{th}box

MCQ 3

Monday, 23 October

Question 11

Let A and B be two events of non-zero probabilities in a probability space $(\Omega, \mathscr{P}(\Omega), P)$. Then:

a. $P(A \cap B) = P(B \mid A) \times P(B)$

b. $P(A \mid B) = \dfrac{P(B \mid A)P(A)}{P(B)}$

c. $P(A \mid B) = \dfrac{P(B \mid A)P(B)}{P(A)}$

d. $P(A \mid B) = \dfrac{P(A \cup B)}{P(B)}$

$P(B \mid A) = \dfrac{P(A \cap B)}{P(A)}$

e. None of the others

Question 12

A fair dice has six sides numbered 1 to 6. We roll the dice and consider the events A: "The number that we get is a multiple of 2" and B: "The number that we get is a multiple of 3".

$\{2, 4; 6\}$

a. The events A and B are independent

b. The events A and B are not independent

Question 13

In a probability space $(\Omega, \mathscr{P}(\Omega), P)$, consider three events A, B and C of non-zero probabilities. Assume that (A, B, C) is a partition of Ω. Then:

a. $\Omega = A \cap B \cap C$

b. $A \cap B = \emptyset$

c. $A \cup C = \emptyset$

d. $\Omega = A + B + C$

e. None of the others

Question 14

In a probability space $(\Omega, \mathscr{P}(\Omega), P)$, consider three events A, B and C of non-zero probabilities. Assume that (A, B) is a partition of Ω. Then:

a. $C = (A \cap C) \cup (B \cap C)$.

b. $P(C) = P(A \cap C) + P(B \cap C)$

c. $P(C) = P(A \cap C) \cup P(B \cap C)$

d. $P(C) = P(C \mid A) + P(C \mid B)$

e. None of the others

Question 15

A box contains 6 tokens numbered 1 to 6. You randomly pick a token (equiprobability) and read its number. If you get an even number, you win 1 euro. If you get number 1, you win 10 euros. Otherwise, you loose 4 euros. Let X be the random variable equal to your gain.

a. The set of possible values of X is $\{-4, 1, 10\}$

b. $P(X = 1) = \frac{1}{6}$

c. $P(X = 1) = \frac{1}{3}$

d. $P(X = 1) = \frac{1}{2}$

e. None of the others

Question 16

Let X be a random variable taking its values in $\{0, 1, 2\}$, such that $P(X = 0) = \frac{2}{5}$ and $P(X = 2) = \frac{1}{5}$. Then:

a. $P(X = 1) = \frac{3}{5}$

b. $P(X > 1) = P(X = 2)$

c. $P(X \geq 1) = P(X = 2)$

d. None of the others

Question 17

Let X be a random variable taking its values in a set $\{x_1, \cdots, x_n\}$. The expectation of X is:

a. $E(X) = \sum_{k=1}^{n} P(X = x_k)$

b. $E(X) = \frac{1}{n} \sum_{k=1}^{n} x_k P(X = x_k)$

c. $E(X) = \frac{1}{n} \sum_{k=1}^{n} x_k$

d. None of the others

Question 18

Let $p \in]0, 1[$ and consider a random variable X taking its values in $\{-1, 1\}$, such that $P(X = 1) = p$. The expectation of X is:

a. $E(X) = p$

b. $E(X) = 2p - 1$

c. $E(X) = 0$

d. None of the others

Question 19

Let X, Y and Z be three independent random variables. Then:

a. $E(X + Y + Z) = E(X) + E(Y) + E(Z)$

b. $E(X + Y + Z) = E(X) \times E(Y) \times E(Z)$

c. $E(2X + 3) = 2E(X) + 3$

d. $E(2X + 3) = 4E(X)$

e. None of the others

Question 20

Select the correct answer(s)

a. The number of anagrams of the word "FRANCE" is 6!

b. The number of anagrams of the word "SAMOA" is $\frac{5!}{2}$

c. The number of anagrams of the word "ROMANIA" is 7!

d. The number of anagrams of the word "ARGENTINA" is $\frac{9!}{2! \times 2!}$

e. None of the others

MCQ Electronics – InfoS1

Read the questions AND the answers provided (pay attention to the numbering of the answers)

Q21. Consider the diagram on the right, where :

$R_1 = 200\Omega$; $R_2 = 100\Omega$

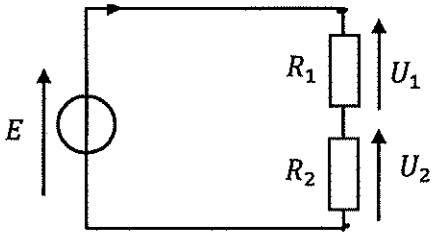
The voltage U_1 between R_1 terminals is?

a- $\frac{1}{3}.E$

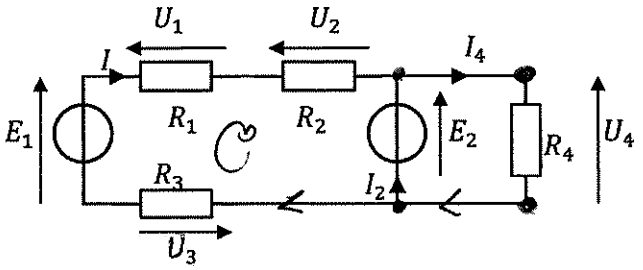
b- $\frac{1}{2}.E$

c- $\frac{2}{3}.E$

d- $\frac{3}{2}.E$



Consider the diagram on the right (Q22&23).



Q22. Which relation is correct?

a- $U_1 = -R_1.I$

b- $U_2 = -R_2.I$

c- $U_3 = -R_3.I$

d- $U_4 = E_2$

Q23. Which relation is correct?

a- $U_1 = U_2$

b- $E_1 = U_3 + U_2 + E_2 + U_1$

c- $E_1 - U_1 + U_2 + E_2 - U_3 = 0$

d- $E_1 = E_2$

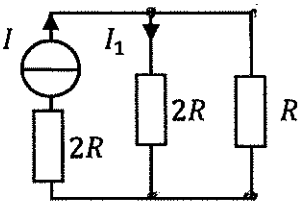
Q24. Consider the diagram on the right. Choose the right formula for I_1?

a- $I_1 = \frac{2}{3} \cdot I$

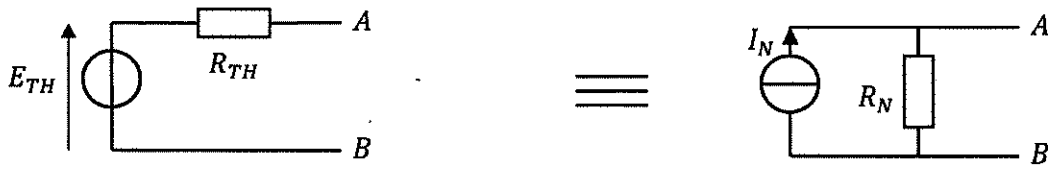
b- $I_1 = \frac{2}{5} \cdot I$

c- $I_1 = \frac{1}{3} \cdot I$

d- $I_1 = \frac{1}{5} \cdot I$



Q25. Consider the 2 diagrams below:



These two diagrams are equivalent if and only if:

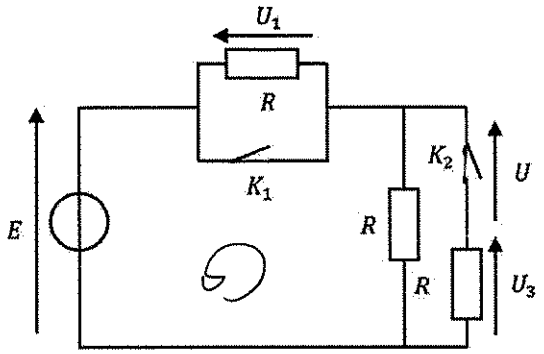
a- $E_{th} = I_N$ and $R_{th} = R_N$

b- $E_{th} = R_N . I_N$ and $R_{th} = R_N$

c- $E_{th} = \frac{I_N}{R_N}$ and $R_{th} = R_N$

d- $E_{th} = R_N$ and $I_N = R_{th}$

Consider the diagram below (Q26&27)



Q26. What is the right formula for U if K_1 and K_2 are closed?

a- $U = \frac{E}{2}$

b- $U = 0$

c- $U = E$

d- $U = \frac{E}{3}$

Q27. What is the right formula for U_1 if K_1 is open and K_2 is closed?

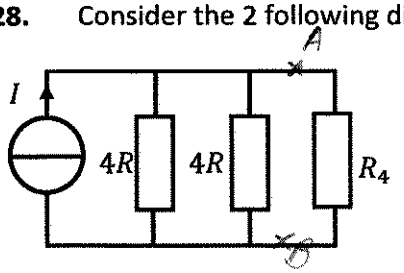
a- $U_1 = \frac{E}{3}$

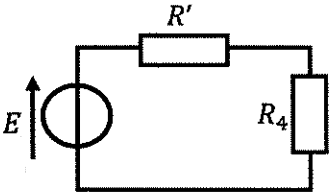
b- $U_1 = \frac{E}{2}$

c- $U_1 = E$

d- $U_1 = \frac{2}{3}.E$

Q28. Consider the 2 following diagrams:





These 2 diagrams are equivalents if and only if:

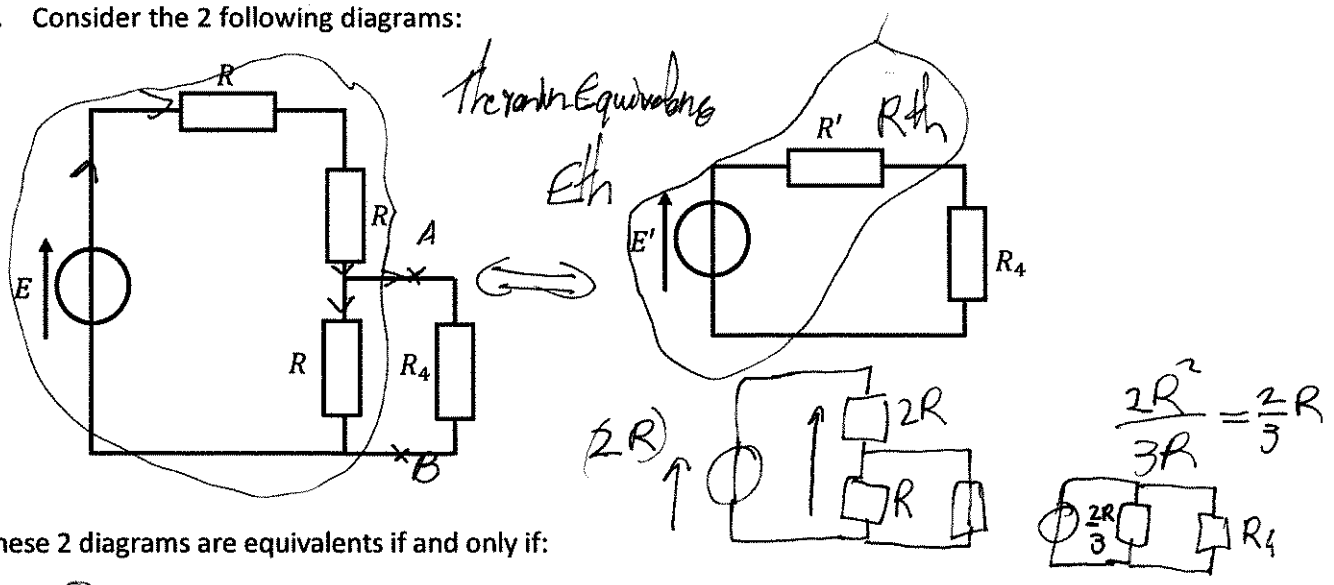
a- $E = 4R.I$ and $R' = 2R$

b- $E = 2R.I$ and $R' = 2R$

c- $E = 4R.I$ and $R' = 8R$

d- $E = \frac{I}{2R}$ and $R' = 2R$

Q29. Consider the 2 following diagrams:



These 2 diagrams are equivalents if and only if:

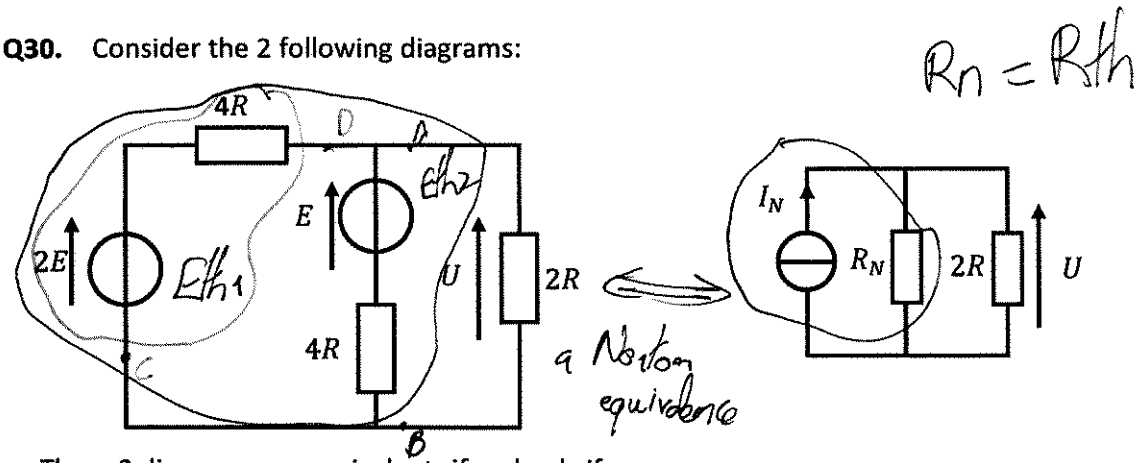
a- $E' = E$ and $R' = 2R/3$

b- $E' = E/3$ and $R' = 2R/3$

c- $E' = E/2$ and $R' = 2R/3$

d- $E' = E/3$ and $R' = R/3$

Q30. Consider the 2 following diagrams:



These 2 diagrams are equivalents if and only if:

a- $I_N = E/R$ and $R_N = 4R$

b- $I_N = 3E/2$ and $R_N = 2R$

c- $I_N = \frac{3}{4R}E$ and $R_N = 2R$

d- $I_N = 12R.E$ and $R_N = 2R$

Test 4
Computer Architecture

Monday 23 October 2023

For all the questions, one or more answers are possible.

31. $1110111_2 + 1110111_2 + 1001011_2 =$
- A. 100111001_2
- B. 100110001_2
- C. 101011001_2
- D. None of these answers.

32. $111110111_2 - 1100111_2 =$
- A. 101010000_2
- B. None of these answers.
- C. 110010000_2
- D. 110110000_2

33. $10011100_2 * 101001_2 =$
- A. None of these answers.
- B. 1101011111100_2
- C. 1100011111100_2
- D. 1010011111100_2

34. An *n*-bit word can be arranged into:
- A. 2^{n-1} patterns
- B. 2^n patterns
- C. None of these answers.
- D. $2^n - 1$ patterns

35. What is the 8-bit two's complement of 98_{16}?
- A. 68_{16}
- B. None of these answers.
- C. 98_{16}
- D. 67_{16}

36. For IEEE-754 denormalized numbers:
    A. e = E – bias
    B. e = 1 – bias
    C. e = 1 + bias
    D. None of these answers.

37. For IEEE-754 normalized numbers:
    A. E = 1 + bias
    B. E = e – bias
    C. E = 1 – bias
    D. None of these answers.

38. What is the value of the **E** field for denormalized numbers?
    A. 0
    B. –1
    C. 1
    D. 2

39. What is the value of the bias for double-precision numbers?
    A. 127
    B. –127
    C. 1,023
    D. –1,023

40. What is the size of the *M* field for a double-precision number?
    A. 23 bits
    B. 32 bits
    C. 52 bits
    D. 64 bits

ADP MCQ4, 23/10/03

Grammar (Questions 41-45):

41. I ____a lot of money yesterday. I ____expensive shoes.

a. spend / buy
b. spent / buy
c. spent / bought
d. was spent / buy

42. ___ you and your husband at the movies last night?

a. were
b. was
c. did
d. do

43. Mr. Lin ____ in from China late last night. I'm sure he ___ really tired today.

a. flied / falled
b. flowed / fell
c. flew / felt
d. flyied / feeled

44. Yesterday, Phil _____ three cups of coffee before 8:00 A.M. He usually ___ too much coffee.

a. drinked/ drink
b. was drinking/ is drinking
c. drunk/drinks
d. drank/drinks

45. A: 'Monica _____ an award for outstanding service to the company.'

B: 'Wonderful! She ___ it.'

a. received / deserves
b. receives / is deserving
c. did received / deserved
d. receive / deserve

Emails (Questions 46-50):

Choose the correct form in place of the underlined words/expressions:

46. Dear Sirs or Madams, I am writing to inform you of our new offer.

a. Dear Sire or Madame,
b. Dear Sir or Madam,
c. Dears Sirs or Madams,
d. Dear Mr or Mrs,

47. Please complete the form until next Tuesday.

a. by next Tuesday.
b. on next Tuesday.
c. at next Tuesday.
d. in next Tuesday.

48. Thank you for reply quick.

a. reply quickly.
b. replying quick.
c. reply fast.
d. replying quickly.

49. Please do not hesitating to contact me.

a. hesite to contact
b. hesite to contacted
c. hesitate to contact
d. hesitate to contacting

50. I look forward to hear from you soon.

a. looking forward to hear
b. look forwarding to hear
c. look forward to hearing
d. am look forward to hearing

ACF MCQ B1-4-23 oct 2023

Choose the ONE correct answer that applies in each case.

51. What is NOT true about good paragraphs?
    a. They contain coherent sentences
    b. They should each only include one piece of information
    c. They show readers how an essay is organised
    d. They should each relate to a single topic

52. What is true about a topic sentence?
    a. It should be close to the beginning of a paragraph
    b. It should always be the first sentence in a paragraph
    c. It should provide background information
    d. It should repeat the essay title

53. What is NOT true about the **introductory** sentence in a paragraph?
    a. It should include background information
    b. It should include the topic sentence
    c. It should compare and contrast
    d. It should start the paragraph

54. What is NOT true about the **body** in a paragraph?
    a. It follows the introduction
    b. It mentions main facts
    c. It discusses the controlling idea
    d. It asks the reader questions

55. What is NOT true about the **concluding** sentence in a paragraph?
    a. It summarises the main idea
    b. It follows the body
    c. It brings together ideas mentioned in the body
    d. It is always required

The remaining questions relate to this paragraph:

_____1_____. One of the physical benefits of exercise is having stronger muscles. The only way to make your muscles stronger is to use them, and exercises such as crunches, squats, lunges, push-ups and weight-lifting are effective exercises that strengthen your muscles. Another benefit of exercise is that it lowers our heart rate. A slow heart rate can show that our hearts are working more efficiently and they do not have to pump as many times in a minute to feed blood to our organs.
_____2_____. _____3_____.

56. Which topic sentence would best fit in position 1?
    a. Muscles are important for life
    b. The benefits of exercise
    c. All in all, exercise makes humans healthier
    d. As it makes our body healthier, exercise is extremely important

57. What role do the supporting sentences play here?
    a. They compare and contrast different forms of exercise
    b. They provide some statistics on exercising
    c. They give the writer's opinion on exercising
    d. They provide concrete examples of activities and the resulting effects

58. Which additional supporting sentence would fit best in position 2?
    a. Our organs need blood to survive
    b. Isn't that amazing?
    c. Moreover, when our heart beats more efficiently, our blood pressure decreases
    d. Try it yourself!

59. Which concluding sentence would fit best in position 3?

a. All in all, people need to exercise more!
b. These are just some of the incredible health benefits of exercise.
c. So shouldn't we all join a fitness club?
d. To conclude, strong muscles are indispensable

60. How could you improve the paragraph?

a. Remove contractions
b. Correct the spelling mistakes
c. Change all the verbs into the passive
d. Remove the possessive pronouns