ALGO
MCQ

1. **The definition of an operation is composed of ?**

   ✗ (a) a name
   ✗ (b) a profile
     (c) a nickname
     (d) a prefix
     (e) a suffix

2. **A partial operation is ?**

   (a) An operation that defines the domain of definition of another one
   (b) An auxiliary operation
   ✗ (c) An operation that is not described everywhere

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

   ✗ (a) Completeness
     (b) Consequence
   ✗ (c) Consistency
     (d) Complementation
     (e) Implementation

4. **The USES area is used to specify ?**

   (a) The defined types
   ✗ (b) The predefined types

5. **For the declaration**

   ```
   TYPES pas
   USES  faux
   ```

   the operation c'est : pas -> faux is ?

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

6. **The AXIOMS ?**

   ✗ (a) allow us to deduce a value by application of observers to internal operations
     (b) allow us to deduce a value by application of internal operations to observers

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

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

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

    (a) The TYPES
    (b) The OPERATIONS
    ✗ (c) The PRECONDITIONS
    ✗ (d) The AXIOMS
    ✗ (e) The variables WITH

9. **The definition of an algebraic abstract type is composed of ?**

    (a) a signature or a system of axioms
    ✗ (b) a signature and a system of axioms

10. **For the declaration**

```
TYPES kenny
USES  they, killed
```

    the operation Omg : kenny x they -> killed is ?

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

MCQ 2

Monday, 9 October

Question 11

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 5! .

✗   c. The number of anagrams of the word "ROMANIA" is $\dfrac{7!}{2}$

   d. The number of anagrams of the word "NAMIBIA" is $\dfrac{7!}{2}$

   e. None of the others

Question 12

Let E be a finite set of cardinal 8. Then:

   a. The number of 6-element subsets of E is equal to 32

✗   b. In E, there are as many 5-element subsets as 3-element subsets

✗   c. The number of 7-element subsets of E is equal to $\binom{8}{7}$ ("8 choose 7")

   d. E can be the set $[\![10, 18]\!]$, for example

   e. None of the others

Question 13

In a box, there are 10 balls, numbered 1 to 10.
You pick 3 balls from the box.

   a. If you pick the balls successively and with replacement, there are $10 \times 9 \times 8$ possible results.

✗   b. If you pick the balls successively and without replacement, there are $10 \times 9 \times 8$ possible results.

   c. If you pick the balls simultaneously, there are $10 \times 9 \times 8$ possible results.

   d. None of the others

Question 14

Let A and B be two events in a probability space $(\Omega, \mathscr{P}(\Omega), P)$.

   a. If A and B are disjoint, then $P(A \cup B) = P(A) \times P(B)$.

   b. If A and B are disjoint, then $P(A \cup B) = P(A) + P(B)$.

   c. $P(A + B) = P(A) \cup P(B)$

   d. $P(A \cup B) = P(A) + P(B) + P(A \cap B)$

   e. None of the others

Question 15

We roll a 6-sided dice, the sides are numbered 1 to 6. The power set is hence $\Omega = [1, 6]$.
We can define a probability space $(\Omega, \mathscr{P}(\Omega), P)$ by setting: (select the correct answer(s))

   a. $P(\{1\}) = 0,3$ and $\forall k \in [2, 6]$, $P(\{k\}) = 0,1$

   b. $P(\{1\}) = 0,5$ and $\forall k \in [2, 6]$, $P(\{k\}) = 0,1$

   c. $P(\{1\}) = 0,3$ and $\forall k \in [2, 6]$, $P(\{k\}) = \dfrac{0,7}{4}$

   d. None of the others

Question 16

We roll two fair dice. The probability of getting at least one 6 is equal to:

   a. $\dfrac{11}{36}$

   b. $\dfrac{5}{18}$

   c. $\dfrac{5}{3}$

   d. None of the others

Question 17

We randomly pick an integer number between 1 and 20, each value having the same probability. 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"

   a. $P(A \cap B) = \dfrac{3}{20}$

   b. $P(A \cap B) = \dfrac{1}{2}$

   c. $P(A \cap B) = 0$

   d. None of the others

Question 18

Consider a function $f : [1,5] \longrightarrow [1,6]$.

    a. f cannot be injective.

✗   b. f cannot be surjective.

    c. None of the others

Question 19

Let $n \in \mathbb{N}$ and $k \in [0,n]$.

    a. $\dbinom{n}{k} = \dfrac{n!}{k!}$

✗   b. $\dbinom{n}{k} = \dfrac{n!}{(n-k)!k!}$

    c. $\dbinom{n}{k} = \dfrac{k!}{n!}$

    d. $\dbinom{n}{k} = \dfrac{k!}{(k-n)!}$
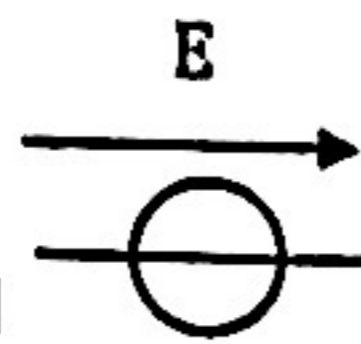
    e. None of the others

Question 20

Let $n \in \mathbb{N}$ and consider two real numbers x and y. Then $(x+y)^n = \displaystyle\sum_{k=0}^{n} \binom{n}{k} x^{n-k} y^k$

✗   a. True.

    b. False

MCQ Electronics – InfoS1

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

Q21. What is the law to be used to write a relation between currents?

✗   a- Law of nodes

b- Law of loops

Q22. In the diagram on the right, we set the following currents:

$I_1 = 5mA$; $I_2 = 1mA$; $I_3 = -1mA$; $I_4 = 3mA$

Calculate the current I.

C

a- $I = 4\ mA$

b- $I = 2\ mA$

c- $I = 10\ mA$

d- $I = 8\ mA$

Consider the diagram on the right (Q23 à 26)

Q23. Calculate current I intensity?

C

a- $1A$

b- $2A$

c- $5A$

d- Unknown

Q24. Calculate current I_2 intensity?

C

a- $5A$

b- $2A$

c- $1A$

d- Unknown

Q25. What can be said on resistances R_1 and R_3 ?

a- $R_1 < R_3$

✗   b- $R_1 = R_3$

c- $R_1 > R_3$

d- Impossible to compare

Q26. What can be said on resistances R_2 et R_3 ?

a- $R_2 < R_3$

C

b- $R_2 = R_3$

c- $R_2 > R_3$

d- Impossible to compare

Consider the diagram on the right where:

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

E

Q27. This symbol ⊖→ represents:

a- A resistor

✗ b- A voltage source

c- A current source

d- A resistor source
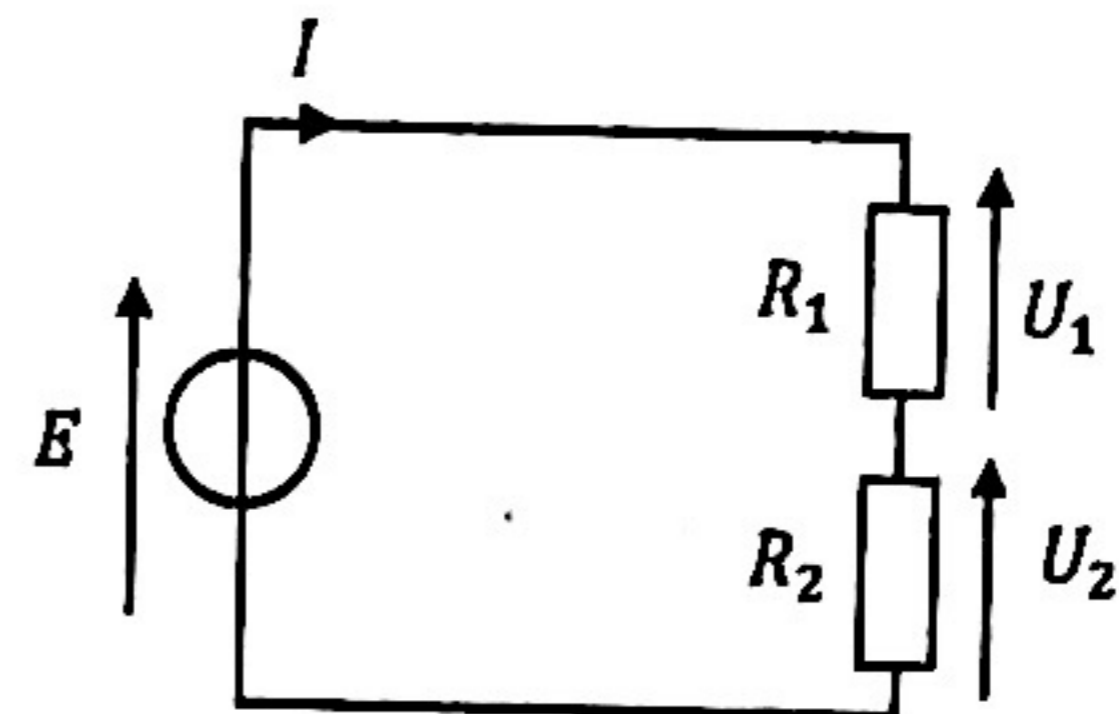
Q28. The sum of voltages across the two resistors is:

a- Bigger than the voltage between source terminals

b- Smaller than the voltage between source terminals

✗ c- Equal to the voltage between source terminals

Q29. The voltage E between source terminals is equal to?

D

a- $(R_1 - R_2).I$　　　　　　　c- $R_1.I$

b- $R_2.I$　　　　　　　　　　d- $(R_1 + R_2).I$

Q30. The voltage U_2 between R_2 terminals is equal to?

C

a- $\frac{1}{3}.E$　　　　　　　　c- $\frac{2}{3}.E$

b- $\frac{1}{2}.E$　　　　　　　　d- $\frac{3}{2}.E$

Test 2
Computer Architecture

Monday 9 October 2023

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

31. Which is the weight of the digit C in the following number: $ABCD_{16}$?
    A. None of these answers.
    B. 1
    C. 12
    D. 16 ✗

32. Which is the result of the following subtraction: $1000_{16} - 1_{16}$?
    A. $1FFF_{16}$
    B. None of these answers.
    C. 999_{16}
    D. FFF_{16} ✗

33. Which is the result of the following addition: $299_{16} + 1_{16}$?
    A. 300_{16}
    B. $30A_{16}$
    C. None of these answers.
    D. $29A_{16}$ ✗

34. $AC7F_{16} =$
    A. None of these answers.
    B. $AC80_{16} - 1_{16}$ ✗
    C. $44,159_{10}$ ✗
    D. 1010110001111111_2 ✗

35. $20000_{16} =$
    A. None of these answers.
    B. $2^{18} - 2^{17}$ ✗
    C. 2^{17} ✗
    D. 2^{18}

36. $137.015625_{10} =$
    A. 89.04_{16}
    B. 89.02_{16}
    C. 10001001.0000001_2
    D. None of these answers.

37. $1011001.000101_2 =$
    A. 59.14_{16}
    B. 59.11_{16}
    C. 89.078125_{10}
    D. None of these answers.

38. $5C.44_{16} =$
    A. 92.265635_{10}
    B. 1011100.01001_2
    C. 1011100.001001_2
    D. None of these answers.

39. $1110111_2 + 1110111_2 + 1001011_2 =$
    A. 100111001_2
    B. 101011001_2
    C. 100110001_2
    D. None of these answers.

40. $111110111_2 - 1100111_2 =$
    A. 110010000_2
    B. 110110000_2
    C. 101010000_2
    D. None of these answers.

Deadly Mistakes (Q.41-45): Choose the correct sentence:

41. a. On one hand, smokers should have the right to smoke if they want to, but in the other hand, non-smokers should have the right to breathe smoke-free air.

b. In one hand, smokers should have the right to smoke if they want to, but in the other hand, non-smokers should have the right to breathe smoke-free air.

✗ c. On one hand, smokers should have the right to smoke if they want to, but on the other hand, non-smokers should have the right to breathe smoke-free air.

d. On a hand, smokers should have the right to smoke if they want to, but on the other hand, non-smokers should have the right to breathe smoke-free air.

42. a. Our vacation was great except it rained the most days.

b. Our vacation was great except it rained the most of the days.

c. Our vacation was great except it rained most of days.

✗ d. Our vacation was great except it rained most of the days.

✗ 43. a. Nowadays the internet is an essential tool.

b. Paul works in a big society.

c. When emily went to paris, she had a great experience.

d. I am agree with you.

44. a. A computer scientist always earn high salaries.

b. My teacher always gives good advices.

c. You must to clean your room before going to the party.

✗ ✗ d. I have two blue and white dresses.

45. a. I have been waiting for more than five minutes.

   b. I am interested on computing.

c. My mother went in the United States and met her friend.

d. The baby was listening at the barking dog.

Email (Q.46-50):

46. Which of the following expressions is the best formal way to end a formal email?

a. See you later

b. Goodbye

c. Rgds

d. Kind regards

47. Which of the following is the best formal way of giving someone some good news in a formal email?

a. Here is some good news.

b. I am delighted to inform you that I have some good news for you.

c. I have some good news for you.

d. Good news: ....

48. Which of the following is the best way to address someone in an informal mail?

a. Good morning John,

b. Hi John,

c. Hi there,

d. Dear John,

49. Which of the following expressions could be seen in a formal email?

a. Let's talk about....

b. I've attached my CV.

✗   c. Would you please.....

d. Don't forget to......

50. Which of the following is an expression that could be seen in an informal email?

✗   a. 'pretty interesting'

b. 'I would like to remind you....'

c. 'I look forward to hearing from you.'

d. 'Could you please refer to ....'

Choose the ONE correct answer that applies in each case.

51. Regarding AWGS, which statement is true?
    a. Academic writers need to be sure that their communications are written in the appropriate style
    b. Style should not be consistent depending on the message being conveyed
    c. A formal research report written in formal English may be considered too simplistic
    d. The grammar check tool on your computer will be indispensable

52. If you are describing a procedure or process, which technique should you adopt?
    a. Read the study by Chang and Swales (1999)
    b. Use contractions
    c. Use pronouns like I, you, one
    d. Use passive instead of active voice

53. Express more formally: "People must put solutions into practice"
    a. People must put into practice solutions
    b. People must implement solutions
    c. People must make up solutions
    d. People must come up with solutions

54. Express more formally: "Artists have to put up with copyright infringement"
    a. Artists have to develop copyright infringement
    b. Artists have to eliminate copyright infringement
    c. Artists have to tolerate copyright infringement
    d. Artists have to accept copyright infringement

55. Express more formally: "Use of AI has gone up dramatically in the past year"
    a. Use of AI has produced dramatically in the past year
    b. Use of AI sprung dramatically in the past year
    c. Use of AI has risen dramatically in the past year
    d. Use of AI headed north dramatically in the past year

56. Which set of verbs could replace "come up with"?
    a. Discover/develop/create
    b. Reveal/raise/find
    c. Examine/analyse/monitor
    d. Face/encounter/confront

57. Which set of verbs could replace "run into"?
    a. Discover/develop/create
    b. Reveal/raise/find
    c. Examine/analyse/monitor
    d. Face/encounter/confront

58. Which set of verbs could replace "look at"?
    a. Discover/develop/create
    b. Reveal/raise/find
    c. Examine/analyse/monitor
    d. Face/encounter/confront

59. Choose the most formal alternative:
    a. a lot of students
    b. heaps of students
    c. loads of students
    d. considerable numbers of students

60. Choose the LEAST formal alternative:
    a. Many universities lack finances
    b. Many universities are experiencing a lack of funds
    c. Many universities need more money
    d. Many universities require greater investment