1. La méthode de recherche la plus naïve est la recherche ?
   (a) séquentielle
   (b) dichotomique
   (c) autoadaptative
   (d) par interpolation

2. Dans le cas d'un ajout d'un élément appartenant déjà à un ensemble, la solution retenue ?
   (a) générera une erreur
   (b) supprimera cet élément
   (c) ajoutera un autre élément
   (d) ajoutera l'élément une deuxième fois
   (e) ne fera rien

3. Lors d'une recherche si la clé recherchée n'est pas trouvée, on parle de recherche ?
   (a) négative
   (b) positive
   (c) affirmative
   (d) logique
   (e) cognitive

4. L'important dans les ensembles c'est ?
   (a) la position d'un élément dans à un ensemble
   (b) la place d'un élément dans à un ensemble
   (c) l'appartenance d'un élément à un ensemble
   (d) l'ordre d'un élément dans un ensemble

5. la recherche autoadaptative n'est pas implémentable sur ?
   (a) liste triée croissante
   (b) liste triée décroissante
   (c) liste non triée

6. La complexité au pire de la recherche négative séquentielle est d'ordre ?
   (a) linéaire
   (b) logarithmique
   (c) quadratique
   (d) constant

7. La recherche séquentielle peut se faire sur ?
   (a) liste triée croissante
   (b) liste triée décroissante
   (c) liste non triée

8. La recherche autoadaptative ramenant l'élément trouvé à la moitié de la distance le séparant de la première place, préfère ?

  (a) une structure dynamique

  (b) une structure statique

9. Quelle opération permet de récupérer le nombre d'occurrences d'un élément dans un multi-ensemble ?

  (a) count

  (b) compte

  (c) occ

  (d) card

  (e) nboccurrences

10. Un élément ne peut pas être présent plusieurs fois dans un ensemble ?

  (a) faux

  (b) vrai

QCM N°14

lundi 5 décembre 2016

Question 11

Soit $P(X) = (X + 2)(X^2 + X + 1)$. Alors

    a. le reste de la division euclidienne de $P(X)$ par $X^2 + X + 1$ est $X + 2$

    b. le reste de la division euclidienne de $P(X)$ par $X^2 + X + 1$ est 0

    c. $X^2 + X + 1$ divise $P(X)$

    d. rien de ce qui précède

Question 12

Soient P et Q deux polynômes quelconques non nuls de $\mathbb{R}[X]$.

    a. $d°(P + Q) = d°(P) + d°(Q)$

    b. $d°(P + Q) = \text{Max}\big(d°(P), d°(Q)\big)$

    c. $d°(PQ) = d°(P) + d°(Q)$

    d. Si $d°(P) \neq d°(Q)$ alors $d°(P + Q) = d°(P) + d°(Q)$

    e. rien de ce qui précède

Question 13

Soit $f : \mathbb{R}_+ \longrightarrow \mathbb{R}$ définie pour tout $x \in \mathbb{R}_+$ par $f(x) = x^3$. Alors

    a. f est injective

    b. f n'est pas injective

    c. f est surjective

    d. f n'est pas surjective

Question 14

Soit $n \in \mathbb{N}$ tel que $n \geqslant 2$. Alors n admet un diviseur premier.

    a. vrai

    b. faux

Question 15

Soient $(a, b) \in \mathbb{N}^{*2}$ et p premier tel que $p \mid ab$. Alors

  a. $p \mid a$ et $p \mid b$

  b. $p \mid a$ ou $p \mid b$

  c. $p \mid (a + b)$

  d. rien de ce qui précède

Question 16

Soit $(a, b, c) \in \mathbb{N}^{*3}$. Alors

  a. $a \mid a + b \Longrightarrow a \mid b$

  b. $a \mid b + c \Longrightarrow a \mid b$ et $a \mid c$

  c. $a \mid b \Longrightarrow a \mid a + b$

  d. $a \mid b$ et $a \mid c \Longrightarrow a \mid b + c$

  e. rien de ce qui précède

Question 17

Soit $(a, b, c) \in \mathbb{N}^{*3}$. Alors

  a. $a \mid b \Longrightarrow b \mid a$

  b. $a \mid b \Longrightarrow a \mid bc$

  c. $a \mid bc \Longrightarrow a \mid b$ ou $a \mid c$

  d. $a \mid 1$

  e. $a \mid b \Longrightarrow ac \mid b$

Question 18

Soient $p \in \mathbb{N}$ premier et $d \in \mathbb{N}^*$. Alors

  a. $d \mid p$ ou $d \wedge p = 1$

  b. Si d divise p alors $d = 1$ ou $d = p$

  c. Si $d \geqslant 2$ alors $p \mid d$

  d. rien de ce qui précède

Question 19

Soient $n \in \mathbb{N}^*$ et $(a, b) \in \mathbb{Z}^2$ tels que $a \equiv b\,[n]$. Alors

- a. il existe $k \in \mathbb{Z}$ tel que $a = b + kn$

- b. $n \mid a - b$

- c. a et b ont même reste dans la division euclidienne par n

  d. rien de ce qui précède

Question 20

Soit $(a, b) \in \mathbb{N}^{*2}$. Alors il existe $(u, v) \in \mathbb{Z}^2$ tel que $au + bv = a \wedge b$.

- a. vrai

  b. faux

21. The students _____ to submit their reports by the end of this week.

    a. have asked
    b. are asked
    c. has asked
    d. are asking

22. A new supermarket _____ next year.
    a. was build
    b. has been built
    c. is going to be built
    d. is been built

23. The car was three years old but _____ very much.
    a. wasn't used
    b. isn't used
    c. hadn't been used
    d. hasn't been used

24. As the patient could not walk, he _____ home in a wheelchair.
    a. has carried
    b. has been carried
    c. was carrying
    d. was carried

25. The computer is not free. It _____ right now.
    a. is being used
    b. has been used
    c. is going to be used
    d. is used

26. I _____ with your decision yesterday.
    a. am agreed
    b. was agreed
    c. have been agreed
    d. agreed

27. Which one is correct?
    a. Does that course being teached by Prof. Shapiro?
    b. Was that course been taught by Prof. Shapiro?
    c. Is that course being taught by Prof. Shapiro?
    d. Have that course being teached by Prof. Shapiro?

28. Which of the following is written is the passive?
    a. Over half of the graduating class went to college in the fall.
    b. The committee is considering a public transportation proposal.
    c. The state exam was passed by over half of the students who took it.
    d. The researchers will publish their findings in a report.

29. Which one of the following is written in the passive?
     a. Two boys were seen near the gym yesterday.
     b. The telephone has rung ten times already.
     c. Brittany's bracelet has 16 silver charms.
     d. Lisa's red sweater was lying on the couch.

30. Which one of the following is written in the passive?
     a. It was our tenth victory of the season.
     b. The scoreboard flashed the final numbers.
     c. The game was won in the last thirty seconds.
     d. The forward slam-dunked the ball in a brilliant last-minute play.

Should Facebook Manipulate Users?

By JARON LANIER JUNE 30, 2014

1. SHOULD we worry that technology companies can secretly influence our emotions? Apparently so.

2. A study recently published by researchers at Facebook and Cornell suggests that social networks can manipulate the emotions of their users by tweaking what is allowed into a user's news feed. The study, published in the Proceedings of the National Academy of Sciences, changed the news feeds delivered to almost 700,000 people for a week without getting their consent to be studied. Some got feeds with more sad news, others received more happy news.

3. The researchers were studying claims that Facebook could make us feel unhappy by creating unrealistic expectations of how good life should be. But it turned out that some subjects were depressed when the good news in their feed was suppressed. Individuals were not asked to report on how they felt; instead, their writing was analyzed for vocabulary choices that were thought to indicate mood.

4. The researchers claim that they have proved that "emotional states can be transferred to others via emotional contagion, leading people to experience the same emotions without their awareness." The effect was slight, but imposed on a very large population, so it's possible the effects were consequential to some people. The paper itself states its claims rather **boldly**, but one of the authors, Adam D. I. Kramer of Facebook, responding to intense criticism that it was wrong to study users without their permission, has since emphasized how tiny the effects were. But however the results might be interpreted now, they couldn't have been known in advance.

5. The manipulation of emotion is no small thing. An estimated 60 percent of suicides are preceded by a mood disorder. Even mild depression has been shown to increase the risk of heart failure by 5 percent; moderate to severe depression increases it by 40 percent.

6. Research with human subjects is generally governed by strict ethical standards, including the informed consent of the people who are studied. Facebook's generic click-through agreement, which almost no one reads and which doesn't mention this kind of experimentation, was the only form of consent cited in the paper. The subjects in the study still, to this day, have not been informed that they were in the study. If there had been federal funding, such a complacent notion of informed consent would probably have been considered a crime. Subjects would most likely have been screened so that those at special risk would be excluded or handled with extra care.

7. To promote the relevance of their study, the researchers noted that emotion was relevant to human health, and yet the study didn't measure any potential health effects of the controlled manipulation of emotions.

8. It is unimaginable that a pharmaceutical firm would be allowed to randomly, secretly sneak an experimental drug, no matter how mild, into the drinks of hundreds of thousands of people, just to see what happens, without ever telling those people. Imagine a pharmaceutical researcher saying, "I was only looking at a narrow research question, so I don't know if my drug harmed anyone, and **I haven't bothered to find out**." Unfortunately, this seems to be an acceptable attitude when it comes to experimenting with people over social networks. It needs to change.

9. Our laws require that cars be recalled and fixed even if a defect would be likely to injure only a very small number of people. In this case, we're talking about a study that was actually intended to cause a negative effect in many people, and one open question is how destructive it was in the worst instances that might have occurred.

10. All of us engaged in research over networks must commit to finding a way to modernize the process of informed consent. Instead of lowering our standards to the level of unread click-through agreements, let's raise the standards for everyone.

11. Now that we know that a social network proprietor can engineer emotions for the multitudes to a slight degree, we need to consider that further research on amplifying that capacity might take place. Stealth emotional manipulation could be channeled to sell things (you suddenly find that you feel better after buying from a particular store, for instance), but it might also be used to exert influence in a multitude of other ways. Research has also shown that voting behavior can be influenced by undetectable social network maneuvering, for example.

12. The principle of informed consent in the age of social networking can't be limited to individuals who are studied; the public has every right to be informed of otherwise undetectable commercial or political practices that are made possible by the results of research into high-tech manipulation, and to choose whether to give consent.

13. My guess is that the public would choose to outlaw using our communication tools as conduits for secret, algorithmic manipulations of our emotions.

14. Let us choose to live in a society of true hearts, not calculated ones.

31. Which statement is true?
    a. Facebook studied their user's mood change in order to offer them better advertising.
    b. Facebook directed the study on their own without anyone's consent.
    c. Cornell researchers found out about Facebook's research and warned people about it.
    d. None of the above.

32. Which statement is true?
    a. Messages were scanned for mood indicators.
    b. Facebook asked people to mention in their messages how they felt.
    c. Only unhappy people were subject to the study.
    d. Only happy people were subject to the study.

33. Which statement is true?
    a. Researchers suggest that emotions are contagious between one another.
    b. The majority of suicides are due to mood disorder.
    c. Emotions and depression are very closely linked.
    d. All of the above.

34. What does the highlighted word "**boldly**" in the text suggest?
    a. That the paper was written rapidly without any real findings.
    b. That most researchers were not involved in the study.
    c. That the paper's results were announced with confidence and courage.
    d. That the results of the paper are totally wrong and false.

35. The writer suggests that:
    a. Facebook could not have told the subjects about the study.
    b. Due to ethical standards, subjects should have been informed of the study.
    c. It is the law to inform the general public about any kind of study.
    d. All is ok because everything is mentioned in the generic click-through agreement.

36. Which statement is true?
    a. The writer suggests that Facebook alone need not respect the principle of informed consent.
    b. The writer suggests that Facebook influences other companies to do the same kind of research.
    c. Facebook is being singled out by the writer as the only network to organize that kind of study.
    d. None of the above.

37. What did the writer suggest the researchers should have done with their study?
    a. Researchers should have measured the social impact of their study.
    b. Researchers should have limited their study to emotionally unstable subjects.
    c. Researches should have measured the impact of their study on subjects' health.
    d. None of the above.

38. Which phrase is similar in meaning to the expression "<u>to bother to do something</u>" used in paragraph 8?
    a. To take the trouble to do something.
    b. To carefully try something.
    c. To show no concern about something.
    d. A and B

39. What is the writer's wish?
    a. That Facebook face all charges held against it.
    b. That all researchers work towards a better process of informed consent.
    c. That Facebook get rid of the basic unread click-through agreement.
    d. All of the above

40. The writer believes that this study could be used for...
    a. manipulating emotion to help financial transactions.
    b. manipulating emotion to help understand people social needs.
    c. A and B
    d. None of the above

41- Un cylindre est soumis à deux forces représentées ci-dessous
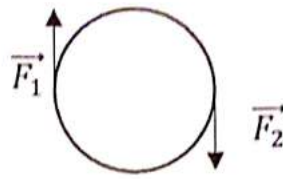
On peut affirmer que le cylindre

a) est au repos
b) tourne dans le sens trigonométrique
c) subit des forces dont la somme des moments est nulle
- d) tourne dans le sens horaire

42- Dans le cas d'un pendule composé d'un fil de longueur L et d'une masse m, le poids et la tension du fil agissent sur le point M (non-représentés ci-dessous). Que vaut le moment du poids ?

a) $L.P.\cos\theta$ b) $L.P.\sin\theta$ - c) $-L.P.\sin\theta$ d) $L.P$
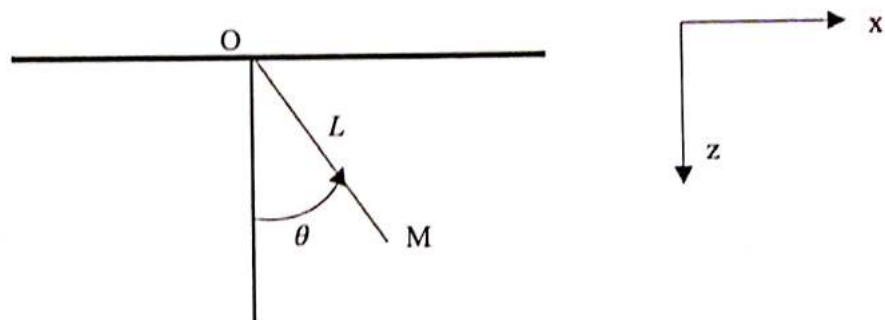
43- Le moment de la tension $\vec{T}$ du fil appliquée au point M (schéma ci-dessus) est

a) strictement positif   - b) strictement négatif   c) nul

44- On étudie le mouvement d'une balle tombant d'un gratte-ciel en se plaçant dans le référentiel terrestre. L'application de la seconde loi de Newton est :

a) valide dans ce cas-ci   - b) fausse ici   c) toujours vraie

45- Toujours dans le cadre de la question 44, on peut résoudre ce problème en utilisant :

a) la loi de composition des vitesses
b) aucun théorème ne le permet a priori
c) le théorème des moments

46- On étudie un point matériel M qui a un mouvement rectiligne uniforme. La première loi de Newton ou principe d'inertie permet de dire que :

  a) aucune force n'agit sur M
  b) les forces agissant sur M se compensent
 c) toutes les forces sont constantes

47- La deuxième loi de Newton s'écrit aussi comme :

  a) $\sum(\vec{F}_{ext}) = m\dfrac{d\vec{OM}}{dt}$

  b) $\sum(\vec{F}_{ext}) = m\dfrac{d^2\vec{V}}{dt^2}$

  c) $\sum(\vec{F}_{ext}) = \dfrac{d\vec{p}}{dt}$

48- Dans le schéma ci-dessous, on suppose que la tension est la même en norme en chaque point du fil, la masse m_2 se déplace vers le bas et m_1 glisse sans frottement sur le plan horizontal, on peut donc affirmer que l'accélération du système sera d'expression
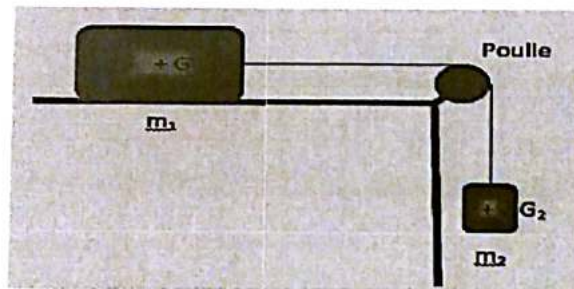
  a) $a = \dfrac{m_2}{m_1} \cdot g$

  b) $a = \dfrac{m_1}{m_2} \cdot g$

  c) $a = \dfrac{m_1}{m_1 + m_2} \cdot g$

  d) $a = \dfrac{m_2}{m_1 + m_2} \cdot g$

49- Dans le schéma ci-dessus, la norme du vecteur réaction du plan sur la masse m_1 est

  a) $R = m_1 \cdot g$
  b) $R = (m_1 + m_2) \cdot g$
  c) $R = 0$

50- Dans le cas où la masse m_1 glisse avec frottement (question 48) le vecteur réaction sera

  a) nul
  b) de direction inclinée vers la droite par rapport à la normale
  c) normale au plan
  d) de direction inclinée vers la gauche par rapport à la normale

Pensez à bien lire les questions ET les réponses proposées

Q1. Une résistance court-circuitée a :

- a- un courant infini qui la traverse
- b- une tension nulle à ses bornes
- c- une tension infinie à ses bornes
- d- Aucune de ces réponses

Q2. Le théorème de Thévenin remplace un dipôle générateur complexe par une :

- a- source de tension idéale en parallèle avec une résistance
- b- source de courant idéale en parallèle avec une résistance
- c- source de tension idéale en série avec une résistance
- d- source de courant idéale en série avec une résistance

Q3. Le théorème de Norton remplace un dipôle générateur complexe par une :

- a- source de tension idéale en parallèle avec une résistance
- b- source de courant idéale en parallèle avec une résistance
- c- source de tension idéale en série avec une résistance
- d- source de courant idéale en série avec une résistance

Q4. Dans le théorème de Thévenin, la tension E_{th} du générateur est aussi appelée :

- a- La tension à vide
- b- La tension de court-circuit
- c- Aucune de ces réponses

Q5. Dans le théorème de Norton, le courant I_N du générateur est aussi appelé :

- a- Le courant à vide
- b- Le courant de court-circuit
- c- Aucune de ces réponses

Q6. Soit le montage suivant :

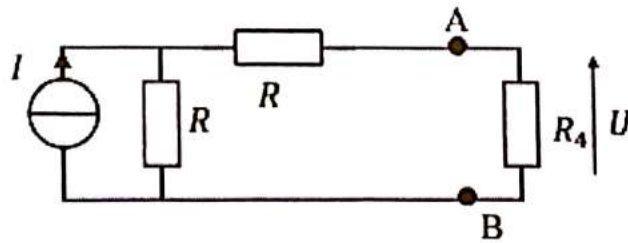Le générateur de Norton "vu" par la résistance R_4 est tel que :
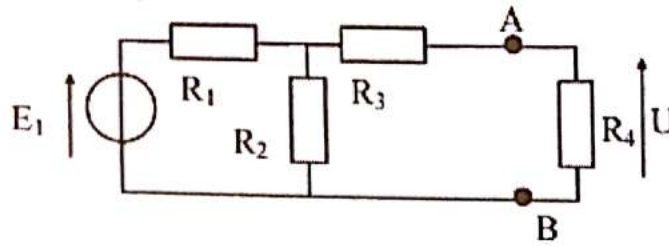
a- $I_N = \dfrac{U}{R_4}$ et $R_N = R_4$

b- $I_N = \dfrac{R_2}{R_2+R_3} \cdot \dfrac{E_1}{R_1}$ et $R_N = R_2$

c- $I_N = \dfrac{E_1}{R_1}$ et $R_N = R_1 + R_2$

d- $I_N = \dfrac{R_2}{R_1.R_2+R_1.R_3+R_2.R_3} \cdot E_1$ et $R_N = \dfrac{R_1 R_2}{R_1+R_2} + R_3$

Q7. Soit le montage suivant :

Le générateur de Thévenin "vu" par la résistance R_4 est tel que :

a- $E_{th=}U$ et $R_{th=} R_4$

b- $E_{th=}2.R.I$ et $R_{th=} R$

c- $E_{th=}R.I$ et $R_{th=} R$

d- $E_{th=}R.I$ et $R_{th=} 2.R$

Q8 Le générateur de Norton vu par la résistance R_4 est tel que :

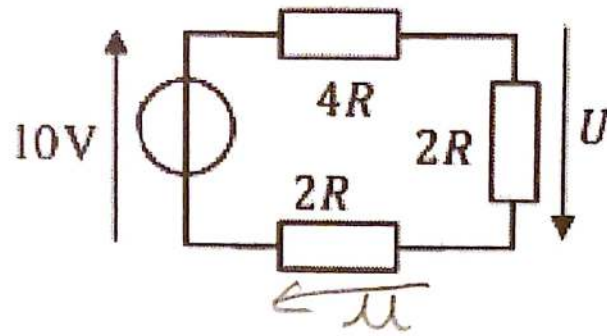a- $I_N = \dfrac{U}{R_4}$ et $R_N = R_4$

b- $I_N = \dfrac{I}{2}$ et $R_N = 2.R$

c- $I_N = I$ et $R_N = 2.R$
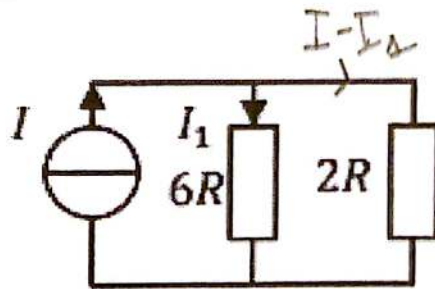
d- $I_N = \dfrac{I}{2}$ et $R_N = R$

Q9. Soit le circuit suivant : Que vaut U ?

a. 2.5 V

• b. -2.5V

c. 5 V

d. 7.5 V

Q10. Quelle est la bonne formule :

a- $I_1 = 4. I$

b- $I_1 = \dfrac{I}{4}$

c- $I_1 = \dfrac{3}{4} . I$

d- $I_1 = \dfrac{3R}{4} . I$

11. Combien de symboles différents possède la base 42 ?

    A. 40

    B. 41

    C. 42

    D. 43

12. Quel est le résultat de la soustraction suivante : $1000_{16} - 1_{16}$?

    A. FFF_{16}

    B. $FFFF_{16}$

    C. 999_{16}

    D. 1999_{16}

13. $123_4 =$

    A. 10111_2

    B. 11001_2

    C. 10011_2

    D. 11011_2

14. En supposant que $18_b = 28_4$, quelle est la valeur de la base b ?

    A. 7

    B. Impossible

    C. 8

    D. 9

15. $1011100010_2 / 100_2 =$

    A. $10111001,1_2$

    B. $10111010,1_2$

    C. 101110001_2

    D. $10111000,1_2$

16. Combien d'entiers signés peut-on coder sur n bits ?

    A. $2^{n-1} - 1$

    B. 2^{n-1}

    C. $2^n - 1$

    D. 2^n

17. Soit l'addition sur 8 bits signés suivante : 250 + 6

    Le résultat sur 8 bits signés est :

    A. −1

    ● B. Cette addition n'est pas possible.

    C. 0

    D. 256

18. Une ou plusieurs réponses sont possibles :

    Soit la soustraction sur 8 bits suivante : $01111100_2 - 01010001_2 = 00101011_2$

    A. Si les nombres sont non signés, il y a un dépassement non signé.

    B. Si les nombres sont signés, il y a un dépassement signé.

    ● C. Si les nombres sont non signés, il n'y a pas de dépassement non signé.

    ● D. Si les nombres sont signés, il n'y a pas de dépassement signé.

19. $X = \overline{B} + A.C$

    Quelle est la première forme canonique de X ?

    A. $A.B.\overline{C} + A.B.\overline{C} + \overline{A}.B.C + \overline{A}.B.\overline{C} + \overline{A}.\overline{B}.C$

    ● B. $\overline{A}.\overline{B}.\overline{C} + \overline{A}.\overline{B}.C + A.\overline{B}.\overline{C} + A.\overline{B}.C + A.B.C$

    C. $(A + \overline{B} + C).(A + \overline{B} + \overline{C}).(\overline{A} + \overline{B} + C)$

    D. $(\overline{A} + B + \overline{C}).(\overline{A} + B + C).(A + B + \overline{C})$

20. Choisir la réponse correcte :

    Dans un tableau de Karnaugh :

    A. Plus le nombre de bulles est petit, plus le nombre de variables dans un terme est grand.

    B. Plus une bulle est petite, plus le nombre de variables dans le terme est grand.

    C. Plus le nombre de bulles est petit, plus le nombre de termes de l'expression est grand.

    D. Plus une bulle est petite, plus le nombre de termes de l'expression est grand.