

TEST DE RECRUTEMENT SPECIALISTE ICT

CODE :

(Instruit par l'examineur d'inscrire le nom)

Durée : **2 Heures 30 minutes**



Instructions

Complétez directement ce document. Pour les questions à choix multiples, assurez-vous de bien mettre en exergue votre sélection en appliquant une couleur de texte différente (rouge par exemple). Ne mentionnez aucun nom sur ce document, l'examineur vous donnera un code. Assurez-vous que votre document est bien enregistré au fur et à mesure que vous travaillez et surtout à la fin quand vous avez terminé. Vous pouvez répondre en français ou en anglais.

Si vous avez encore un téléphone avec vous, veuillez le remettre à l'examineur. Toute tentative de fraude ou d'accès à Internet pendant le test (même si constaté plus tard) conduira à l'annulation de votre test.

Un conseil : Ne perdez pas de temps sur une question si vous n'avez pas la réponse, passer à la question suivante et vous pourrez revenir sur ces questions quand vous aurez terminé.

Bonne chance et c'est parti....

Partie 1

/82pts

1. Troubleshooting is a systematic approach to solving a problem. What are the main troubleshooting questions to ask to solve a problem? List in order at least 5 questions and provide in the justification column how each question contributes to solve the problem. (3pts)

Réponse :

Vérification	Justification
1. - What is the problem?	1. - In order to know the issue
2. - When did it start ?	2. - To determine the triggering point
3. - What are you trying to accomplish?	3. - To have an idea of the tasks, and direct the user
4. - Is there anything else not working?	4. - To know if the issue is limited to single point or is general to other things
5. - Is there any other method to be used?	5. - It would help to have alternatives options.
6. -	6. -
7. -	7. -

2. Questions on OSI model and specify for each the protocols used and the unit/format of information. (4pts)

a- What OSI stands for? (1pt)

O..... S..... I.....



b- What is the difference between flow control and error control, and which layer performs these functions in OSI model? (1pt)
Flow control determines that bits are transmitted in the right order (Transport Layer) - Error control has to deal with errors that might happen (Application Layer)

c- What are the differences between the OSI and TCP/IP models? (1pt)
TCP/IP uses the Internet Protocol whilst the OSI model uses UDP

d- What is data encapsulation process and how it works? (1pt)
Response: Encapsulation is the process of splitting and wrapping data into bits before it is being transmitted over a network.

3. What is the role of a proxy server? (1pt)
Réponse : A proxy server helps create an intermediate server from which communication transit; helps improve security of dedicated server.

4. Data Privacy (3pt)
- a. What is Data Protection? (1pt)
Data protection is the process of ensuring security of data from unauthorized access
 - b. What is a Privacy policy? (1pt)
Data privacy policy lists the necessary policies to ensure data is limited to owners and authorized parties; and not shared without consent.
 - c. What is Endpoint security? (1pt)
Control mechanism that enforces security of data

5. List the 3 types of Internet connections and present their different characteristics. (3pts)

Internet Connection type	Characteristics
Satellite connection	Uses satellite connectivity to connect to the internet - VSAT
Mobile connection	Uses the broadband mobile carrier for internet access
Fibre connection	Cable connection both submarine and terrestrial; they represent the type is transmits the vast volume of data.

6. Explain what IPv6 is and why it's important? (3pts)

What is IPv6	Why IPv6 is important. Also provide an example
IPv6 stands for Internet Protocol version 6 and unlike IPv4 which in which addresses are represented using 32 bits; IPv6 uses 128bits.	The 128bits used by IPv6 for addressing allows to cover a multitude of devices, reducing the risks of running out of addresses for connected devices especially with IoT.

7. Qu'est ce qui caractérise un câblage structuré et comment s'assurer après un tel déploiement que les standards ont été respectés ? (2pts)



Réponses : **Un câblage structuré permet d'avoir une bonne structuration dans le déploiement d'un réseau. On peut vérifier par des tests avec le branchement des certains équipements sur le réseau et des PING.**

8. Explain the advantages of the SDWAN for each of the following aspect. Provide examples (3pts)

Réponse:

Connectivity :	Permits a connectivity to the outside Wide Area Network
Management :	
Security :	Helps setup security protocols from external connections

9. What is the command prompt used on Windows and Unix operating systems for displaying about TCP/IP settings, incoming and outgoing connections, network protocols statistics and routing tables? (1pt)

Reponse: Using cmd: **ipconfig /all**

10. Which of the following features allows Windows 10 to accommodate different types of devices? Underline the correct answer. (1pt)

Unify, Continuum, **Hub**, Flexi

11. La définition d'un câble droit est (Sélectionnez la bonne réponse) ? (1pt)

- a) Les quatre paires de fils se connectent sur les mêmes pin de chaque bout
- b) Le câble qui connecte directement un ordinateur à un autre
- c) Les quatre paires de fils ne sont pas croisés entre eux
- d) Le câble qui n'est pas croisé

12. Can you list and give the role of the main components of a complete HF radio installation powered by solar panels. (4pts)

<u>Main components</u>	<u>Role in installation</u>
Solar panels	Capture solar energy and translate into electrical energy
Battery	Accumulates the energy from the solar panels to be used by
HF antenna	For the reception and broadcast of wave signal
HF Transceiver	Transmits and receives the signal on a specific frequency configured
Audio Console	Microphone & Speaker Kit that helps speak and hear the message being transmitted and received.

13. What is the wavelength of a signal at a frequency of 10MHz? (2pt)

Réponse: **This falls under the category of HF – High Frequency.**

14. Which of these electronic components can amplify the signal? (Underline the answer) (1pt)

Réponse: Transistor, Resistance variable, Condensateur électrolytique, batterie multi-cellules

15. Dans un montage électrique, donnez pour chacun des composants suivants l'utilisation et précisez s'il s'agit d'un composant actif ou passif. (4pts)

Composant	A quoi il sert ?	Est un composant actif ou passif ?
Résistance électrique	Sert a reduire la tension et le courant	Actif
Transistor	Utilisé dans le passage du courant alternatif au courant continu	Passif
Condensateur		Actif

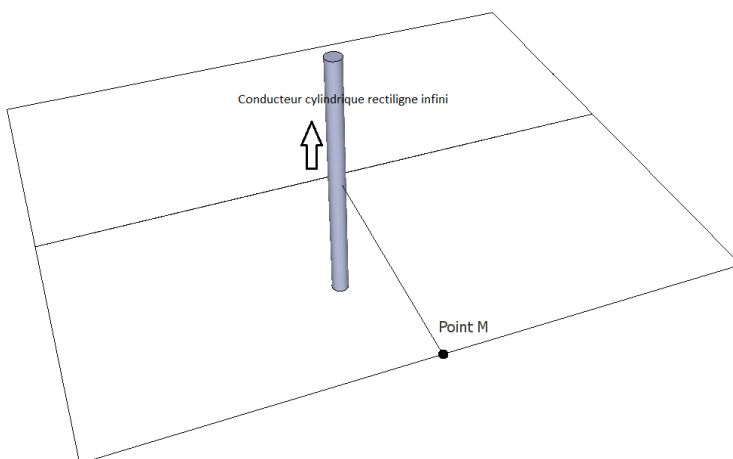
Quelle est la différence entre ces deux types de composants ?

16. Explain what makes the difference between UPS systems and list the three major types of UPS systems. (2pts)

What makes the difference between UPS systems	Three major types of UPS

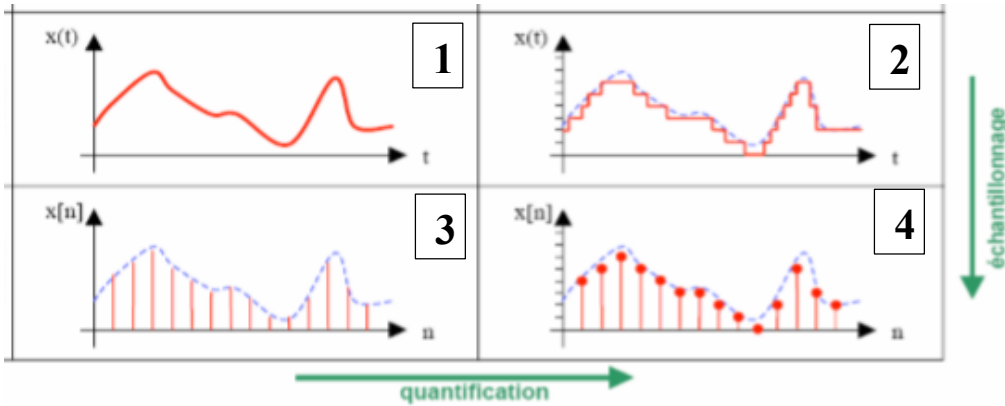
17. Dites dans quelles circonstances un conducteur crée un champ magnétique dans son environnement, et représentez-le au point M pour ce conducteur (la flèche indique le sens des électrons) (Voir schéma ci-dessous) (3pts)

Réponse : **Un conducteur crée un champ magnétique quand sa bobine est alimenté par un courant électrique.**



Circonstances	Direction au Point M (Sélectionner)
	a) Orienté vers le haut b) Orienté vers le bas c) Orienté vers la droite d) Orienté vers la gauche

18. In terms of signal processing and from a morphological point of view, the dial below shows the four types of signals. Name them and say what characterises each type. (2pts)



Réponse:

Number	Type of signal	Characteristic
1		
2		
3		
4		

19. A user who has access to Internet suddenly complains that he or she can no longer connect to the corporate VPN from his computer. List in order of priority 4 main checks you will do and state the interest for each. (4pts)

Checking to be done	Interest (justification)
Has the internet connection been interrupted?	If for some reason there was the interruption, then no access would be possible
From what location is the user connected?	To check if the location is not restricted
What network is the user using?	Restriction may be set to public networks
What other sites / resources is the user trying to access?	Attempts to access restricted resources can result in a ban

20. Can you give two new features that are present in Windows 8 (and later versions) but were not present in Windows XP? (2pts)

Réponse: **Multi Users system: Ability to support multiple users ; NTFS: New Technology File System for the hard disk.**

21. How will you explain how running several programs simultaneously can lead to a slow computer? Also specify impacted components (2pts)

Réponse: **The computer has a limited processing power which is then to be distributed across all programs. Running several programs simultaneously results in the split of the limited power into executing multiple things with all the programs not receiving enough processing power as needed. This translates into a slow computer. Affected component are the CPU, the RAM, Hard Disk and perhaps the fan for trying to cool down the overwhelmed system**

22. What do you do when you don't understand and have no idea about a user's problem? (2pts)



Réponse: I would try to speak to the user in the best non-technical language possible. Simple question like “what are you trying to accomplish?”, “where are you stuck?”, etc. can help understand what the issue might be.

23. A remote user complains that he cannot connect to a network application, yet he has no problem accessing the Internet from his computer. List in order of priority 4 relevant questions that you will ask the user to solve the problem. (4pt)

Réponse:

Question	Justification
Which application is that ?	Knowing which application helps narrow it down
What network are you connected to? Where is your location?	Sometimes the user can try to access an intranet resource while connected from a different network. E.g: trying to print from a network printer at the office while connected to the internet from your mobile hotspot
Do you have required access to connect?	An attempt from an unknown source can be blocked, hence the need to know if the user has all the necessary privileges
Is your network safe, do you have a VPN, etc. ?	Attempts from unsafe network such as public airports internet can be restricted for specific resources

24. Give 4 adjectives that best describe the personal skill that an ICT technician should not have in order to be able to manage a small stock of ICT equipment well (Example: messy). (2pts)

Réponse: Messy, Not keen to details, Disorganized, Untimely

25. Quelle est la formule pour calculer le débit de données (D) dans un intervalle de temps (t) et pour une quantité de données (n). Utiliser cette formule pour déterminer le volume de données en Go qui sera copié en 3H20 minutes avec une vitesse de transfert de 102.4Mo par minute. (2pts)

Réponse: $D = n * t$

$$D = 102 \text{ Mo per min} * ((60*3) + 20) \text{ min}$$

$$= 20\,400 \text{ Mo}$$

$$= 20,4 \text{ Go}$$

26. List 4 main advantages of satellite communications over terrestrial communications systems (2pts)

Réponse:

Satellite communications presents some advantages over terrestrial:

- Cost of setup is relatively low
- Ability to cover remote access
- Not hindered by landscape like mountains or huge buildings.
- Ability to be portative or mobile.

27. A user who does not have a backup of his data has accidentally deleted some important files and wants to restore them. In order to be able to help him, give 3 relevant questions that you ask him and say for each of them the interest of the question in solving the problem. (4pts)



Question	Justification
Where was the files deleted from?	In order to know the platform and recovery options (Local computer? OneDrive? External Drive?)
Have you cleaned your Recycle Bin since?	Most Systems have a recycle bin where deleted files transit, it can help quickly restore the files if not yet cleaned from the recycle bin
What the approximate size?	The volume and type would help define techniques for retrieval, and maybe help setup the appropriate backup system.

28. There are two kinds of VSAT access technologies: SCPC and DVB-S2 (TDM)/FD-TDMA. Can you explain what are those technologies and how they operate? (2pts)

Technology	Characteristics
SCPC	
DVB-S2 (TDM)/FD-TDMA	

29. Give the definition of a satellite footprint (1pt)

Réponse: A satellite footprint is the area the satellite is able to cover from its position.

30. What is "Direct Access" in the Windows environment? (2pts)

Réponse: Direct Access refers to the direct connection onto a terminal via cable, without going through a network

31. Name two protocols used by the Active Directory and explain their role (2pts)

Réponse:

	Protocol	Explanation
1		
2		

32. Explain what is meant by "Big Data" today (2pts)

Réponse: By Big Data, we see a huge collection on data generated by current usage of technology: social media, interconnected devices, whether data, etc.; followed by its storage and its processing.

33. What is the difference between differential backup and incremental backup? (2pt)

Réponse: With differential backup, the system on the backup end looks for differences with the source, and proceeds by backing up those difference as so to have the same at both ends; whilst with incremental backup, the process goes incrementally from point it was left off until completion.

34. What are Group Policy Objects (GPOs) and name their different kinds (2pt)

Réponse: Group policies allows to define what group of users and their level of access onto a system. This helps to control as limit access as needed.



35. Quelle est la différence entre le RAID 5 et le RAID 10 ? (2pt)

Réponse: Tous sont des technologie architecturale des disques dur. RAID 5 utilise une partition par en 5 du Disque, et RAID 10 une partition par 10

Part 2 - Multiple choices.

Please answer the following questions accordingly. If you don't know the answer, there is no problem but it is better to leave the question blank. (1pts per question)

Telecom:

/9pts

36. Définir PABX? (1 réponse). (1pt)

- a) Public Automatic Branch Exchange
- b) Private Action Branch Exchange
- c) People Active Branch Exchange
- d) Private Automatic Branch Exchange

37. In radio communications, the higher the frequency... (1 answer). (1pt)

- a) ...the shorter the antenna
- b) ...the better the antenna is
- b) ...the longer the antenna
- c) ...the lower the antenna is

38. On satellite communications. For an earth station transmitter with an antenna output power of 40 dBW, a back-off loss of 3 dB, a total branching and feeder loss of 3 dB and transmit antenna gain of 4 dB, the effective isotropic radiated power (EIRP) will be? (1 réponse). (1pt)

- a) 40 dbm
- b) 36 dB
- c) 44 dbm
- d) 38 dB

39. The satellite that is used as a relay to extend communication distance is called as (une réponse). (1pt)

- a) Relay satellites
- b) Communication satellites
- c) Repeater satellites
- d) Geosynchronous satellites

40. Which software prevents the external access to a system? (1pt)

- a) Firewall
- b) Router
- c) Gateway
- d) Antivirus

41. Frequencies in UHF range propagate by means of (1 answer). (1pt)

- a) Ground waves



- b) Sky waves
- c) Space waves
- d) Surface waves

42. In Microsoft Office, which feature is used to make selected sentence to All Capital Letters or All Small Letters? (1 answer). (1pt)

- a) Change Letter
- b) Change Case
- c) Change Sentence
- d) Change Format

43. If frequency of modulated wave is less than frequency of carrier wave, then input signal is (1 answer). (1pt)

- a) Infinite
- b) Positive
- c) Zero
- d) Negative

44. Radio waves sometimes bend around the corners due to (1 answer). (1pt)

- a) Diffusion
- b) Diffraction
- c) Refraction
- d) Reflection

Information Technology:

/19pts

45. Hashing functions like MD5 and SHA are used in IPSEC to provide which of the following services? (1 réponse). (1pt)

- a) Data confidentiality (privacy from eavesdropping)
- b) Data Integrity (data protected from being changed during transit)
- c) Securely negotiating a key over an unsecure media
- d) Anti-replay protection

46. Does the IP protocol establish a temporary dedicated circuit when there is a transmission? (1 Answer). (1pt)

- a) Oui
- b) Non

47. Your router has the following IP address on Ethernet0: 172.16.2.1/23. Which of the following can be valid host IDs on the LAN interface attached to the router? (1 réponse). (1pt)

1. 172.16.1.100
2. 172.16.1.198
3. 172.16.2.198
4. 172.16.3.0

- a) 1 only
- b) 2 and 3 only
- c) 3 and 4 only



- d) 2 and 5 only
- e) None of the above

48. You need to subnet a network that has 5 subnets, each with at least 16 hosts. Which classful subnet mask would you use? (1 réponse). (1pt)

- a) 255.255.255.192
- b) 255.255.255.224
- c) 255.255.255.240
- d) 255.255.255.248

49. What is a NIC (1 answer)? (1pt)

- a) A WAN adapter
- b) A printed circuit board that provides network communication
- c) A card used only for Ethernet networks
- d) A standardized data link layer address

50. Which three statements describe differences between Storage Area Network (SAN) and Network Attached Storage (NAS) solutions? (Three statements are correct). (1pt)

- i. SAN is generally more expensive but provides higher performance
 - ii. NAS uses TCP/IP for communication between hosts and the NAS server
 - iii. NAS requires additional hardware on a host: a host bus adapter for connectivity
 - iv. SAN uses proprietary protocols for communication between hosts and the SAN fabric
- a) i, ii, iii
 - b) i, ii, iv
 - c) ii, iii, iv
 - d) I, ii, iii

51. Incident Management is responsible for _____, _____, _____, _____ and _____ incidents (mark 2 good answers) (1pt)

- a) Identifying, notifying, classifying, mitigating, resolving
- b) Detecting, recording, mitigating, classifying, investigating
- c) Detecting, recording, classifying, investigating, resolving
- d) Identifying, notifying, preventing, investigating, resolving
- e) None of the above

52. The network address of 172.16.0.0/19 provides how many subnets and hosts? (1pt)

- a) 7 subnets, 30 hosts each
- b) 8 subnets, 8 190 hosts each
- c) 8 subnets, 2046 hosts each
- d) 7 subnets, 2046 hosts each

53. What UDP port is used by DHCP for sending data to the server (1 answer)? (1pt)

- a) 66
- b) 67
- c) 68
- d) 69



- 54.** In IT incident management, who determines the criticality level of an incident? (1 réponse) **(1pt)**
- a) The developer
 - b) The Client
 - c) The tester
 - d) All concerned
- 55.** Which of the following is not a type of virus? (1 answer) **(1pt)**
- a) Boot sector
 - b) Polymorphic
 - c) Multipartite
 - d) Trojans
- 56.** How many types of computer virus do we have? (1 answer) **(1pt)**
- a) 5
 - b) 7
 - c) 10
 - d) 12
- 57.** What is the standard upload speed of ADSL technology? (1 réponse) **(1pt)**
- a) 1.0 Mbit/s
 - b) 2.0 Mbit/s
 - c) 4.0 Mbit/s
 - d) 8.0 Mbit/s
- 58.** Select what is right from the following (1 réponse) **(1pt)**
- a) UDP is more reliable than TCP, but TCP is faster than UDP
 - b) TCP is more reliable than UDP, but TCP is faster than UDP
 - c) UDP is more reliable than TCP, but UDP is faster than TCP
 - d) TCP is more reliable than UDP, but UDP is faster than TCP
- 59.** What do you recommend to users to tighten the security of their data? (mark all valid answers) **(1pt)**
- a) When they share directory on their computer, they must setup a password on the directory
 - b) To setup a "power on" password on their computer
 - c) To setup an optical password on the hard disk of their computer
 - d) Never share any files using Win 8/10 services but to use a secured DB and/or a shared directory of the file server instead
 - e) To save confidential files on a DVD or External hard drive and keep them in a safe or locked files cabinet
- 60.** What does mean best effort protocol within the IP protocol? (1 answer) **(1pt)**
- a) The protocol gives the best try but is connectionless to carry packets
 - b) The protocol gives the best try and connects the destination to carry packets
 - c) The protocol is at its best to carry packets
 - d) The protocol is the best one to carry packets



61. The Tri-band GSM phone supports the following frequencies: **(1pt)**

- a) 900/1700/1800 Mhz
- b) 900/1800/1900 Mhz
- c) **800/1600/2400 Mhz**
- d) 800/1800/2800 Mhz

62. What is the characteristic impedance of a coaxial cable used in radio installations? **(1pt)**

- a) 25 Ohm
- b) **50 Ohm**
- c) 75 Ohm
- d) 100 Ohm

Si vous avez répondu à toutes les questions, bravo !!! Vérifiez vos réponses, rassurez-vous que votre nom soit bien écrit et informez l'examineur pour collecter votre copie.