

O = correct answer

**ALGO  
MCQ**

1. A secondary collision is a collision ?

$h(x) \neq h(y)$ ,  $x \neq y$

- (a) with a coincidence of hash values between an x and a y, with x equal to y
- (b) without a coincidence of hash values between an x and a y, with x equal to y
- (c) without a coincidence of hash values between an x and a y, with x different from y
- (d) with a coincidence of hash values between an x and a y, with x different from y

2. The probe sequence function is used in the case of ?

- (a) Open addressing
- (b) Linear probing
- (c) hashing with separate chaining
- (d) coalesced hashing

3. Which hashing methods are not indirect methods to resolve primary collisions ?

- (a) Linear probing
- (b) double hashing
- (c) coalesced hashing
- (d) hashing with separate chaining

4. Which searching methods can use a static implementation ?

- ? (a) sequential
- ? (b) binary search
- (c) BST
- ? (d) hashing

5. In the worst case, for the hashing methods, the search complexity order is ?

- (a) constant
- (b) logarithmic
- (c) linear
- (d) quadratic
- (e) exponential

6. In the worst case, for the BST, the search complexity order is ?

- (a) constant
- (b) logarithmic
- (c) linear
- (d) quadratic
- (e) exponential

7. In the worst case, for the AVL, the search complexity order is ?

- (a) constant
- (b) logarithmic
- (c) linear
- (d) quadratic
- (e) exponential

8. What searching method is totally unsuited to the search by interval ?

- (a) sequential
- (b) binary search
- (c) BST
- (d) Balanced search trees
- (e) hashing

9. Which hashing methods are indirect methods to resolve primary collisions ?

- (a) Linear probing
- (b) Double hashing
- (c) coalesced hashing
- (d) hashing with separate chaining

10. Which hashing method generates secondary collisions?

- (a) Linear probing
- (b) Double hashing
- (c) coalesced hashing
- (d) hashing with separate chaining



## MCQ N°3

Monday, 14 October 2019

### 1 Question 11

Let  $X$  be a random variable taking its values in  $\{0, \dots, n\}$ . Then its generating function is, for any  $t \in \mathbb{R}$  :

a.  $G_X(t) = E(t^X)$

b.  $G_X(t) = \sum_{k=0}^n P(X = k)$

c.  $G_X(t) = E(X^t)$

d.  $G_X(t) = \sum_{k=0}^n t^k P(X = k)$

e. none of the above

### 2 Question 12

Let  $X$  be a random variable taking its values in  $\{0, \dots, n\}$ . Then

a.  $E(X) = G_X(1)$

b.  $G_X(1) = 1$

c.  $E(X) = G'_X(1)$

d.  $E(X) = G''_X(1)$

e. none of the above

### 3 Question 13

Let  $X$  and  $Y$  be two integer-valued random variables. Assume that they are finite and independent. Then

a.  $G_{XY} = G_X \times G_Y$

$P(X=0)=0.5$

$P(Y=0)=0.5$

b.  $G_{XY} = G_X + G_Y$

$P(X=1)=0.5$

$P(Y=1)=0.5$

c.  $G_{X+Y} = G_X \times G_Y$

$0.5+0.5=1$

d.  $G_{X+Y} = G_X + G_Y$

$P(X+Y=0)$

e. none of the above

## Question 14

Let  $X$  be an integer-valued random variable whose generating function is  $G_X(t) = a(2t + 1)^2$ . Then

- a.  $a = \frac{1}{9}$
- b.  $a = \frac{1}{3}$
- c.  $a = 1$
- d. we cannot deduce the value of  $a$  from these data
- e. none of the above

$$G_X(t) = a(4t^2 + 4t + 1)$$

$$G_X(1) = a\frac{4}{3} + a\frac{4}{3} + a = 1$$

$$b \text{ or } G_X(1) = 1$$

## Question 15

Let  $X$  be a random variable taking its values in  $\{1, 3, 5\}$ , such that  $P(X = 1) = \frac{1}{2}$  and  $P(X = 3) = P(X = 5) = \frac{1}{4}$ .

Then its generating function is, for any  $t \in \mathbb{R}$  :  $G_X(t) = \frac{t}{2} + \frac{t^3}{4} + \frac{t^5}{4}$ .

- a. true
- b. false

## Question 16

Let  $(u_n)$  be a positive numerical sequence such that  $nu_n \xrightarrow[n \rightarrow +\infty]{} 0$ . Then

- a.  $\sum u_n$  converges
- b.  $\sum u_n$  diverges
- c. we cannot say anything about the nature of  $\sum u_n$

## Question 17

- a.  $\sum \frac{(-1)^n}{n}$  converges absolutely

- b.  $\sum \frac{(-1)^n}{n}$  converges

- c.  $\sum \frac{(-1)^n}{n^2}$  converges absolutely

- d.  $\sum \frac{(-1)^n}{n^2}$  converges

- e. none of the above

## Question 18

Let  $(u_n)$  be a strictly positive numerical sequence such that  $\frac{u_{n+1}}{u_n} \xrightarrow[n \rightarrow +\infty]{} \frac{1}{4}$ . Then

- a.  $\sum u_n$  converges
- b.  $\sum u_n$  diverges
- c. we cannot say anything about the nature of  $\sum u_n$

## +2 Question 19

When  $x$  tends to 0, one has

- a.  $\frac{1}{1+x} = 1 + x + x^2 + x^3 + o(x^3)$
- b.  $\frac{1}{1+x} = 1 - x + x^2 - x^3 + o(x^3)$
- ✗ c.  $\frac{1}{1-x} = 1 + x + x^2 + x^3 + o(x^3)$
- d.  $\frac{1}{1-x} = 1 - x + x^2 - x^3 + o(x^3)$
- e. none of the above

$$(1+x)^{-1} = 1 - x + \frac{x^2}{2} - \frac{x^3}{3} + \dots$$

## +2 Question 20

When  $x$  tends to 0, one has

- a.  $\cos(x) = 1 - \frac{x^2}{2} + \frac{x^4}{4} + o(x^4)$
- b.  $\cos(x) = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} + o(x^4)$
- c.  $\cos(x) = x - \frac{x^3}{3} + \frac{x^5}{5} + o(x^5)$
- d.  $\cos(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} + o(x^5)$
- e. none of the above

$$\cos(0) \approx 1$$

# Anglo

QCM 3 Error Recognition 1 Find the underlined error in each sentence.

21. Many Democrats are arguing harsh that the House is wasting an opportunity to open an impeachment inquiry against President Trump.
- a. arguing  
→ b. harsh  
c. wasting  
d. against
22. There were actually two impeachment resolutions before the committee's investigation that ultimately led to the President Nixon's resignation.
- a. were  
b. actually  
c. that  
? → d. the
23. If Drinan's resolution has come up for a vote at the time he filed it, it would have been overwhelmingly defeated—by something like 400 to 20.
- a. has  
b. come  
c. filed  
d. overwhelmingly
24. Instead of another airport, Peru should develop sustainable tourism practices and invest into infrastructure to make these areas more accessible.
- a. should  
b. develop  
→ c. into  
d. to make
25. On the one hand, would America be better off if this president had a stable team of skilled lieutenants who shared his vision and were dedicated to enacting it, from building a wall to pretend Russia isn't trying to subvert American democracy?
- a. off  
b. dedicated  
c. to  
→ d. pretend
26. As key advisers leave [their posts], they are being replaced with "acting" chiefs, temporary leaders who do not require confirmation by the Senate, together with the inconvenience of public hearings to establish whether they're qualified for their jobs.
- a. chiefs  
b. require  
c. together with  
→ d. weather      whether
27. Americans are lucky that, even in a time when the leadership at the top is wrongheaded or clownish or simply absent, hundreds of thousands of their fellow citizens remain committed to protecting them from foreign adversaries or rising waters or taint food, to watching over their airways and highways and savings accounts and to delivering their mail.
- a. committed  
b. to  
c. rising

→ d. taint

28. In fact, what is found in a landscape where data detached from any context abounds is the fracturing of the word into ever proliferating pieces of discourse, all existing side by side, indifferently approved, and without any way of distinguishing among them, of telling which of them are true or at least have a claim to be true and which are made up out of whole cloth.

? a. abounds

b. them

c. made up

? d. whole wool?

29. If we perfect that [communication] infrastructure by devise a language of data algorithms and instantaneous electronic interaction that bypasses intervening and distorting institutions like the state, then communication would be perfect and undistorted, and society would be set on the right path without any further political efforts required.

? a. devise

b. bypasses

c. the

d. further

30. While this new surfeit of options has been a boon to people trying to get around town, it has also helped lay wastes to the livelihoods of taxi drivers and turn New York's already busy streets into glorified parking lots—and leaders like Mayor Bill de Blasio and Gov. Andrew Cuomo, Albany and the City Council have yet to come up with an effective strategy to deal with these problems.

? a. lay

? b. wastes

c. yet

d. come up with

# Esport is a viable career path in South Korea and beyond

Simona Potter - February 18, 2019



South Korea wins a game against the United States in Overwatch

Today, esports are more about organized structures than the grassroots movement that has propelled competitive gaming to the status of prominence it enjoys today. From the NBA 2K to League of Legends, to Overwatch, esports athletes are paid professionals.

Esports are run as franchise leagues and well-developed competitive formats, with salaried professionals participating each season. South Korea's industry is one of the sweetest for professional gaming.

The 2019 Overwatch World Cup, being one of the major celebrations of LAN gaming culture and its competitive community, which pits teams from around the world against each other at events like BlizzCon, and which defines the competitive format of the future.

Not all games though are successful at moving into the esports competitions arena. The competition to break into the highest level of esports is tough, as there's money at stake and unless you are the best player in a certain game, there's not much use in a top organization investing millions to build a winning team.

Despite the drawbacks of participating in a highly-competitive environment that is both physically and mentally testing, there have been significant changes in the way organizations have started to treat athletes.

Starting with salaries, the livelihoods of professional video gamers are far less precarious these days, also with contracts getting re-signed from one season to the next, plus housing and

other expenses are all taken care of. In a word, athletes are enjoying quite a few comforts.

Understandably, the grassroots members and aspiring professionals are having a more difficult time at it, but that is the nature of the competition as seen in South Korea.

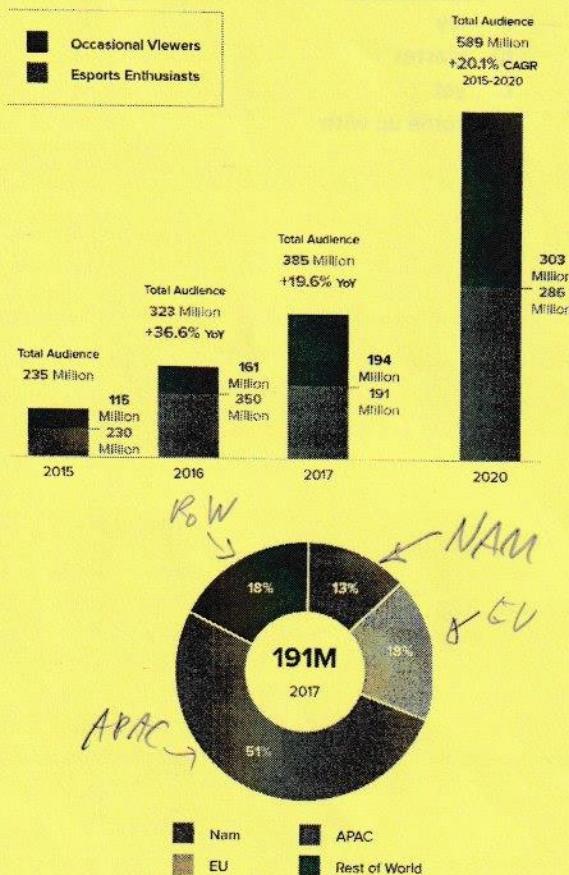
## South Korea and the booming Esport industry

South Korea remains one of the best developed esport ecosystems. At the start the country was running competitive video gaming at a time when the West looked down on the activities as the preserve of basement-dwelling riff-raff, or as it being silly.

The landscape has changed drastically though, with esports competitors in the limelight and fans attending huge, sold-out stadiums to cheer for their heroes. League of Legends and Overwatch having dominated esports in South Korea driving the industry.

Chart 4: Esports Audience Growth

Global | For 2015, 2016, 2017, 2020 | Q1 2017



NewZoo 2017 Report

Also based on a study conducted by InvenGlobal, some other interesting metrics surfaced:

- The annual salary of athletes averages \$155,000
- Estimated 40% of all players earn between \$18,000 and \$44,000
- Another 25.6% are making \$44,000 – \$89,000 every year

These sums exclude additional income generated through *prize money, streaming opportunities* and *additional participation* as part of partnerships.

One untapped market is brand partnerships between individual players and mainstream companies, with the non-endemic companies still focusing exclusively on signing up organizations as opposed to teams.



Overwatch South Korea at Blizzcon 2018

### You Pretty Young Thing – LCK Players Are Young

InvenGlobal established another interesting metric that shows that LCK players are overwhelmingly young with the *medium age* at 20.8, and that Esports athletes in general don't have very long careers, with the majority retiring by the time their peers in certain countries around the world have to go to college.

### THE AVERAGE AGE OF ESPORTS ATHLETES IN SOUTH KOREA IS 20.8

In South Korea, only 3.9% of all players had been active around 5 years, with all the rest being new faces. A statistic which can be explained by the fact that League of Legends and most importantly Overwatch have only now been gaining significant traction in the country, so the arrival of fresh players is not surprising.

### The Overwatch Effect reverberates

Overwatch is a fantasy first-person shooter (FPS) inspired by the most unexpected game, Valve Corporation's Team Fortress 2. Nevertheless,

Overwatch is now one of the driving forces in today's changing esports landscape.

The game has managed to completely change how we think about competitive video gaming, borrowing the franchise model from the NBA and NFL and distilling it into esports.

The fanfare and momentum built around esports franchises such as the Overwatch League (OWL)'s New York Excelsior and the inaugural squad of Toronto Defiant has been awe-inspiring, Overwatch managing to localize esports and develop region-based competitions and communities, which has given the segment a more mainstream look.

Following in the footsteps of Overwatch, League of Legends also developed franchised entities across various regions, rebranding the European and North American competitions. But while esports structures and leagues have been reassuring, there are at least two bad examples of esports ambitions gone very wrong.

For example, the H1Z1 League ending up collapsing amid reports of pending payments to teams and players. Then the Heroes of the Storm Global Championship (HGC) was also cancelled abruptly and without much in the way of warning, sending many teams and players to despair. Causing one of the most respected esports communities Team Liquid to issued a heart-felt letter bidding goodbye to their time as esports athletes.

### Building a stable esport format

With esports careers burning out fast, it's worth considering, even in passing, that certain games can make it as a true esports while others struggle; but in both cases all development must be natural and not forced.

Many publishers and developers have been committed to the idea such as what Ubisoft has done with its significant efforts to bring Rainbow 6 up to speed.

Meanwhile, PUBG Corp. has released a massive esports plan but which is yet to gain popularity with viewers.

In light of all of this, it's worth noting that esport has changed. To draw the line and say whether it's "all for the best" or mistakenly believe in something inherently "wrong" with the current model means to go to an extreme.

Instead, we have to keep reminding ourselves that esports regional-level tournaments, are a massive undertaking, and have to be treated carefully by publishers, shareholders, policymakers and the community itself to avoid the format collapsing on its own weight as certain formats have so far.

- 31) Esports is seen as a viable career option \_\_\_\_\_.
- a) only in S. Korea
  - b) in other countries apart from S. Korea
  - c) not only in S. Korea
  - d) in S. Korea and China
- 32) The Esports format is now considered to be \_\_\_\_\_ arena event.
- a) a local
  - b) a regional
  - c) a national
  - d) an international
- 33) Once having achieved 'athlete' level a professional video gamer's lifestyle \_\_\_\_\_.
- a) still remains unstable
  - b) will always remain unstable
  - c) becomes more stable
  - d) is guaranteed
- 34) Which of the following two video games are featured in S. Korea's biggest events? \_\_\_\_\_.
- a) Rainbow 6 and Team Fortress 2
  - b) Rainbow 6 and League of Legends
  - c) League of Legends and Overwatch
  - d) Overwatch and Rainbow 6
- 35) According to the chart the majority of growth has been seen in the \_\_\_\_\_ region.
- a) Europe, Middle East & Africa
  - b) Asia Pacific
  - c) Americas
  - d) None of these
- 36) If a player wins a tournament a player's salary \_\_\_\_\_.
- a) has to be paid back
  - b) must be donated to an internet addiction charity
  - c) is additional to the winning prize money
  - d) has to be invested in developing new gaming talent
- 37) \_\_\_\_\_ S. Korean players have career spans of 5 years.
- a) A majority of
  - b) A minority of
  - c) On average
  - d) No information is given
- 38) H1Z1 League and HGC \_\_\_\_\_ Overwatch.
- a) have been as successful as
  - b) have not been as successful as
  - c) have been developing at the same level as
  - d) have exceeded the successes of
- 39) PUBG Corps \_\_\_\_\_ audiences.
- a) needs to prove itself with
  - b) is guaranteed to win over
  - c) has lost favor with audiences
  - d) will never win over its

40) Organisers of the regional-level tournament format \_\_\_\_\_.

- a) have proven the concept works
- b) must still remain vigilant
- c) have no need to worry
- d) can rest assured

## M.C.Q test n°3 Physics

Notes: the values q and Q are considered positive.

- +2 41 - The electrostatic field  $\vec{E}(M)$  is linked to the electrostatic potential  $V(M)$  by the expression:

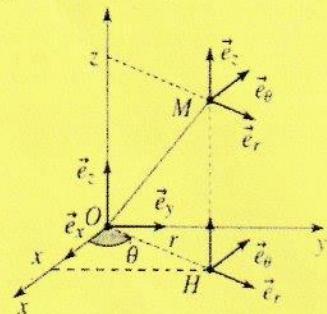
$\Rightarrow$  a)  $\vec{E}(M) = -\overrightarrow{\text{grad}}(V)$  b)  $\vec{E}(M) = \overrightarrow{\text{grad}}(V)$  c)  $V(M) = \overrightarrow{\text{grad}}(\vec{E})$

- +2 42 - Consider a charge  $q$  at point O and a charge  $Q$  at point M. How can the electric potential energy  $E_{pe}(M)$  on the point M be written ?

- a)  $E_{pe}(M) = k \cdot \frac{q}{OM^2}$   
 b)  $E_{pe}(M) = k \cdot \frac{q \cdot Q}{OM^2} \vec{u}_r$ , where  $\vec{u}_r$  is the unit vector oriented from O to M.  
 $\Rightarrow$  c)  $E_{pe}(M) = k \cdot \frac{q \cdot Q}{OM}$

- +2 43 - Considering the following cylindrical coordinate system  $(\vec{e}_r, \vec{e}_\theta, \vec{e}_z)$ , how to express the projection of the vector  $\vec{OH}$  on the Ox axis as function of r and  $\theta$  ?

- $\Rightarrow$  a)  $x = r \cos(\theta)$   
 b)  $x = -r \sin(\theta)$   
 c)  $x = r d\theta$



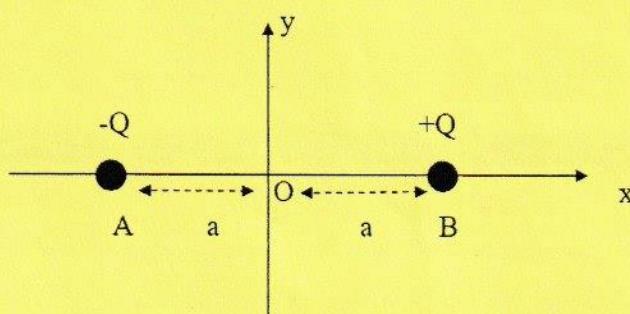
- +2 44 - The opposite of the electric potential gradient at a point M is :

- $\Rightarrow$  b) A vector  
 c) An absolute value  
 d)

- 45- In polar coordinates  $(r, \theta)$ , which infinitesimal element  $d\vec{l}$  does not exist?

- a)  $d\vec{l} = rd\theta \cdot \vec{u}_\theta$  b)  $d\vec{l} = dr \cdot \vec{u}_r$  c)  $d\vec{l} = d\theta \cdot \vec{u}_\theta$

- +1 46 - The following dipole is considered, the point O being located at the middle of AB:



The electric potential at the point A is:

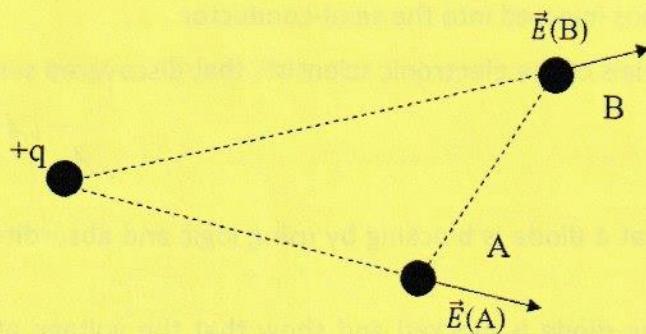
$$\rightarrow \text{a) } V(A) = k \frac{Q}{a} \quad \text{b) } V(A) = k \frac{Q}{2a} \quad \times \text{c) } V(A) = -k \frac{Q}{2a}$$

**47** – The situation in question 46 is considered. The electric field created by B on A is :

- a) collinear to (AB), with orientation from A to B
- b) collinear to (AB), with orientation from B to A
- c) orthogonal to (AB), pointing towards  $y > 0$
- d) orthogonal to (AB), pointing towards  $y < 0$

$E(A)$

**48** – Two distant points A and B are subject to the electric field  $\vec{E}$  created by a positive charge  $q$  as sketched below.



The difference of electric potential between A and B  $V_B - V_A$  is equal to:

- a)  $- \int_A^B \vec{E} \cdot d\vec{l}$
- b)  $\int_A^B \vec{E} \cdot d\vec{l}$
- c) Neither of both suggestions

**49** – The distribution of question 48 is still considered. As sketched the distance between the point B and the charge  $+q$  is longer than the distance between the point A and the charge  $+q$ . Which electric potential is higher:  $V(A)$  at the point A or  $V(B)$  at the point B?

- a)  $V(B)$
- b)  $V(A)$
- c) It depends on the signs of the charges at the points A and B

**50** – The gradient of the function  $f(x, y, z) = x^2 - z \cdot \ln(y)$  is :

- a)  $\overrightarrow{\text{grad}}(f) = 2x - \frac{z}{y} - \ln(y)$
- b)  $\overrightarrow{\text{grad}}(f) = 2x \cdot \vec{u}_x - \ln(y) \cdot \vec{u}_y + \frac{z}{y} \cdot \vec{u}_z$
- c)  $\overrightarrow{\text{grad}}(f) = 2x \cdot \vec{u}_x - \frac{z}{y} \cdot \vec{u}_y - \ln(y) \cdot \vec{u}_z$

$$\frac{\partial f}{\partial x} = 2x$$

$$\frac{\partial f}{\partial y} = \frac{z}{y}$$

## MCQ test n°3 Electronics – InfoS3 ENG

Mind to well read the questions AND the answers suggested (be carreful about the answers numbering).

f1

- Q1. The doping allows the semi-conductor resistivity decrease

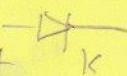
a- TRUE

b- FALSE

f2

- Q2. Two types of doping are qualified by letters P and N. What does the letters correspond to ?

- a- To the charges of the charge carrier in excess  
 b- To the type of ions injected into the semi-conductor  
 c- They are the initials of the electronic scientists that discovered semi-conductors  
 d- To nothing

A  K

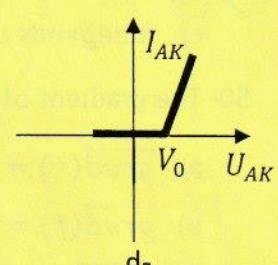
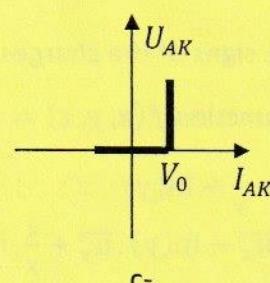
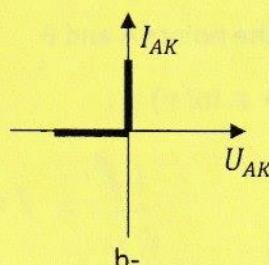
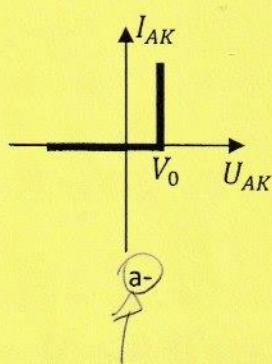
f3

- Q3. In order to show that a diode is blocking by using logic and absurdity, it is necessary to :

- a- Suppose that the diode is blocked and show that the voltage at its terminals is superior to its threshold voltage.  
 b- Suppose that the diode is conducting and show that the voltage at its terminals is superior to its threshold voltage.  
 c- Suppose that the diode is conducting and show that the current passing through it from the anode to the cathode is positive.  
 → d- Suppose that the diode is conducting and show that the current passing through it from the anode to the cathode is negative.

f4

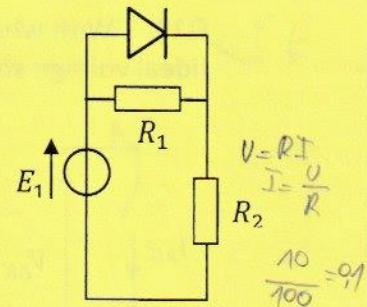
- Q4. Which one of these characteristics corresponds to the current/ voltage characteristic of the diode threshold model :



The following circuit is considered (Q 5 & 6) :

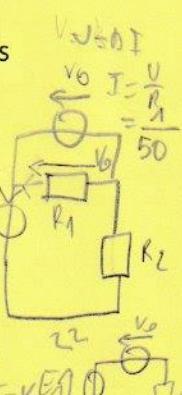
+2 Q5. Choose the correct affirmation if  $E_1 = 10V$ ,  $R_1 = 100\Omega$ ,  $R_2 = 100\Omega$  and if the diode is considered as ideal :

- a- The diode is blocking and the voltage at its terminals is equal to 5V.
- b- The diode is conducting and the current passing through it is equal to 100mA.
- c- The diode is conducting and the current passing through it is equal to 50mA.
- d- The diode is conducting and the current passing through it is equal to 5A.



Q6. Choose the correct affirmation if  $E_1 = 1V$ ,  $R_1 = 50\Omega$ ,  $R_2 = 100\Omega$  and if the diode is modelised by its threshold model (ideal voltage source) with  $V_0 = 0,6V$  :

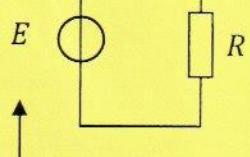
- a- The diode is conducting and the current passing through it is equal to 100mA.
- b- The diode is conducting and the current passing through it is equal to 5A.
- c- The diode is conducting and the current passing through it is equal to 200mA.
- d- The diode is blocking and the voltage at its terminals is equal to  $\frac{1}{3}V$ .



The following circuit in which the diode is assumed ideal (switch) is considered (Q 7 & 8) :

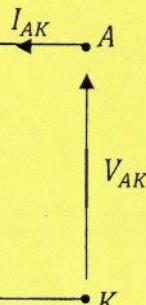
-2 Q7. What is the voltage at the terminals of R if  $E = 10V$ ,  $R = 100\Omega$ .

- a- 0 V
- b- 10 V
- c- 1 kV
- d- 0,1 V

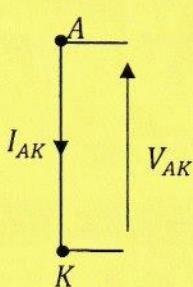


+2 Q8. What is the voltage  $V_{AK}$  at the terminals of the diode if  $E = 0,5 V$ ,  $R = 1k\Omega$ .

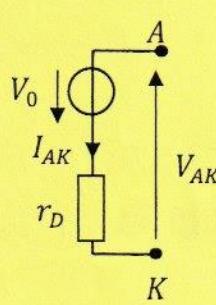
- a- 0 V
- b- -0,5 V
- c- 0,7 V
- d- -0,7 V



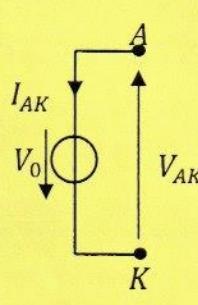
+2 Q9. With what would you replace the conducting diode if the real model is considered (imperfect voltage source model) ? The threshold voltage is  $V_0$ .



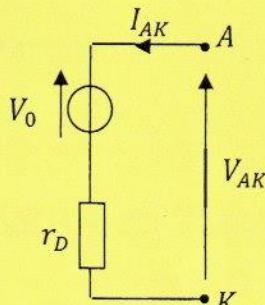
a-



b-

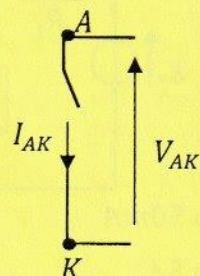


c-

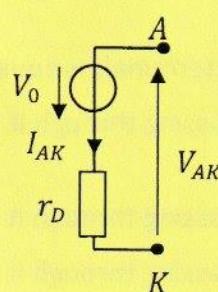


d-

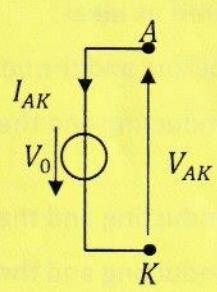
Q10. With what would you replace the blocking diode if the threshold model is considered (ideal voltage source model).



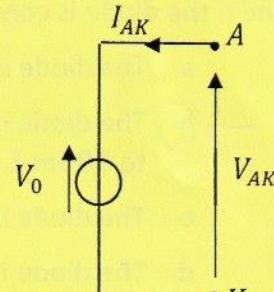
a-



b-



c-



d-

# Test 3

## Computer Architecture

Monday 14 October 2019

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

11. The term ‘assembler’ can refer to:

- A. A programming language.
- B. A very fast microprocessor.
- C. A very smart person.
- D. A program that converts a source code into machine code.

12. Which mnemonic is an assembler directive?

- A. ORG
- B. ILLEGAL
- C. ADD
- D. MOVE

13. Let us consider the following instruction: MOVE.W (A0)+,D0

- A. A0 is incremented by 1.
- B. A0 is incremented by 2.
- C. A0 is incremented by 4.
- D. A0 does not change.

14. Let us consider the following instruction: MOVE.W 2(A0),D0

- A. A0 is incremented by 4.
- B. A0 is incremented by 2.
- C. A0 is incremented by 1.
- D. A0 does not change.

15. Let us consider the following instruction: MOVE.W \$50,D0. What is the value \$50?

- A. A 16-bit address.
- B. 8-bit immediate data.
- C. A 32-bit address.
- D. 32-bit immediate data.

16. Which instruction(s) can be used to call a subroutine?

- A. BRA
- B. BSR
- C. GSR
- D. JMP

17. After the execution of the RTS instruction, the stack pointer is:

- A. Incremented by two.
- B. Incremented by four.
- C. Decrement by two.
- D. Decrement by four.

18. The steps to push an item onto the stack are:

- A. Write the item to (A7) then decrement A7.
- B. Read the item from (A7) then increment A7.
- C. Decrement A7 then write the item to (A7).
- D. Increment A7 then read the item from (A7).

19. The steps to pop an item off the stack are:

- A. Write the item to (A7) then decrement A7.
- B. Read the item from (A7) then increment A7.
- C. Decrement A7 then write the item to (A7).
- D. Increment A7 then read the item from (A7).

20. The RTS instruction:

- A. Pushes a return address onto the stack.
- B. Is a branch instruction.
- C. Do not modify the stack.
- D. Restore registers.