ALGO
QCM

1. **Un graphe orienté de n sommets peut être fortement connexe à partir de ?**
   (a) $n-1$ arcs
   (b) n arcs
   (c) $n+1$ arcs

2. **Une chaîne qui ne contient pas plusieurs fois un même sommet est ?**
   (a) élémentaire
   (b) optimal
   (c) plus court
   (d) un chemin

3. **Soit un graphe G connexe, sa fermeture transitive est ?**
   (a) Un sous-graphe
   (b) Un graphe partiel
   (c) Un graphe complet

4. **Supposons que *Pref[i]* retourne le Numéro d'ordre préfixe de rencontre d'un sommet i. Lors du parcours en profondeur d'un graphe orienté G, les arcs x→y tels que pref[y] est supérieur à Pref[x] dans la forêt sont appelés ?**
   (a) Arcs couvrants
   (b) Arcs en arrière
   (c) Arcs en Avant
   (d) Arcs croisés

5. **Calculer la fermeture transitive d'un graphe sert à ?**
   (a) Déterminer si un graphe est connexe
   (b) Déterminer les composantes connexes d'un graphe non orienté
   (c) Déterminer si un graphe est complet

6. **la longueur d'un chemin est ?**
   (a) éventuellement nulle.
   (b) le nombre d'arcs qui le composent.
   (c) le nombre de sommets qui le composent.
   (d) le nombre d'arêtes qui le composent.

7. **Un graphe non orienté de n sommets peut être connexe à partir de ?**
   (a) $n-1$ arêtes.
   (b) n arêtes.
   (c) $n+1$ arêtes.

8. **Pour déterminer les composantes connexes d'un graphe non orienté on peut utiliser ?**
   (a) l'algorithme de *parcours en profondeur*.
   (b) l'algorithme de *parcours en largeur*.
   (c) l'algorithme de *Warshall*.

9. **L'algorithme de *Warshall* permet de ?**
   (a) calculer la fermeture transitive d'un graphe non orienté.
   (b) calculer la fermeture transitive d'un graphe orienté.
   (c) parcourir un graphe en largeur.
   (d) déterminer si un graphe est complet.

10. **Les algorithmes *Trouver* et *Réunir* nécessitent ?**
    (a) un vecteur de pères.
    (b) un vecteur de fils.
    (c) un vecteur de frères.

QCM N°6

Lundi 4 décembre 2023

Question 11

Dans $\mathbb{R}^2$, considérons la base canonique $\mathcal{B} = (e_1{=}(1,0), e_2{=}(0,1))$, une autre base $\mathcal{B}' = (\varepsilon_1{=}(1,-2), \varepsilon_2{=}(2,1))$ et un vecteur $u = (x,y) \in \mathbb{R}^2$.

On note $X = \begin{pmatrix} x \\ y \end{pmatrix}$ et $X' = \begin{pmatrix} x' \\ y' \end{pmatrix}$ les colonnes constituées des coordonnées de u dans les bases $\mathcal{B}$ et $\mathcal{B}'$.

Enfin, on note P la matrice de passage de $\mathcal{B}$ à $\mathcal{B}'$. Alors :

a. $P = \begin{pmatrix} 1 & 2 \\ -2 & 1 \end{pmatrix}$

b. $P = \begin{pmatrix} 1 & -2 \\ 2 & 1 \end{pmatrix}$

c. $X = PX'$

d. $X' = PX$

e. Aucun des autres choix

Question 12

Considérons deux matrices A et B dans $\mathcal{M}_3(\mathbb{R})$ et $\lambda \in \mathbb{R}$. Alors :

a. $\det(A+B) = \det(A) + \det(B)$

b. $\det(\lambda A) = \lambda \det(A)$

c. $\det(A \times B) = \det(A) \times \det(B)$

d. Si A est inversible, $\det\left(A^{-1}\right) = \dfrac{1}{\det(A)}$

e. Aucun des autres choix

Question 13

Soit $A \in \mathcal{M}_3(\mathbb{R})$. On note C_1, C_2 et C_3 ses trois colonnes, L_1, L_2 et L_3 ses trois lignes.

a. On ne change pas $\det(A)$ si on remplace C_2 par $C_1 + 2C_2 - 2C_3$

b. On ne change pas $\det(A)$ si on remplace C_3 par $C_1 + 2C_2 - 2C_3$

c. On ne change pas $\det(A)$ si on remplace L_3 par $2L_1 - L_2 - L_3$

d. On ne change pas $\det(A)$ si on remplace L_1 par $2L_1 - L_2 - L_3$

e. Aucun des autres choix

Question 14

Soient E un $\mathbb{R}$-ev, $f \in \mathcal{L}(E)$ et $\lambda \in \mathbb{R}$. On note id l'application identité de E. Le réel λ est une valeur propre de f si et seulement si :

a. $\exists u \in E, f(u) = \lambda u$

b. $\exists u \in E, f(u) = \lambda u$ et $u \neq 0_E$

c. $\text{Ker}(f - \lambda id) \neq \{0_E\}$

d. $f - \lambda id$ n'est pas injective

e. Aucun des autres choix

Question 15

Soit $A \in \mathcal{M}_3(\mathbb{R})$. On note I la matrice identité de $\mathcal{M}_3(\mathbb{R})$. Le polynôme caractéristique de A est :

a. $P_A(X) = \det(XA + I)$

b. $P_A(X) = \det(XA - I)$

c. $P_A(X) = \det(A + XI)$

d. $P_A(X) = \det(A - XI)$

e. Aucun des autres choix

Question 16

Soit la matrice $A = \begin{pmatrix} 1 & 1 & -1 \\ 0 & 2 & 1 \\ 0 & 0 & -1 \end{pmatrix}$. Son polynôme caractéristique est :

a. $P_A(X) = (1 - X)^2(2 - X)$

b. $P_A(X) = (-1 - X)^2(2 - X)$

c. $P_A(X) = (1 - X)(2 - X)(-1 - X)$

d. Aucun des autres choix

Question 17

Soient $A \in \mathcal{M}_3(\mathbb{R})$ et $\lambda \in \mathbb{R}$ une valeur propre de A. On note I la matrice identité de $\mathcal{M}_3(\mathbb{R})$. Le sous-espace propre associé à la valeur propre λ est :

a. $E_\lambda = \{u \in \mathbb{R}^3, Au = \lambda u\}$

b. $E_\lambda = \{u \in \mathbb{R}^3, A(\lambda u) = 0_{\mathbb{R}^3}\}$

c. $E_\lambda = \text{Ker}(A - \lambda I)$

d. Aucun des autres choix

Question 18

Dans $E = \mathbb{R}^2$, on considère deux vecteurs $\varepsilon_1 = (1,1)$ et $\varepsilon_2 = (-1,1)$, et $f \in \mathcal{L}(E)$ telle que

$$f(\varepsilon_1) = (2,2) \qquad \text{et} \qquad f(\varepsilon_2) = (-3,3)$$

Alors la matrice de f dans la base $(\varepsilon_1, \varepsilon_2)$ au départ et à l'arrivée est :

a. $A = \begin{pmatrix} 2 & -3 \\ 2 & 3 \end{pmatrix}$

b. $A = \begin{pmatrix} 2 & 2 \\ -3 & 3 \end{pmatrix}$

c. $A = \begin{pmatrix} 2 & 0 \\ 0 & 3 \end{pmatrix}$

d. Aucun des autres choix

Question 19

Soit une matrice $A \in \mathcal{M}_3(\mathbb{R})$ admettant le polynôme caractéristique $P_A(X) = (1-X)^2(2-X)$.

On note E_1 et E_2 les sous-espaces propres de $\mathbb{R}^3$ associés aux valeurs propres 1 et 2. Alors :

a. $\dim(E_2) = 1$

b. $\dim(E_1) = 2$

c. $\dim(E_1)$ peut valoir 1

d. $\dim(E_1)$ peut valoir 0

e. Aucun des autres choix

Question 20

Soit $f : \begin{cases} \mathbb{R}_2[X] & \longrightarrow & \mathbb{R}_2[X] \\ P & \longmapsto & (X+1)P' \end{cases}$.

Alors le polynôme $P = (X+1)^2$ est un vecteur propre de f.

a. Vrai

b. Faux

QCM 8 Azar Chap20 (wish ex 45,48WBprac ex 21pg212) fall 23

Choose the one correct answer. The situations could require past, present, or future forms of WISH.

21. Lionel knows he should stop smoking, but he wishes his mother _____ telling him about it.
a. would stop
b. was going to stop
c. stopped
d. will stop

22. Jerome and Chafia are watching a movie with their children.
Chafia: What's the matter? Don't you like the movie?
Jerome: I am really bored! I wish it ___ , but we'll have to stay because the kids are enjoying it so much.
a. had ended
b. has ended
c. would end
d. would have ended

23. I'm taking my driving test tomorrow but I'm not ready. I wish I _____ take the test tomorrow.
a. am not going to
b. won't
c. weren't going to
d. None of the above.

Numbers 24 and 25 are part of the same conversation.

24. Bill: I wish you_____! We're going to be late if you don't!
a. walk faster
b. would walk faster
c. will walk faster
d. walked faster

25. Angelina: I wish you ___. The meetings never start on time anyway.
a. will relax
b. would relax
c. were relaxing
d. relax

26. Anne: Did you see the email from the bank? We are overdrawn.
Karim: Yes, and it's not the first time. We borrowed too much money for the new car. I wish we _____ such an expensive car on credit.

a. had not bought
b. didn't buy
c. would have bought
d. would not buy

27. Josh: Harold cannot make it to the board meeting this afternoon.
Claire: Really? That's too bad, but I wish you _____ sooner so that I could have invited someone else to go with me.

a. have told me
b. told me
c. had let me know
d. were letting me know

Choose the one correct auxiliary verb for these sentences.

28. Jill didn't attend that class but she wishes she ___ . The teacher covered all the material that will be on the test.

a. had
b. will
c. would
d. have

29. I work with a lot of partners, but I wish I _____ because I work better by myself.

a. don't
b. had not
c. did
d. didn't

30. Miranda isn't old enough to vote, but she wishes she _____ . She would love to cast a vote against that reality show host that dyes his hair and talks like a gangster.

a. were
b. is
c. would be
d. None of the above.

QCM 8 – OC S3 2023/24 (Week 4 Dec)

31. In his TedTalk, what does Gilmour state creates the feeling of culture shock?

a) Lack of preparation
b) Constantly staying in contact with home
c) Trying to recreate patterns of behaviour from home
d) Thinking too much about home

32. In his talk, which of the following according to Gilmour is a symptom of culture shock? *Choose all that apply*

a) Staying away from other people
b) Excessive alcohol consumption
c) Being frustrated at the differences
d) Fatigue

33. In his talk, according to Gilmour which of the following statements are true? *Choose all that apply*

a) Culture shock is not exclusive to a travel experience
b) Normalcy is not a static state of mind but can be changed
c) Culture shock should be welcomed
d) Challenging experiences are part of the process

34. In his talk, which of the following is **NOT** a piece of advice given by Gilmour for dealing with culture shock?

a) Go towards feelings of discomfort
b) Take time to observe your environment
c) Find a local boyfriend/girlfriend
d) Figure out how to achieve your goals but in the local way

35. In his talk, which of the following is **NOT** a practical suggestion Gilmour gives for avoiding culture shock?

a) Try to find the best coffee in town
b) Go and buy milk from the supermarket
c) Write down your experiences
d) Find the biggest bookshop

Questions 36 to 40 below are based on the following article

Why Experiencing Culture Shock is a Good Thing for Young Adults
by **DANIELLE DESIMONE** - *December 14, 2022* ***(Article has been edited)***

9 benefits of experiencing culture shock

Paragraph 1
In a culture other than their own, almost anything in your day-to-day life can be different: how often people watch television, what time people wake up in the morning, or how much food is served at each meal. Summer and travel abroad programs often arrange for student housing with a host family, which is an incredible opportunity for young students to see the everyday life in another country. Although details such as when grocery stores open what hand you should eat with may seem insignificant at first, experiencing diverse cultural norms can open perspectives to a whole new way of life.
High schoolers and college students will learn to adapt quickly to new situations and environments both abroad and when they return home because of how they've had to acclimate to the challenges of living abroad. This kind of easy adjustment will set them apart when approaching the world of college or even further into the future, in the work field, when success is dependent on a student or employee's ability to adapt to situations dictated by conventions or people different than what they are used to.

Paragraph 2
Travel in your early years encourages students to appreciate the value in different cultures. When faced with the opinions, beliefs, and lifestyles of another country, travelers will be forced to reevaluate their own social, economic, and cultural values. In doing so, they will be able to define what *they* personally believe in, as well as come to appreciate parts of both their home country *and* the country they are studying in.
Having a grounded sense of values and beliefs increases self-awareness, which ultimately helps in developing soft skills like conflict resolution and empathy.

Paragraph 3
Faced with an environment that is not their own while apart from family and friends, young adults and teens will be forced to overcome obstacles and problem-solve on their own. At an age where self-confidence is too often determined by peer-approval, this independently-developed autonomy gives teens a sense of confidence built by personal accomplishments.

Paragraph 4
When traveling to another country, you'll typically find that your native language is not the predominant language spoken in the country you are studying in. Travel abroad programs often focus on language immersion. This typically means that classes are taught in the language of the country that the teens are studying in; it also could involve homestay accommodations, with a local family, so that participants can practice their language skills outside of the classroom as well. Programs may also arrange for extracurricular activities with local students of the same age, so that young travelers and students can participate in sports teams or language buddy programs in order to practice the language with their peers. By fully immersing themselves in the country's native language, travelers not only learn a new language, but a new way of thinking and communicating. The effects of culture shock

when navigating language barriers teaches young people crucial lessons in communication and cultural sensitivity.

Paragraph 5

Only a very limited amount of young adult travelers and high school students travel or study abroad independently and by doing so, you are setting yourself apart from the rest of college and job applicants. Having traveled and experiencing another culture is the new de-facto desired skill set! The skills and global awareness teens will acquire while abroad will make them far more desirable for future university admissions and future employers. Students who go abroad are not afraid to challenge themselves, to take risks, or to navigate unfamiliar waters successfully, not to mention, they learn to work with people from diverse backgrounds, making them excellent team players and, thus, perfect candidates for undergraduate or graduate schools, as well as employers.

According to a study conducted by QS Global Employer Survey, approximately 60 percent of employers stated that value international experience in a candidate. Meanwhile, studies conducted by IES Abroad showed that 85 percent of study abroad alumni claimed that studying abroad had prepared them with skills necessary in the job market, while 90 percent of those who had studied abroad got into their first or second choice graduate school.

Paragraph 6

Going abroad is the perfect test run for high school students to experience life outside their often sheltered and comfortable bubble of home, so they can see what they want and what they are capable of when it is time to go to college. And for college students working closer to graduation, it can be a serious "reality pill" about the way the world works. By going so far from home, travelers experience much of the same disorienting loneliness and forced independence that freshman in college or new hires go through, but on a much larger scale, as the added cultural differences are even greater.

After going abroad as a young adult, travelers might find themselves compelled to explore the option of schools or jobs farther from home, out of state. Culture shock pushes everyone to their limits and teaches them what they're capable of handling and adapting to, making them far more ready for college or far flung employment in the future. Not to mention, going abroad makes for an incredible application essay or interview topic!

Paragraph 7

Disney jokes aside, going on a travel program for young adults gives students the invaluable realization of how much of a great, big world there is to explore out there. As this grand epiphany usually takes place when older, you could almost say that by going abroad as a young pup, you're getting a head start on a lifelong love and passion for travel and general curiosity about the world.

Paragraph 8

Learning abroad is entirely different from learning in a classroom at home, as students learn not only in class, but in their everyday interactions with the world around them. The beauty of studying abroad is that the subjects studied will be intrinsically linked to the world around the students, the city, the country, and the culture teens have adopted during their time abroad.

36. Which paragraph highlights dealing with Culture Shock as good preparation for adult life?

a) Paragraph 2
b) Paragraph 6
c) Paragraph 7
d) Paragraph 8

37. The term 'self-awareness' means _____.

a) trust in one's abilities, qualities, and judgement
b) conscious knowledge of one's own character and feelings
c) modest about or critical of oneself, especially humorously so
d) doing or tending to do exactly what one wants

38. Which paragraph infers that dealing with Culture Shock makes people more open minded? *Choose all that apply.*

a) Paragraph 2
b) Paragraph 3
c) Paragraph 5
d) Paragraph 8

39. Which of these headings best describe **Paragraph 7**?

a) Educational experiences
b) A whole new world
c) Life skills
d) College preparation

40. In the article which of these are mentioned as positive effects of culture shock? *Choose all that apply*

a) Confidence booster
b) A chance to start afresh
c) Good addition to a CV
d) Opportunity for personal reflection

QCM Physique – InfoS3 – 04.12

Pensez à bien lire les questions ET les réponses proposées (attention à la numérotation des réponses)

Q41. Le principe d'incertitude d'Heisenberg pour une particule de masse constante m, de vitesse v (donc de quantité de mouvement p = mv), repérée par sa position x, a pour expression ($\hbar$ désigne la constante de Planck réduite, et pour une grandeur a, Δa désigne son incertitude) :

a. $\Delta x \Delta v \geq \frac{\hbar}{2}$
b. $\Delta x \Delta p \geq \frac{\hbar}{2}$
c. $m.\Delta x \Delta p \geq \frac{\hbar}{2}$
d. $m.\Delta x \Delta v \geq \frac{\hbar}{2}$

Q42. Le principe d'incertitude d'Heisenberg signifie que, pour une particule de masse constante m :

a. Il est possible de connaître à la fois sa vitesse et sa position avec une précision aussi grande que l'on veut.
b. Il est impossible de connaître à la fois sa vitesse et sa position avec une précision aussi grande que l'on veut.
c. Pour une particule dont on sait précisément la vitesse, elle est susceptible de se trouver dans un périmètre restreint.
d. Pour une particule dont on sait précisément la vitesse, elle est susceptible de se trouver dans un périmètre étendu.

Q43. Pour un objet macroscopique le principe d'incertitude d'Heisenberg :

a. A des effets négligeables.
b. A des effets significatifs.
c. A des effets négligeables lorsque la vitesse est faible.
d. A des effets significatifs lorsque la vitesse est faible.

Q44. L'expression de l'équation de Schrödinger indépendante du temps, pour le cas 1D d'une particule de masse m sur l'axe (Ox), de fonction d'onde ψ et plongée dans un potentiel V=0 est :

a. $-\frac{\hbar^2}{2m}\frac{d^2\psi}{dx^2} = E\psi$
b. $-\frac{\hbar^2}{2m}\frac{d\psi}{dx} = E\psi$
c. $-\frac{\hbar^2}{2m}\frac{d^2\psi}{dx^2} = E$
d. $-\frac{\hbar^2}{2m}\frac{d^2\psi}{dx^2} = E$

Q45. Soit une particule de masse m, de fonction d'onde $\psi(x)$, définie sur $\mathbb{R}$. La densité de probabilité de présence de la particule est la fonction définie sur $\mathbb{R}$ qui s'obtient en calculant :

a. $\frac{d}{dx}|\psi(x)|$
b. $\frac{d^2}{dx^2}|\psi(x)|$
c. $|\psi(x)|$
d. $|\psi(x)|^2$

Q46. Soit une particule de masse m, de fonction d'onde $\psi(x)$, définie sur $\mathbb{R}$. Nommons f sa densité de probabilité de présence. On peut affirmer que :

a. $\int_0^{+\infty} f(x)dx = 0$
b. $\int_0^{+\infty} f(x)dx = 1$
c. $\int_{-\infty}^{+\infty} f(x)dx = 0$
d. $\int_{-\infty}^{+\infty} f(x)dx = 1$

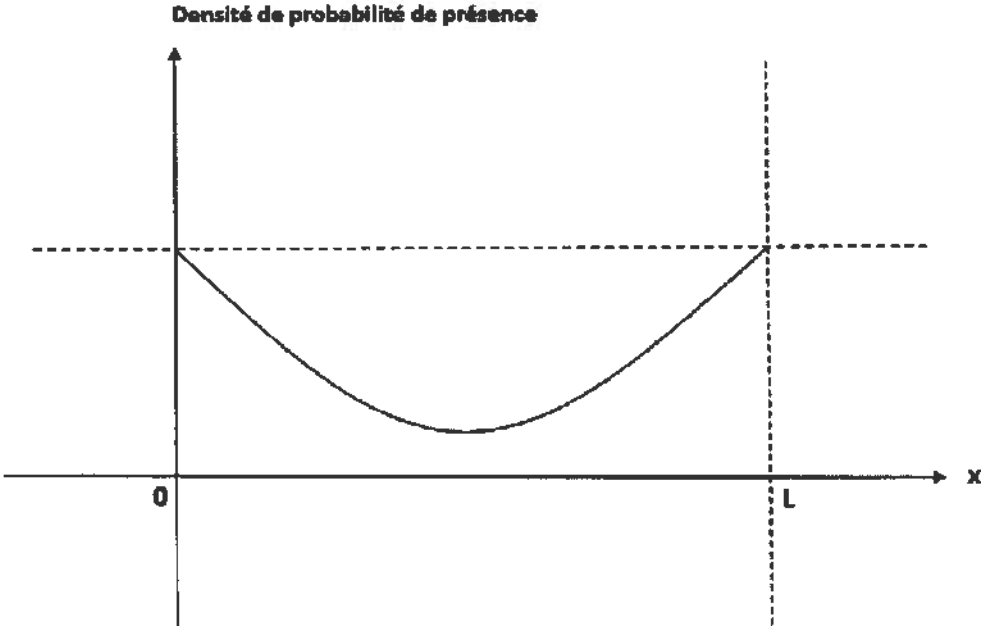
Q47. Soit une particule de masse m, de fonction d'onde définie sur $\mathbb{R}$ la fonction ayant pour expression $\psi(x) = Ke^{-(\frac{x}{x_0})^2}$. La densité de probabilité de présence de la particule, définie sur $\mathbb{R}$, a pour expression :

a. $f(x) = K^2 e^{-2(\frac{x}{x_0})^2}$
b. $f(x) = K^2 e^{-(\frac{2x}{x_0})^2}$
c. $f(x) = -\frac{2x}{x_0^2} K e^{-(\frac{2x}{x_0})^2}$
d. Aucune de ces réponses

Q48. On donne la fonction d'onde ψ associée à une particule, définie sur l'intervalle $[0 ; +\infty[$ telle que $\psi(x) = A.sin(kx)$, où A et k sont des constantes supposées connues. On a :

a. $\frac{d^2\psi(x)}{dx^2} = A.\sin(kx)$
b. $\frac{d^2\psi(x)}{dx^2} = -A.\sin(kx)$
c. $\frac{d^2\psi(x)}{dx^2} = Ak^2.\sin(kx)$
d. $\frac{d^2\psi(x)}{dx^2} = -Ak^2.\sin(kx)$

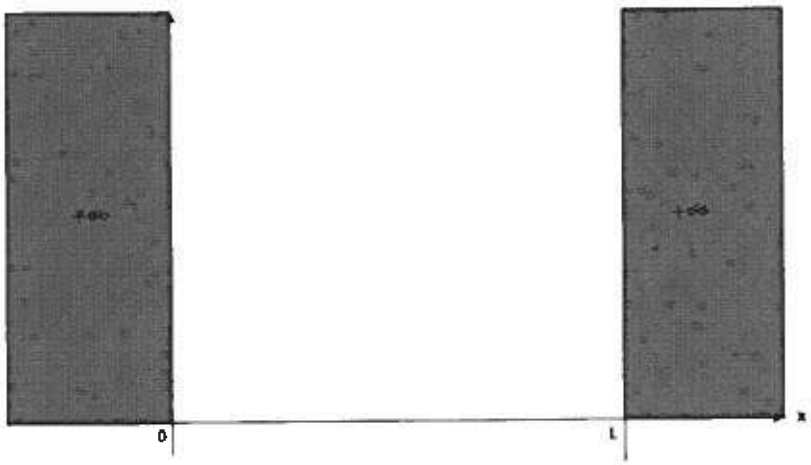
Q49. Soit une particule massique ayant pour densité de probabilité de présence la fonction ci-dessous. On peut dire que :



a. La particule a plus de chances d'être observée proche de l'origine.
b. La particule n'est jamais observée en $\frac{L}{2}$.
c. La particule est plus rarement observée en $\frac{L}{2}$.
d. La particule peut être observée en n'importe quel point entre 0 et L.

Q50. Soit une particule massique de fonction d'onde $\psi(x)$ soumise au potentiel V(x) suivant (voir schéma). On peut affirmer que :

$$V(x) = \begin{cases} 0 \; si \; x \in [0\,;\, L] \\ +\infty \; sinon \end{cases}$$



a. $\psi(0) = 0$
b. $\psi(L) = 0$
c. $\forall x \in [0\,;\, L], \psi(x) = 0$
d. $\forall x \in \mathbb{R}\backslash[0\,;\, L], \psi(x) = 0$

QCM 8
Architecture des ordinateurs

Lundi 4 décembre 2023

Pour toutes les questions, une ou plusieurs réponses sont possibles.

51. Quelle est la valeur de D1.L après l'exécution de l'instruction suivante ? `SUB.W D0,D1`
    Valeurs initiales : D0.L = $00000007, D1.L = $00000002
    A. $000000FB
    B. $0000FFF5
    C. $0000FFFB
    D. Aucune de ces réponses

52. Le registre PC
    A. Est le compteur programme.
    B. Contient l'état du microprocesseur.
    C. Contient l'adresse de la prochaine instruction à exécuter.
    D. Aucune de ces réponses.

53. Soit l'instruction suivante : `MOVE.L -1(A0),D0`
    A. A0 est décrémenté de 1.
    B. A0 est décrémenté de 2.
    C. A0 ne change pas.
    D. A0 est décrémenté de 4.

54. Quelle(s) instruction(s) n'est (ne sont) pas possible(s) ?
    A. SUBQ.L #3,D0
    B. SUBQ.L #8,A2
    C. SUBQ.L #42,D3
    D. SUBQ.B #2,(A2)

55. Soient les deux instructions suivantes :
```
CMP.L D0,D1
BHI   NEXT
```
    L'instruction `BHI` effectue le branchement si :
    A. D1.L < D0.L (comparaison non signée)
    B. D1.L > D0.L (comparaison signée)
    C. D1.L > D0.L (comparaison non signée)
    D. D1.L < D0.L (comparaison signée)

56. Soient les deux instructions suivantes :

```
CMP.L D0,D1
BLE   NEXT
```

L'instruction `BLE` effectue le branchement si :

A. D1.L >= D0.L (comparaison non signée)
B. D1.L <= D0.L (comparaison non signée)
C. D1.L <= D0.L (comparaison signée)
D. D1.L >= D0.L (comparaison signée)

57. Pour empiler une donnée :

A. On incrémente A7 d'abord.
B. On ne change pas A7.
C. On décrémente A7 d'abord.
D. Aucune de ces réponses.

58. Soit l'instruction suivante : `MOVEM.L D1-D3/A4/A5,-(A7)`
Quelle instruction est équivalente ?

A. `MOVEM.L D1/D3/A4-A5,-(A7)`
B. `MOVEM.L A4/A5/D1/D2/D3,-(A7)`
C. `MOVEM.L D1/D3/A4/A5,-(A7)`
D. Aucune de ces réponses.

59. Soient les deux instructions suivantes :

```
CMP.W D1,D2
BLE   NEXT
```

Branchement à `NEXT` si :

A. D1 = $92181892 et D2 = $92181892
B. D1 = $92181892 et D2 = $18929218
C. D1 = $18929218 et D2 = $92181892
D. D1 = $18929218 et D2 = $18929218

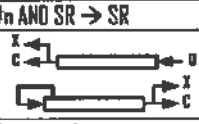
60. Soient les deux instructions suivantes :

```
CMP.B D1,D2
BLE   NEXT
```

Branchement à `NEXT` si :

A. D1 = $92181892 et D2 = $92181892
B. D1 = $18929218 et D2 = $92181892
C. D1 = $92181892 et D2 = $18929218
D. D1 = $18929218 et D2 = $18929218

EASy68K Quick Reference v1.8 http://www.wowgwep.com/EASy68K.htm

Opcode	Size	Operand	CCR	Effective Address: s=source, d=destination, e=either, i=displacement												Operation	Description
	BWL	s,d	XNZVC	Dn	An	(An)	(An)+	-(An)	(i,An)	(i,An,Rn)	abs.W	abs.L	(i,PC)	(i,PC,Rn)	#n		
ABCD	B	Dy,Dx	*U*U*	e	-	-	-	-	-	-	-	-	-	-	-	$Dy_{10} + Dx_{10} + X \rightarrow Dx_{10}$	Add BCD source and eXtend bit to
		-(Ay),-(Ax)		-	-	-	-	e	-	-	-	-	-	-	-	$-(Ay)_{10} + -(Ax)_{10} + X \rightarrow -(Ax)_{10}$	destination, BCD result
ADD[4]	BWL	s,Dn	*****	e	s	s	s	s	s	s	s	s	s	s	s[4]	s + Dn → Dn	Add binary (ADDI or ADDQ is used when
		Dn,d		e	d[4]	d	d	d	d	d	d	d	-	-	-	Dn + d → d	source is #n. Prevent ADDQ with #n.L)
ADDA[4]	WL	s,An	-----	s	e	s	s	s	s	s	s	s	s	s	s	s + An → An	Add address (.W sign-extended to .L)
ADDI[4]	BWL	#n,d	*****	d	-	d	d	d	d	d	d	d	-	-	s	#n + d → d	Add immediate to destination
ADDQ[4]	BWL	#n,d	*****	d	d	d	d	d	d	d	d	d	-	-	s	#n + d → d	Add quick immediate (#n range: 1 to 8)
ADDX	BWL	Dy,Dx	*****	e	-	-	-	-	-	-	-	-	-	-	-	Dy + Dx + X → Dx	Add source and eXtend bit to destination
		-(Ay),-(Ax)		-	-	-	-	e	-	-	-	-	-	-	-	-(Ay) + -(Ax) + X → -(Ax)	
AND[4]	BWL	s,Dn	-**00	e	-	s	s	s	s	s	s	s	s	s	s[4]	s AND Dn → Dn	Logical AND source to destination
		Dn,d		e	-	d	d	d	d	d	d	d	-	-	-	Dn AND d → d	(ANDI is used when source is #n)
ANDI[4]	BWL	#n,d	-**00	d	-	d	d	d	d	d	d	d	-	-	s	#n AND d → d	Logical AND immediate to destination
ANDI[4]	B	#n,CCR	=====	-	-	-	-	-	-	-	-	-	-	-	s	#n AND CCR → CCR	Logical AND immediate to CCR
ANDI[4]	W	#n,SR	=====	-	-	-	-	-	-	-	-	-	-	-	s	#n AND SR → SR	Logical AND immediate to SR (Privileged)
ASL	BWL	Dx,Dy	*****	e	-	-	-	-	-	-	-	-	-	-	-		Arithmetic shift Dy by Dx bits left/right
ASR		#n,Dy		d	-	-	-	-	-	-	-	-	-	-	s		Arithmetic shift Dy #n bits L/R (#n: 1 to 8)
	W	d		-	-	d	d	d	d	d	d	d	-	-	-		Arithmetic shift ds 1 bit left/right (.W only)
Bcc	BW[3]	address[2]	-----	-	-	-	-	-	-	-	-	-	-	-	-	if cc true then	Branch conditionally (cc table on back)
																address → PC	(8 or 16-bit ± offset to address)
BCHG	B L	Dn,d	--*--	e[1]	-	d	d	d	d	d	d	d	-	-	-	NOT(bit number of d) → Z	Set Z with state of specified bit in d then
		#n,d		d[1]	-	d	d	d	d	d	d	d	-	-	s	NOT(bit n of d) → bit n of d	invert the bit in d
BCLR	B L	Dn,d	--*--	e[1]	-	d	d	d	d	d	d	d	-	-	-	NOT(bit number of d) → Z	Set Z with state of specified bit in d then
		#n,d		d[1]	-	d	d	d	d	d	d	d	-	-	s	0 → bit number of d	clear the bit in d
BRA	BW[3]	address[2]	-----	-	-	-	-	-	-	-	-	-	-	-	-	address → PC	Branch always (8 or 16-bit ± offset to addr)
BSET	B L	Dn,d	--*--	e[1]	-	d	d	d	d	d	d	d	-	-	-	NOT(bit n of d) → Z	Set Z with state of specified bit in d then
		#n,d		d[1]	-	d	d	d	d	d	d	d	-	-	s	1 → bit n of d	set the bit in d
BSR	BW[3]	address[2]	-----	-	-	-	-	-	-	-	-	-	-	-	-	PC → -(SP); address → PC	Branch to subroutine (8 or 16-bit ± offset)
BTST	B L	Dn,d	--*--	e[1]	-	d	d	d	d	d	d	d	d	d	-	NOT(bit Dn of d) → Z	Set Z with state of specified bit in d
		#n,d		d[1]	-	d	d	d	d	d	d	d	d	d	s	NOT(bit #n of d) → Z	Leave the bit in d unchanged
CHK	W	s,Dn	-*UUU	e	-	s	s	s	s	s	s	s	s	s	s	if Dn<0 or Dn>s then TRAP	Compare Dn with 0 and upper bound [s]
CLR	BWL	d	-0100	d	-	d	d	d	d	d	d	d	-	-	-	0 → d	Clear destination to zero
CMP[4]	BWL	s,Dn	-****	e	s[4]	s	s	s	s	s	s	s	s	s	s[4]	set CCR with Dn – s	Compare Dn to source
CMPA[4]	WL	s,An	-****	s	e	s	s	s	s	s	s	s	s	s	s	set CCR with An – s	Compare An to source
CMPI[4]	BWL	#n,d	-****	d	-	d	d	d	d	d	d	d	-	-	s	set CCR with d - #n	Compare destination to #n
CMPM[4]	BWL	(Ay)+,(Ax)+	-****	-	-	-	e	-	-	-	-	-	-	-	-	set CCR with (Ax) - (Ay)	Compare (Ax) to (Ay); Increment Ax and Ay
DBcc	W	Dn,address[2]	-----	•	-	-	-	-	-	-	-	-	-	-	-	if cc false then { Dn-1 → Dn	Test condition, decrement and branch
																if Dn <> -1 then addr →PC }	(16-bit ± offset to address)
DIVS	W	s,Dn	-***0	e	-	s	s	s	s	s	s	s	s	s	s	±32bit Dn / ±16bit s → ±Dn	Dn= [16-bit remainder, 16-bit quotient]
DIVU	W	s,Dn	-***0	e	-	s	s	s	s	s	s	s	s	s	s	32bit Dn / 16bit s → Dn	Dn= [16-bit remainder, 16-bit quotient]
EOR[4]	BWL	Dn,d	-**00	e	-	d	d	d	d	d	d	d	-	-	s[4]	Dn XOR d → d	Logical exclusive OR Dn to destination
EORI[4]	BWL	#n,d	-**00	d	-	d	d	d	d	d	d	d	-	-	s	#n XOR d → d	Logical exclusive OR #n to destination
EORI[4]	B	#n,CCR	=====	•	•	-	-	-	-	-	-	-	-	-	s	#n XOR CCR → CCR	Logical exclusive OR #n to CCR
EORI[4]	W	#n,SR	=====	-	-	-	-	-	-	-	-	-	-	-	s	#n XOR SR → SR	Logical exclusive OR #n to SR (Privileged)
EXG	L	Rx,Ry	-----	e	e	-	-	-	-	-	-	-	-	-	-	register ←→ register	Exchange registers (32-bit only)
EXT	WL	Dn	-**00	d	-	-	-	-	-	-	-	-	-	-	-	Dn.B → Dn.W | Dn.W → Dn.L	Sign extend (change .B to .W or .W to .L)
ILLEGAL			-----	-	-	-	-	-	-	-	-	-	-	-	-	PC→-(SSP); SR→-(SSP)	Generate Illegal Instruction exception
JMP		d	-----	-	-	d	-	-	d	d	d	d	d	d	-	↑d → PC	Jump to effective address of destination
JSR		d	-----	-	-	d	-	-	d	d	d	d	d	d	-	PC → -(SP); ↑d → PC	push PC, jump to subroutine at address d
LEA	L	s,An	-----	-	e	s	-	-	s	s	s	s	s	s	-	↑s → An	Load effective address of s to An
LINK		An,#n	-----	-	-	-	-	-	-	-	-	-	-	-	-	An → -(SP); SP → An;	Create local workspace on stack
																SP + #n → SP	(negative n to allocate space)
LSL	BWL	Dx,Dy	***0*	e	-	-	-	-	-	-	-	-	-	-	-		Logical shift Dy, Dx bits left/right
LSR		#n,Dy		d	-	-	-	-	-	-	-	-	-	-	s		Logical shift Dy, #n bits L/R (#n: 1 to 8)
	W	d		-	-	d	d	d	d	d	d	d	-	-	-		Logical shift d 1 bit left/right (.W only)
MOVE[4]	BWL	s,d	-**00	e	s[4]	e	e	e	e	e	e	e	s	s	s[4]	s → d	Move data from source to destination
MOVE	W	s,CCR	=====	s	-	s	s	s	s	s	s	s	s	s	s	s → CCR	Move source to Condition Code Register
MOVE	W	s,SR	=====	s	-	s	s	s	s	s	s	s	s	s	s	s → SR	Move source to Status Register (Privileged)
MOVE	W	SR,d	-----	d	-	d	d	d	d	d	d	d	-	-	-	SR → d	Move Status Register to destination
MOVE	L	USP,An	-----	-	d	-	-	-	-	-	-	-	-	-	-	USP → An	Move User Stack Pointer to An (Privileged)
		An,USP		-	s	-	-	-	-	-	-	-	-	-	-	An → USP	Move An to User Stack Pointer (Privileged)
	BWL	s,d	XNZVC	Dn	An	(An)	(An)+	-(An)	(i,An)	(i,An,Rn)	abs.W	abs.L	(i,PC)	(i,PC,Rn)	#n		

Opcode	Size	Operand	CCR	Effective Address s=source, d=destination, e=either, i=displacement												Operation	Description
	BWL	s,d	XNZVC	Dn	An	(An)	(An)+	-(An)	(i,An)	(i,An,Rn)	abs.W	abs.L	(i,PC)	(i,PC,Rn)	#n		
MOVEA[4]	WL	s,An	-----	s	e	s	s	s	s	s	s	s	s	s	s	s → An	Move source to An (MOVE s,An use MOVEA)
MOVEM[4]	WL	Rn-Rn,d	-----	-	-	d	-	d	d	d	d	d	-	-	-	Registers → d	Move specified registers to/from memory
		s,Rn-Rn		-	-	s	s	-	s	s	s	s	s	s	-	s → Registers	(.W source is sign-extended to .L for Rn)
MOVEP	WL	Dn,(i,An)	-----	s	-	-	-	-	d	-	-	-	-	-	-	Dn → (i,An)...(i+2,An)...(i+4,A.	Move Dn to/from alternate memory bytes
		(i,An),Dn		d	-	-	-	-	s	-	-	-	-	-	-	(i,An) → Dn...(i+2,An)...(i+4,A.	(Access only even or odd addresses)
MOVEQ[4]	L	#n,Dn	-**00	d	-	-	-	-	-	-	-	-	-	-	s	#n → Dn	Move sign extended 8-bit #n to Dn
MULS	W	s,Dn	-**00	e	-	s	s	s	s	s	s	s	s	s	s	±16bit s * ±16bit Dn → ±Dn	Multiply signed 16-bit: result: signed 32-bit
MULU	W	s,Dn	-**00	e	-	s	s	s	s	s	s	s	s	s	s	16bit s * 16bit Dn → Dn	Multiply unsig'd 16-bit: result: unsig'd 32-bit
NBCD	B	d	*U*U*	d	-	d	d	d	d	d	d	d	-	-	-	0 - d_{10} - X → d	Negate BCD with eXtend, BCD result
NEG	BWL	d	*****	d	-	d	d	d	d	d	d	d	-	-	-	0 - d → d	Negate destination (2's complement)
NEGX	BWL	d	*****	d	-	d	d	d	d	d	d	d	-	-	-	0 - d - X → d	Negate destination with eXtend
NOP			-----	-	-	-	-	-	-	-	-	-	-	-	-	None	No operation occurs
NOT	BWL	d	-**00	d	-	d	d	d	d	d	d	d	-	-	-	NOT(d) → d	Logical NOT destination (1's complement)
OR[4]	BWL	s,Dn	-**00	e	-	s	s	s	s	s	s	s	s	s	s[4]	s OR Dn → Dn	Logical OR
		Dn,d		e	-	d	d	d	d	d	d	d	-	-	-	Dn OR d → d	(ORI is used when source is #n)
ORI[4]	BWL	#n,d	-**00	d	-	d	d	d	d	d	d	d	-	-	s	#n OR d → d	Logical OR #n to destination
ORI[4]	B	#n,CCR	=====	-	-	-	-	-	-	-	-	-	-	-	s	#n OR CCR → CCR	Logical OR #n to CCR
ORI[4]	W	#n,SR	=====	-	-	-	-	-	-	-	-	-	-	-	s	#n OR SR → SR	Logical OR #n to SR (Privileged)
PEA	L	s	-----	-	-	s	-	-	s	s	s	s	s	s	-	↑s → -(SP)	Push effective address of s onto stack
RESET			-----	-	-	-	-	-	-	-	-	-	-	-	-	Assert RESET Line	Issue a hardware RESET (Privileged)
ROL	BWL	Dx,Dy	-**0*	e	-	-	-	-	-	-	-	-	-	-	-		Rotate Dy, Dx bits left/right (without X)
ROR		#n,Dy		d	-	-	-	-	-	-	-	-	-	-	s		Rotate Dy, #n bits left/right (#n: 1 to 8)
	W	d		-	-	d	d	d	d	d	d	d	-	-	-		Rotate d 1-bit left/right (.W only)
ROXL	BWL	Dx,Dy	***0*	e	-	-	-	-	-	-	-	-	-	-	-		Rotate Dy, Dx bits L/R, X used then updated
ROXR		#n,Dy		d	-	-	-	-	-	-	-	-	-	-	s		Rotate Dy, #n bits left/right (#n: 1 to 8)
	W	d		-	-	d	d	d	d	d	d	d	-	-	-		Rotate destination 1-bit left/right (.W only)
RTE			=====	-	-	-	-	-	-	-	-	-	-	-	-	(SP)+ → SR; (SP)+ → PC	Return from exception (Privileged)
RTR			=====	-	-	-	-	-	-	-	-	-	-	-	-	(SP)+ → CCR, (SP)+ → PC	Return from subroutine and restore CCR
RTS			-----	-	-	-	-	-	-	-	-	-	-	-	-	(SP)+ → PC	Return from subroutine
SBCD	B	Dy,Dx	*U*U*	e	-	-	-	-	-	-	-	-	-	-	-	Dx_{10} - Dy_{10} - X → Dx_{10}	Subtract BCD source and eXtend bit from
		-(Ay),-(Ax)		-	-	-	-	e	-	-	-	-	-	-	-	$-(Ax)_{10}$ - $-(Ay)_{10}$ - X → $-(Ax)_{10}$	destination, BCD result
Scc	B	d	-----	d	-	d	d	d	d	d	d	d	-	-	-	If cc is true then 1's → d	If cc true then d.B = 11111111
																else 0's → d	else d.B = 00000000
STOP		#n	=====	-	-	-	-	-	-	-	-	-	-	-	s	#n → SR; STOP	Move #n to SR, stop processor (Privileged)
SUB[4]	BWL	s,Dn	*****	e	s	s	s	s	s	s	s	s	s	s	s[4]	Dn - s → Dn	Subtract binary (SUBI or SUBQ used when
		Dn,d		e	d[4]	d	d	d	d	d	d	d	-	-	-	d - Dn → d	source is #n. Prevent SUBQ with #n.L)
SUBA[4]	WL	s,An	-----	s	e	s	s	s	s	s	s	s	s	s	s	An - s → An	Subtract address (.W sign-extended to .L)
SUBI[4]	BWL	#n,d	*****	d	-	d	d	d	d	d	d	d	-	-	s	d - #n → d	Subtract immediate from destination
SUBQ[4]	BWL	#n,d	*****	d	d	d	d	d	d	d	d	d	-	-	s	d - #n → d	Subtract quick immediate (#n range: 1 to 8)
SUBX	BWL	Dy,Dx	*****	e	-	-	-	-	-	-	-	-	-	-	-	Dx - Dy - X → Dx	Subtract source and eXtend bit from
		-(Ay),-(Ax)		-	-	-	-	e	-	-	-	-	-	-	-	-(Ax) - -(Ay) - X → -(Ax)	destination
SWAP	W	Dn	-**00	d	-	-	-	-	-	-	-	-	-	-	-	bits[31:16]←→bits[15:0]	Exchange the 16-bit halves of Dn
TAS	B	d	-**00	d	-	d	d	d	d	d	d	d	-	-	-	test d→CCR; 1→bit7 of d	N and Z set to reflect d, bit7 of d set to 1
TRAP		#n	-----	-	-	-	-	-	-	-	-	-	-	-	s	PC→-(SSP);SR→-(SSP);	Push PC and SR, PC set by vector table #n
																(vector table entry) → PC	(#n range: 0 to 15)
TRAPV			-----	-	-	-	-	-	-	-	-	-	-	-	-	If V then TRAP #7	If overflow, execute an Overflow TRAP
TST	BWL	d	-**00	d	-	d	d	d	d	d	d	d	-	-	-	test d → CCR	N and Z set to reflect destination
UNLK		An	-----	-	d	-	-	-	-	-	-	-	-	-	-	An → SP; (SP)+ → An	Remove local workspace from stack
	BWL	s,d	XNZVC	Dn	An	(An)	(An)+	-(An)	(i,An)	(i,An,Rn)	abs.W	abs.L	(i,PC)	(i,PC,Rn)	#n		

Condition Tests (+ OR, ! NOT, ⊕ XOR; * Unsigned, * Alternate cc)					
cc	Condition	Test	cc	Condition	Test
T	true	1	VC	overflow clear	!V
F	false	0	VS	overflow set	V
HI*	higher than	!(C + Z)	PL	plus	!N
LS*	lower or same	C + Z	MI	minus	N
HS*, CC*	higher or same	!C	GE	greater or equal	!(N ⊕ V)
LO*, CS*	lower than	C	LT	less than	(N ⊕ V)
NE	not equal	!Z	GT	greater than	!((N ⊕ V) + Z)
EQ	equal	Z	LE	less or equal	(N ⊕ V) + Z

An Address register (16/32-bit, n=0-7)
Dn Data register (8/16/32-bit, n=0-7)
Rn any data or address register
s Source, d Destination
e Either source or destination
#n Immediate data, i Displacement
BCD Binary Coded Decimal
↑ Effective address
1 Long only; all others are byte only
2 Assembler calculates offset
3 Branch sizes: .S or .S -128 to +127 bytes, .W or .L -32768 to +32767 bytes
4 Assembler automatically uses A, I, Q or M form if possible. Use #n.L to prevent Quick optimization

SSP Supervisor Stack Pointer (32-bit)
USP User Stack Pointer (32-bit)
SP Active Stack Pointer (same as A7)
PC Program Counter (24-bit)

SR Status Register (16-bit)
CCR Condition Code Register (lower 8-bits of SR)
N negative, Z zero, V overflow, C carry, X extend
* set according to operation's result, = set directly
- not affected, 0 cleared, 1 set, U undefined

Revised by Peter Csaszar, Lawrence Tech University – 2004-2006

NTS-Sociologie et Robotique
QCM

1. **Au commencement les robots étaient ?**
   (a) Réels
   (b) Fictionnels
   (c) Mythologiques
   (d) Religieux

2. **Depuis les années 50, quelles grandes familles de robots ont fait leur apparition ?**
   (a) Les robots Ménagers et industriels
   (b) Les robots mécaniques et intelligents
   (c) Les robots fonctionnels et disfonctionnels
   (d) Les robots compagnons et de manipulation

3. **Les 4 capacités reconnues pour un robot sont ?**
   (a) Polyvalence, intelligence, rapidité, créativité
   (b) Polyvalence, interaction, autonomie, apprentissage
   (c) Polyvalence, interaction, autonomie, créativité
   (d) Innovation, intelligence, rapidité, créativité

4. **Ce qui distingue sociologiquement un robot d'un humain c'est ?**
   (a) Qu'il n'a pas d'identité
   (b) Qu'il n'a pas d'identité pour soi
   (c) Qu'il n'a pas d'identité pour autrui
   (d) Qu'il n'a pas de carte d'identité

5. **Quel sociologue Français a théorisé la sociologie de l'innovation ?**
   (a) Norbert Alter
   (b) Norbert Elias
   (c) Isaac Asimov
   (d) Grichka Bogdanoff

6. **Le passage entre invention et innovation ?**
   (a) C'est la même chose
   (b) C'est quand une invention est rachetée par une entreprise
   (c) C'est le passage d'une idée à son usage par un grand nombre
   (d) C'est quand une invention se déploie d'un pays à un autre

7. **Les deux grands types de processus d'innovation sont ?**
   (a) Le processus créateur et l'invention dogmatique
   (b) Le dessin technique et la fabrication
   (c) L'imagination et le développement
   (d) Le processus créateur et la création destructrice

8. **La tyrannie de la commodité ?**
   (a) C'est quand on ne supporte plus les tâches difficiles
   (b) C'est ne plus supporter les ordres
   (c) C'est quand on cherche à éliminer tout ce qui est pénible dans nos vies
   (d) C'est quand on pense que ce qui se faisait avant n'a plus lieu d'être

9. **Quel risque y a-t-il à créer des robots ?**
   (a) Cela détruit des emplois
   (b) Il n'y a pas de risques car les innovations sont faites pour améliorer notre quotidien
   (c) C'est mauvais pour l'écologie
   (d) Il y a peu de risques si l'on pense aux risques en amont et si on écoute les usagers

10. **La responsabilité éthique dans l'innovation en robotique appartient ?**
    (a) Aux chercheurs et aux ingénieurs
    (b) La responsabilité est partagée et doit être évolutive
    (c) Aux entreprises qui financent la création de robots
    (d) Aux personnes qui achètent les robots