16

ALGO
QCM

1. **L'implémentation d'une file sous la forme d'un tableau n'est pas possible ?**
   - (a) faux
   - (b) vrai

2. **Que représentent x, opération1 et opération2 dans l'axiome suivant (dans lequel e est un Elément) ?**
   `est-vide (x) = faux => opération1(opération2 (x,e)) = opération2(opération1 (x),e)`
   - (a) x est une File, opération1 = enfiler, opération2 = défiler
   - (b) x est une Pile, opération1 = dépiler, opération2 = empiler
   - (c) x est une File, opération1 = défiler, opération2 = enfiler
   - (d) x est une Pile, opération1 = ajouter, opération2 = empiler

3. **Une pile est une structure intrinsèquement ?**
   - (a) Récursive
   - (b) Itérative
   - (c) Répétitive
   - (d) Alternative

4. **L'implémentation d'une file sous la forme d'une liste chaînée, n'est pas possible ?**
   - (a) faux
   - (b) vrai

5. **Une file est une structure ?**
   - (a) LIFO
   - (b) PIPO
   - (c) FIFO
   - (d) FIPO

6. **La construction d'une liste itérative est basée sur ?**
   - (a) L'ajout d'un élément à la première place d'une liste
   - (b) La récupération du reste de la liste
   - (c) L'insertion d'un élément à la $K^{ième}$ place
   - (d) L'ajout d'un élément en tête de liste

7. **L'implémentation d'une file sous la forme d'un tableau d'éléments, est dite ?**
   - (a) statique
   - (b) chaînée
   - (c) contiguë
   - (d) dynamique

8. **Que représentent opération1 et opération2 dans l'axiome suivant (dans lequel e est un élément et x une pile) ?**
   `opération1(opération2 (e,x)) = e`
   (a) opération1 = sommet, opération2 = dépiler
   (b) opération1 = dépiler, opération2 = sommet
   (c) opération1 = sommet, opération2 = empiler
   (d) opération1 = dépiler, opération2 = empiler

9. **Une pile est une structure ?**
   (a) LIFO
   (b) PIPO
   (c) FIFO
   (d) FIPO

10. **Que représentent x, opération1 et opération2 dans l'axiome suivant (dans lequel e est un Elément) ?**
    `est-vide (x) = vrai => opération1(opération2 (x,e)) = x`
    (a) x est une File, opération1 = enfiler, opération2 = défiler
    (b) x est une Pile, opération1 = dépiler, opération2 = empiler
    (c) x est une File, opération1 = défiler, opération2 = enfiler
    (d) x est une Pile, opération1 = ajouter, opération2 = empiler

QCM 11

lundi 28 novembre 2022

Question 11

Soit (u_n) une suite telle que pour tout $n \in \mathbb{N}$, $u_n > 2$. On a

a. Si (u_n) est croissante alors (u_n) converge.

b. Si (u_n) est décroissante alors (u_n) converge.

c. Si (u_n) converge alors (u_n) est majorée.

d. Si (u_n) est majorée alors (u_n) converge.

e. Aucune des autres réponses

Question 12

Soit (u_n) une suite. Cochez la(les) bonne(s) réponse(s)

a. Si (u_n) converge alors (u_n) est bornée.

b. Si (u_n) diverge alors (u_n) n'est pas bornée.

c. Si (u_n) est bornée alors (u_n) converge.

d. Si (u_n) n'est pas bornée alors (u_n) diverge.

e. Aucune des autres réponses

Question 13

Soit (u_n) telle que pour tout $n \in \mathbb{N}$, $u_n \leq \dfrac{1}{n+1}$. On a

a. (u_n) converge vers 0.

b. Si (u_n) est croissante alors (u_n) converge

c. (u_n) diverge

d. Aucune des autres réponses

2

Question 14

On considère deux suites adjacentes (u_n) et (v_n). On a

a. Pour tout $n \in \mathbb{N}$, $u_{n+1} - u_n$ et $v_{n+1} - v_n$ sont de signes opposés.

b. Pour tout $n \in \mathbb{N}$, $u_{n+1} - u_n$ et $v_{n+1} - v_n$ sont de même signe.

c. $\lim\limits_{n \to +\infty} u_n - v_n = 0$

d. $\lim\limits_{n \to +\infty} u_n = \lim\limits_{n \to +\infty} v_n$

e. Aucune des autres réponses

Question 15

Soient (u_n) et (v_n) telles que pour tout $n \in \mathbb{N}$, $u_n \leq v_n$. On a

a. Si (v_n) tend vers $+\infty$ alors (u_n) aussi

b. Si (u_n) tend vers $+\infty$ alors (v_n) aussi

c. Si (u_n) converge et est positive alors (v_n) converge.

d. Si (v_n) converge et est positive alors (u_n) converge.

e. Aucune des autres réponses

Question 16

Considérons la suite (u_n) définie pour tout $n \in \mathbb{N}$ par $u_n = \dfrac{n-1}{2n+3}$. On a

a. $u_{2n} = \dfrac{2n-1}{4n+3}$

b. $u_{2n} = \dfrac{2n-1}{2n+3}$

c. $u_{2n+1} = \dfrac{2n}{4n+3}$

d. $u_{2n+1} = \dfrac{2n}{4n+5}$

e. Aucune des autres réponses

Question 17

Soit (u_n) une suite. On a

a. Si (u_n) converge vers un réel ℓ alors toute suite extraite de (u_n) converge vers ℓ.

b. Si (u_n) diverge alors toute suite extraite de (u_n) diverge.

c. Si une suite extraite de (u_n) converge vers un réel ℓ alors (u_n) converge vers ℓ.

d. Si une suite extraite de (u_n) diverge alors (u_n) diverge.

e. Aucune des autres réponses

3/4

Question 18

Soit la suite (u_n) définie pour tout entier $n > 1$ par $u_n = \dfrac{1}{n-1}$. On a :

a. (u_n) est bornée

b. (u_n) diverge.

c. (u_n) converge.

d. Aucune des autres réponses

Question 19

On considère la suite (q^n) avec $q \in \mathbb{R}$. On a

a. Pour $q = \dfrac{3}{4}$, $q^n \xrightarrow[n\to+\infty]{} 0$

b. Pour $q = 3$, $q^n \xrightarrow[n\to+\infty]{} +\infty$

c. Pour $q = -\dfrac{3}{4}$, $q^n \xrightarrow[n\to+\infty]{} 0$

d. Pour $q = -3$, $q^n \xrightarrow[n\to+\infty]{} -\infty$

e. Aucune des autres réponses

Question 20

Cochez la(les) suite(s) convergentes(s)

a. (u_n) telle que $\lim\limits_{n\to+\infty} u_n = 2$

b. (u_n) telle que $\lim\limits_{n\to+\infty} u_n = -\infty$

c. (u_n) telle que (u_n) n' a pas de limite.

d. (u_n) telle que $\forall n \in \mathbb{N}$, $0 \leq u_n \leq \dfrac{1}{n+1}$.

e. Aucune des autres réponses

CIE MCQ6

28/11/2022

Grammar

21) Mr and Mrs Davies _____ dinner last night at 9 o'clock.

a) Was having
b) Were having
c) Are having
d) Were been having

22) Which is the only correct combination to complete this sentence?

The radio _____ when a friend _____ me, so I _____ the call.

a) Were playing / called / missed
b) Played / was calling / was missing
c) Was playing / calls / missed
d) Was playing / called / missed

23) When he was younger, he _____ to watch cartoons.

a) Was loving
b) Loves
c) Loved
d) Had been loving

24) People _____ far too much too much time on their phones in the last decade.

a) Are spending
b) Was spent
c) Were spending
d) Was spending

25) What is wrong with this sentence?

She was rebooting her laptop while she dropped her coffee on it.

a) "Rebooting" must be "reboots"
b) "Dropped" must be "was dropping"
c) "while" must be "when"
d) "rebooting" must be "rebooted"

Emails

26) Which of the following sentences is the most appropriate one for imposing deadlines?

A) Monday is the last date.
B) Remember: the deadline is Monday.
C) Once again, the deadline is Monday.
D) We cannot accept the report any later than Monday.

27) Which of the following is the most appropriate to talk about attachments in an email?

A) I have attached a document.
B) There is a document attached.
C) Please find the document attached.
D) Don't forget to read the attached document.

For questions 28-30, choose the most appropriate words in the blanks:

28) Any feedback you can give me on this would be gratefully _____.

A) appreciated
B) pleased
C) taken
D) remembered

29. I'll _____ to you by Tuesday with our final decision.

A) talk back
B) writing back
C) be letting
D) get back

30. Once again, please accept our _____ for any inconvenience this may have caused.

A) condolences
B) apologies
C) regrets
D) best wishes

A deepening digital divide requires us all to challenge Big Tech

The writer is a technology pioneer, philanthropist, and founding funder of the Oxford Internet Institute

1. Twenty-one years ago, the Financial Time reported the opening of the Oxford Internet Institute (OII), a department established to research the opportunities and challenges presented by the then-burgeoning internet. A companion article on the same page delved into one of the most pressing questions of the time: how to "bridge the digital divide" and ensure access for everyone to the wealth of information and resources available online.

2. A generation later, the issues are equally pressing and immeasurably more complex. In 2001 there were 500mn global internet users; in 2021 there were five billion. Digital technology is now inextricably a part of everything we do, from politics and financial systems to our work, social lives and (increasingly since the pandemic) education. And much of our information about the world comes via the internet.

3. There is still a "digital divide" — though how we define it has changed. Unfortunately, many remain excluded from full participation in the digital world by age, poverty or lack of education. But the more worrying divide today is between the corporate and institutional "haves" who dictate the terms of the online experience, with their extraordinary power and influence, and the "have-nots" — everyday internet users, navigating a digital realm in which it can be hard to know who and what to trust.

4. Our reliance on digital technology has placed us in the hands of powerful tech innovators and the giant companies they spawned. They are commercially driven, with deep pockets and immense technical knowhow. They have the power to influence our daily lives in ways few understand, and they often remain largely unchallenged as a result.

5. Two recent events have highlighted the need for transparent analysis and independent study: the Covid pandemic and the war in Ukraine, in both of which misinformation has played a significant role. Misinformation affected our perception of Covid-19's origins, stifled government responses (especially in the early days), and politicised public safety measures, including stay-at-home mandates, mask-wearing, and vaccinations.

6. The war, like many conflicts before it, has been fought through propaganda as much as on the battlefield. But with digital technology, the source of propaganda is more easily obscured while the information itself is much more easily spreadable. And advances in tech have enabled the creation of superficially impressive "deep fake" content — such as the video in which Ukrainian president Volodymyr Zelenskyy's head was superimposed on someone else's body and made to appear as if instructing Ukrainian soldiers to surrender.

7. The internet is protean, its impacts are manifold and its influence profound. If we are to somehow define and agree global rules for our engagement with it — a regime of information governance to which all players can sign up — it can only happen on the basis of detailed, critical study.

8. But who can we trust to guide us through the minefield?

9. Traditional news organizations are struggling to compete with well-funded special interest groups that spin up websites and hire influencers to promote their agenda on social media. A generation ago, many in the media had the resources to vet fact from fiction effectively as part of their mission of delivering accurate news. Now, most are focused on survival.

10. Probably not technology companies either. Twitter, Meta and their competitors are commercially driven: they want eyeballs on their websites, and ads to support their business models. They are product builders and content providers. They didn't sign up to be arbiters of truth.

11. And probably not policymakers. Most politicians are simply overwhelmed by the nuance and complexity of technology in the information age and lack the time and the skills to make sense of it.

12. That leaves academia and institutions such as the OII to fulfil the role of an impartial voice in the conversation.

13. Today, as information consumers, we all have to grapple with fake news, false influence and the question of where to find the truth. It is a daily challenge to filter out, as best we can, all the online noise and the information we don't find credible, and to seek out trusted sources. For all the information at our fingertips, we are still struggling to understand and manage the impact of digital technology on society.

31) Which statement is NOT correct about the title of this article?
- a) Everyone should take responsibility in tackling this problem
- b) The digital gap is required to be challenged by Big Tech
- c) Big Tech is to be challenged by us all
- d) The digital divide is more profound than before

32) What is true about paragraph 1?
- a) In 2002 the OII hosted an event to promote the use of the internet
- b) 21 years ago, the internet was not yet experiencing a great divide
- c) It is only a generation later that we are seeing problems in the digital divide
- d) The reason for the foundation of the OII was to investigate possible problems and advantages of the internet

33) It should be understood in paragraph 1 that...
- a) The amount of internet users has increased by a factor 100
- b) The problems that were predicted in 2002 were overexaggerated
- c) Not only are the challenges still very pressing, they are also more complicated
- d) Digital technology has only become a bigger part of our lives because of the pandemic

34) Which statement about the difference between the "haves" and "have-nots" is correct according to paragraph 3?
- a) The have-nots are all old, poor and uneducated
- b) The author worries mainly about the difference of interest between the providers and consumers of internet information
- c) The "haves" rely on people to stay uneducated to keep their power
- d) The corporate and institutional "haves" should spend more of their wealth on closing the digital divide

35) In paragraph 4, which word is closest in meaning to <u>spawned</u>?
- a) Restarted
- b) Gave birth to
- c) Reappeared
- d) Cooperated with

36) In paragraph 4 the term "with deep pockets" is used. What does it mean?
- a) With massive wealth
- b) Powerful
- c) Influential
- d) Without responsibility

37) Why does the author mention the Covid crisis and Ukraine war in paragraph 5?
- a) Because both cases are good examples of mismanagement
- b) Because misinformation can stifle government responses
- c) Because both cases featured prominently in the news
- d) Because both cases could have benefitted from more factual reporting

38) In paragraph 9, what does the author state about the traditional news organizations?
- a) They don't have the resources anymore to fact-check all incoming information
- b) They should not use influencers anymore
- c) To survive, they need a different approach
- d) They do not do their job as well as well-funded special interest groups on social media.

39) What does the phrase "They didn't sign up to be arbiters of truth" in paragraph 10 mean?
- a) Technology companies are only interested in profit
- b) Twitter, Meta and their competitors do not care about the truth, only money
- c) These companies want to focus on product building and content providing
- d) They never agreed to take responsibility for fact checking all their output

40) Which phrase gives the best summary of paragraph 13?
- a) Since nobody else is able or willing to fulfil the role of an impartial voice in the conversation, it is up to the academia to do this.
- b) Despite the wealth of information at our fingertips, it remains paradoxically difficult to find the truth.
- c) Fake news and false influence will not remain a challenge for the information consumer.
- d) Understanding and managing the impact of digital technology is the task of the OII.

QCM Physique/Electronique – InfoS1

Pensez à bien lire les questions ET les réponses proposées

Pour les questions suivantes, une ou plusieurs bonnes réponses sont possibles.

Un mouvement a pour équations horaires $\begin{cases} x(t) = 3.\cos(2t) \\ y(t) = 3.\sin(2t) \end{cases}$ dans les unités du système international. (Q41&42)

Q41. On peut identifier :

a. $R = 3\,m$ b. $R = 9\,m$ c. $R = \sqrt{3}\,m$ d. $R = 6\,m$

Q42. On peut identifier :

a. $\omega = 2\,rad.s^{-1}$ b. $\omega = 2t\,rad.s^{-1}$ c. $\theta = 2t\,rad$ d. $\theta = 2\,rad$

Q43. Un mouvement elliptique a pour équation de trajectoire $\frac{x^2}{2} + \frac{y^2}{3} = 1$. Les paramètres de l'ellipse (demi-petit axe et demi-grand axe) ont pour valeur :

a. $a = 2$ et $b = 3$

b. $a = 4$ et $b = 9$

c. $a = \sqrt{2}$ et $b = \sqrt{3}$

d. $a = \frac{1}{2}$ et $b = \frac{1}{3}$

Un mouvement a pour équations horaires $\begin{cases} x(t) = 2.\cos(2t) \\ y(t) = 3.\sin(2t) \end{cases}$ dans les unités du système international. (Q44&45)

Q44. Le vecteur vitesse a pour norme :

a. $\|\overrightarrow{v(t)}\| = \sqrt{4 + 5.cos^2(2t)}$

b. $\|\overrightarrow{v(t)}\| = 2\sqrt{4 + 5.cos^2(2t)}$

c. $\|\overrightarrow{v(t)}\| = 2\sqrt{4 + 5.sin^2(2t)}$

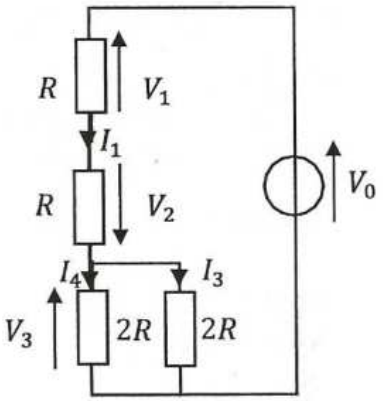
d. $\|\overrightarrow{v(t)}\| = \sqrt{4 + 5.sin^2(2t)}$

Q45. Les vecteurs vitesse et accélération sont dans ce cas particulier orthogonaux.

a. VRAI

b. FAUX

Soit le circuit ci-contre (Q46&47) :



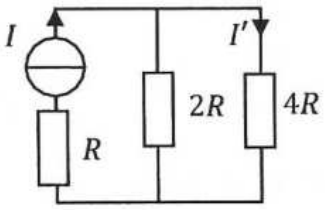
Q46. La tension V_2 est :

a. De même signe que I_1
b. De signe opposé à I_1
c. De même signe que V_0
d. Nulle

Q47. Le courant I_1 est égal à :

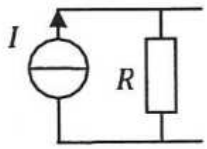
a. $-\frac{V_0}{3R}$
b. $\frac{V_2}{R}$
c. $I_3 - \frac{V_3}{2R}$
d. $\frac{V_0}{3R}$

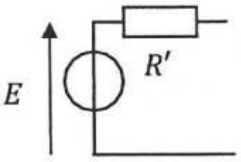
Q48. Soit le circuit ci-contre. Quelle est l'expression de l'intensité I' ?



a- $I' = \frac{2}{7} \cdot I$
b- $I' = \frac{1}{3} \cdot I$
c- $I' = \frac{4}{7} \cdot I$
d- $I' = \frac{2}{3} \cdot I$

On considère les 2 circuits suivants (Q49&50)





Ces 2 circuits sont équivalents si et seulement si :

Q49. $E =$

a- I
b- $R.I$
c- $\frac{R}{R+R'}.I$
d- Aucune de ces réponses

Q50. $R' =$

a- R
b- $\frac{R.R'}{R+R'}$
c- $\frac{R}{R+R'}$
d- Aucune de ces réponses

QCM 5
Architecture des ordinateurs

Lundi 28 novembre 2022

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

51. 10101100011000111_{0_2} =
   - A. 530616_8
   - B. $2B18E_{16}$
   - C. Aucune de ces réponses.
   - D. $AC638_{16}$

52. Quel est le complément à 2 du mot sur 8 bits suivant : 36_{16}
   - A. CA_{16}
   - B. $C9_{16}$
   - C. CB_{16}
   - D. Aucune de ces réponses

53. Combien d'entiers signés peut-on coder sur n bits ?
   - A. $2^n - 1$
   - B. 2^n
   - C. Aucune de ces réponses.
   - D. 2^{n-1}

54. Soit l'addition sur 8 bits signés suivante : 250 + 4
    Le résultat sur 8 bits signés est :
   - A. Cette addition n'est pas possible.
   - B. –2
   - C. 0
   - D. 254

55. Codez le nombre –255 sur 10 bits signés :
   - A. 1111111111_2
   - B. 1011111111_2
   - C. Impossible
   - D. 1100000001_2

12

56. $\overline{A} + A =$
    A. 0
    B. A
    C. 1
    D. $\overline{A}$

57. $A \oplus B =$
    A. $\overline{A}.B + A.\overline{B}$
    B. $\overline{A}.\overline{B} + A.B$
    C. $\overline{A} \oplus \overline{B}$
    D. $\overline{A} \oplus B$

58. $A + A.B =$
    A. 0
    B. A
    C. 1
    D. B

59. $A + \overline{A}.B =$
    A. A
    B. B
    C. $\overline{A}.B$
    D. $A + B$

60. $\overline{A.B} =$
    A. $\overline{A}.\overline{B}$
    B. $A + B$
    C. $\overline{A + B}$
    D. $\overline{A} + \overline{B}$

13