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**T215B: Communication and information technologies (II)**

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# **Question ( 1 ) :**

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**As brief description of VPN** [**(1)**](https://books.google.jo/books?id=JVcBEAAAQBAJ&pg=PA263&dq=aspects+of+design+and+planning+of+a+VPN+policy&hl=ar&sa=X&ved=2ahUKEwiYtoLum7v0AhWO_7sIHUU6Db4Q6AF6BAgKEAI#v=onepage&q&f=false)  **we can say that the Virtual Private Network** **(**[**VPN**](https://books.google.jo/books?hl=ar&lr=&id=OuFQ3t7eF4IC&oi=fnd&pg=PR9&dq=Virtual+Private+Network+(VPN)&ots=hglXxADL-x&sig=SapUfF0fPj66kIJ35PEWWhw9m-4&redir_esc=y#v=onepage&q=Virtual%20Private%20Network%20(VPN)&f=false)**) known as the way to simulate a private network over public net- work,we called it “Virtual” for using virtual connections in it , actually it is a temporary connections without real physical presence,and with Secure virtual connections which created between two networks or between two machines, a machine and a network.**

[**Actually the VPN got many benefits (2)**](https://us.norton.com/internetsecurity-privacy-benefits-of-vpn.html)**, the most popular are two key benefits which are:**

* **Security: that helping protect personal information when send from and received by your device**
* **Privacy: hiding things like your location,IP address to keep you from being tracked by internet browsers, internet service providers (ISPs), and others.**

**But we also got many other benefits such as :**

* **Escape data-throttling: With a VPN your data will be free from the prying eyes of ISPs and others.**
* **Access region-blocked services like Netflix: the VPN can change your IP address to make a content provider think you’re browsing in another location or region that allows access.**
* **Avoid censorship when traveling abroad: Some VPNs may support you to bypass geographical restrictions, for example, some countries restrict or forbid access to certain websites.**
* **Reduce support costs: the use of VPN can support business to lower the cost of maintaining servers, by using third-party service providers to support them .**
* **Provide network scalability: When organizations grow, the costs of building a dedicated private network which VPNs allow businesses to give remote and international locations in particular better reach and service quality.**
* **Avoid bandwidth-throttling: the VPN can thwart the sluggishness by encrypting your device’s internet traffic and that prevents anyone on the same network from seeing the content of your web traffic.**

**Although VPNS offer many benefits, But as everything in life the VPN also got Limitations** [**(3 )**](https://books.google.jo/books?id=OuFQ3t7eF4IC&lpg=PR9&dq=Virtual%20Private%20Network%20(VPN)&lr&hl=ar&pg=PT11#v=onepage&q&f=false) **such as**

* **A VPN connection does not ensure quality of service.**
* **VPNS over the Internet can easily suffer from latency, fragmentation, traffic congestion, and dropped packets.**
* **Sometimes VPN connections have a lack of dedicated bandwidth between business sites because of the volatility of the Internet.**
* **A VPN connection with huge all traffic got significantly slow down because capacity is greater than the highway (network or physical)**

**And when we understand these limitations and need to address major issues when correctly Installing and productively using VPNS, we need to** **create and design effective VPN policies** [**( 4 )**](https://books.google.jo/books?id=JVcBEAAAQBAJ&pg=PA263&dq=aspects+of+design+and+planning+of+a+VPN+policy&hl=ar&sa=X&ved=2ahUKEwiYtoLum7v0AhWO_7sIHUU6Db4Q6AF6BAgKEAI#v=onepage&q&f=false) **and take some of the aspects of design and planning of a VPN policy include such as :**

**• Define mechanisms for providing remote technical support about the VPN telecommuters**

**• Define how VPN can manage interfaces, and whom Exploring complexities of patch management onVPN**

**• Apply strong (authorization) access control with restrictions on all VPN connections.**

**• Depending on the advantage and disadvantage of software and hardware VPN solutions**

# **Question ( 2 ) :**

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1 ) . The readable Original PlainText is p ≡ c + 𝐾’mod 26**

**2 ) . Table with details required**

| **Cipher text** | **O** | **G** | **T** | **J** | **Q** | **P** | **P** | **B** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Number Equivalent** | **14** | **6** | **19** | **9** | **16** | **15** | **15** | **1** |
| **Key** | **o** | **p** | **t** | **i** | **c** | **a** | **l** | **o** |
| **Number key equivalent** | **14** | **15** | **19** | **8** | **2** | **0** | **11** | **14** |
| **Number k’ equivalent**  **K’ = 26 - k** | **12** | **11** | **7** | **18** | **24** | **26** | **15** | **12** |
| **Plain Number**  **p ≡ c + 𝐾’mod 26** | **0** | **17** | **0** | **1** | **14** | **15** | **4** | **13** |
| **Plain text** | **a** | **r** | **a** | **b** | **o** | **p** | **e** | **n** |

**Question ( 3 ) :**

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**a ) . The given data :**

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**Similarity value = less than 5% in strictly differences**

**Table shows differences of minutiae pairs for FP1, FP2 and FP3**

**We got 15 minutiae pairs**

**. The Answer :**

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**For FP1,out of 15 we can take (10 ) pairs for similarity less than 5%, so we can say :**

**The FP1: Similarity = (10/15) x 100 = 66.67%**

**For FP2,out of 15 we can take (5 ) pairs for similarity less than 5%, so we can say :**

**The FP2: Similarity = (5/15) x 100 = 33.33%**

**For FP3,out of 15 we can take (9 ) pairs for similarity less than 5%, so we can say :**

**The FP3: Similarity = (9/15) x 100 = 60 %**

**b ) Now, since the threshold is 65% , we need a similarity index of at least 61% for a match , So FP1 is a match.**

**But since FP2 and FP3 have similarity percentage less than 61% , Sothey are not in match.**

**c ) The three reasons for non match can be :-**

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1. **When a threshold is set too high, biometric data from the same person can appear not to match because of slight variations.**
2. **Dust on fingers can cause a false non match.**
3. **Hands can be too sweaty or too dry .**
4. **Surface of skin; scars , cuts or any other skin conditions.**

# **Study References :**

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1. **( 1 ) Stewart, J. and Kinsey, D., n.d.** [***Network Security, Firewalls, and VPNs***](https://books.google.jo/books?id=JVcBEAAAQBAJ&lpg=PA263&dq=aspects%20of%20design%20and%20planning%20of%20a%20VPN%20policy&hl=ar&pg=PA254#v=onepage&q&f=false)**. 3rd ed. 101 Morris Street, Sebastopol: O'Reilly & Associates, Inc., p.254.**
2. [**Us.norton.com**](https://us.norton.com/internetsecurity-privacy-benefits-of-vpn.html)**. 2021. *10 benefits of a VPN you might not know about*. [online] Available at: <https://us.norton.com/internetsecurity-privacy-benefits-of-vpn.html> [Accessed 3 December 2021].**
3. **Bates, R., 2002.** [***Virtual private networks*.**](https://books.google.jo/books?id=OuFQ3t7eF4IC&lpg=PR9&dq=Virtual%20Private%20Network%20(VPN)&lr&hl=ar&pg=PT11#v=onepage&q&f=false) **2nd ed. New York: McGraw-Hill, pp.168- 189.**
4. **Stewart, J. and Kinsey, D., n.d.** [***Network Security, Firewalls, and VPNs***](https://books.google.jo/books?id=JVcBEAAAQBAJ&pg=PA263&dq=aspects+of+design+and+planning+of+a+VPN+policy&hl=ar&sa=X&ved=2ahUKEwiYtoLum7v0AhWO_7sIHUU6Db4Q6AF6BAgKEAI#v=onepage&q&f=false)**. 3rd ed. 101 Morris Street, Sebastopol: O'Reilly & Associates, Inc., p.263.**

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