higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

# MARKING GUIDELINE

## NATIONAL CERTIFICATE (VOCATIONAL)

## MULTIMEDIA SERVICE
## NQF LEVEL 4

## 20 November 2024

**This marking guideline consists of 8 pages.**

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## SECTION A

## QUESTION 1

| | | |
|---|---|---|
| 1.1 | 1.1.1 | True |
| | 1.1.2 | True |
| | 1.1.3 | False |
| | 1.1.4 | True |
| | 1.1.5 | False |
| | 1.1.6 | True |
| | 1.1.7 | False |
| | 1.1.8 | True |
| | 1.1.9 | True |
| | 1.1.10 | False |
| | 1.1.11 | True |
| | 1.1.12 | False |
| | 1.1.13 | True |
| | 1.1.14 | True |
| | 1.1.15 | True |

(15 × 1) (15)

| | | |
|---|---|---|
| 1.2 | 1.2.1 | C |
| | 1.2.2 | B |
| | 1.2.3 | B |
| | 1.2.4 | B |
| | 1.2.5 | D |
| | 1.2.6 | C |
| | 1.2.7 | C |
| | 1.2.8 | B |
| | 1.2.9 | A |
| | 1.2.10 | D |

(10 × 1) (10)
**[25]**

**TOTAL SECTION A: 25**

## SECTION B

## QUESTION 2

2.1 2.1.1 FTP servers are software solutions used to transfer files across the Internet.✓ FTP servers have two functions, namely "put" and "get." It allows the client device to upload (put) files to the server and download (get) files from the server to the client's device.✓

2.1.2 IP addresses for new computers or machines relocated from one subnet to another must be manually set without DHCP.✓ IP addresses for computers withdrawn from the network must be manually recovered.✓ This entire process is automated and managed centrally using DHCP.

2.1.3 The purpose of DNS is to translate a domain name into the appropriate IP address.✓ This is done by looking up the DNS records of the requested domain.✓ There are typically eight steps in this DNS lookup process that follow the information path from the originating web browser to the DNS server and back again.

2.1.4 Email protocols, which tell the server how to process incoming requests, where to route the messages and how to send them to the designated mail client,✓ are used by mail servers to transport email messages between mail clients.✓ A mail server, also known as a mail transfer agent, MTA, mail transport agent, mail router or Internet mailer is an application that receives incoming email from local users and remote senders and forwards outgoing messages for delivery.

2.1.5 Web servers are generally used to handle and administer HTTP/HTTPS client system requests and responses.✓ A web server also stores and protects website data. A web server can store and safeguard important website data from unauthorised users.✓ The primary role of a web server is to store, process and deliver requested information or webpages to end users. All website data is stored on a physical web server to ensure its safety.

(5 × 2) (10)

2.2 2.2.1

| Device | Function | Example |
|---|---|---|
| **Repeater** | A repeater regenerates and amplifies signals✓ to extend the distance over which data can travel without degradation. ✓It operates at the physical layer (Layer 1) of the OSI model. | A repeater can be used in a long cable run between two buildings to boost the signal strength.✓ |
| **Router** | A router directs data packets between different networks,✓ making decisions based on IP addresses.✓ It operates at the network layer (Layer 3) of the OSI model. | A home router connects a local home network to the internet, assigning local IP addresses and managing traffic.✓ |

(6)

2.2.2

| Device | Function | Example |
|---|---|---|
| **Switch** | A switch connects multiple devices within a local area network (LAN) ✓and uses MAC addresses to forward data to the correct destination. ✓ It operates at the data link layer (Layer 2) of the OSI model. | An Ethernet switch in an office network connects computers, printers, and servers, allowing them to communicate efficiently. ✓ |
| **Bridge** | A bridge connects and filters traffic ✓between two or more network segments, reducing collisions and managing traffic more effectively. ✓It operates at the data link layer (Layer 2) of the OSI model. | A bridge can connect a wired network to a wireless network, extending the network without allowing collisions between the two segments. ✓ |

(6)

✓✓ for a function of each device
✓ for an example of each device (3 x 4)

2.3 A wireless LAN (WLAN) is a computer network✓ that uses wireless communication✓ to connect two or more devices✓ to form a local area network within a certain region such as a home, school, computer laboratory, campus or business building. (3)

**[25]**

**QUESTION 3**

3.1 3.1.1

```
SELECT✓ empName,✓ birthDate,✓ Salary✓
FROM employee✓
```

(5)

3.1.2

```
SELECT *✓
FROM employee✓
ORDER BY✓ empNo ASC✓
```

(4)

3.1.3

```
SELECT  empName ✓
FROM Employee✓
WHERE Salary✓ > R5 000✓
```

(4)

3.1.4

```
INSERT INTO employee✓ (empNo,✓ empName,✓ birthDate,✓ Salary✓)
VALUES✓ (800331,✓ Tshego,✓ 23/09/1995,✓ R3 600✓)
```

(10)

3.2 Normalisation is the process of arranging data in a database,✓ which includes generating tables✓ and building links between those tables based on rules aimed to secure the data while also making the database more flexible by removing redundancy and inconsistent dependence. (2)

**[25]**

**QUESTION 4**

4.1 4.1.1 This is an example of a poorly designed webpage. (2)

4.1.2
- The website has a cluttered layout with no focal point that draws the user's eyes.✓ The layout is too busy, which makes it confusing.✓
- The hidden navigation menu✓ makes it difficult and slows down the user if it has to be opened to have access to tools.✓
- The lack of colour contrast✓ makes the website boring. It is not creative and the user will lose interest quickly.✓
- Nonresponsive design✓ is a drawback if the website is viewed on different devices with different screen sizes, as it does not adjust to the screen size.✓
- Inconsistent typefaces✓ is poorly designed, as it is confusing to the user when there is no consistent structure to the page.✓
- When there is a lack of user-centricity✓ on a webpage, the webpage is not user-friendly and users will find it difficult to use and navigate.✓
- Visitors come to your website to make a purchase, learn about your product, sign up for a newsletter or apply for a job. Bad website design is likely to blame if they have difficulty accomplishing any of these tasks.
- Bad usability websites could cause significant frustration and even mean your visitors will exit quickly. (Any 5 × 2) (10)

4.1.3 Some smaller devices cannot cope with frames often because their screen is not big enough to be divided up.✓ Sometimes the page will be displayed differently on different computers due to different screen resolution.✓ The browser's *Back* button might not work as the user hopes.✓ There are still few browsers that do not support frame technology. (3)

4.2 4.2.1 The DOCTYPE declaration tells the web browser which version of HTML the page is written in.✓ This ensures that different web browsers parse the web page in the same way. ✓ (2)

4.2.2 This line initiates a prompt box,✓ that allows the user to enter a name. ✓ (2)

4.2.3 Line 13 is only executed if the user does not enter a name✓ in the prompt box.✓✓ (3)

4.2.4 Line 20 creates a button that the user will click. ✓ This button will initiate the function askUserName, ✓ which will display a prompt box asking the user to enter a name. ✓ (3)

**[25]**

**QUESTION 5**

5.1
```
<!DOCTYPE html>✓
<html>
<body>✓

<h1>The Happy Birthday Song</h1>✓

<p>Click on the play button to Play Happy Birthday Song</p>✓

<audio controls>✓
  <source src✓ ="birthday.mp3"✓ type="audio/mpeg✓">

</audio>✓
</body>
</html>✓
```
(10)

5.2
```
<!DOCTYPE html>
<html>
<body>

<h1>Enter Your email and Password to Proceed</h1>✓

<form>✓
 <label for="email">Email:</label>✓
 <input type="email"✓ id="email"✓ name="email✓"><br><br>
 <label for="pwd"✓>Password: ✓</label>
 <input type="password"✓ id="pwd"✓ name="pwd" minlength="8"✓><br><br>
 <input type="submit">✓✓
</form>
</body>
</html>
```
(12)

5.3 5.3.1 The <footer> tag in HTML is used to define a footer of HTML documents. This section contains the footer information (author information, copyright information, carriers, etc.). The footer tag is used within the body tag.

5.3.2 The <nav> tag is used for declaring the navigational section in HTML documents. Websites typically have sections dedicated to navigational links, which enables users to navigate the site. These links can be placed inside a nav tag.

5.3.3 The <time> tag is used to display the human-readable date/time. It can also be used to encode dates and times in a machine-readable form.

(3 × 1) (3)

**[25]**

## QUESTION 6

6.1 A firewall is a network security device that monitors and filters incoming✓ and outgoing network traffic based on an organisation's previously established security policies.✓ At its most basic, a firewall is essentially the barrier that sits between a private internal network and the public Internet.✓ (3)

6.2 6.2.1 Packet filtering can occur at layer 3 or layer 4.✓ One of the primary advantages of packet filtering firewalls is their efficiency.✓ Packet filtering controls access to a network by analysing the incoming and/or outgoing packets and forwarding them or discarding them based on given criteria.✓ Another benefit is transparency. While users are aware of firewalls when they reject a packet, packet filters typically operate quickly and discreetly without interfering with user functionality.

6.2.2 In a secure web or application infrastructure, proxy firewalls are frequently employed as the initial line of defence.✓ They secure the network from external threats,✓ while also ensuring that internal web services and applications can be used safely and without affecting performance.✓ A proxy server is a device or router that acts as a connection point between users and the Internet. As a result, it aids in preventing cyberintruders from infiltrating a private network. It is a server that acts as an 'intermediary' between end-users and the webpages they browse online threats while also ensuring that internal web services and applications can be used safely and without affecting performance.

6.2.3 A next-generation firewall, or NGFW, is a network security system that filters out undesirable traffic✓ while also providing extra cybersecurity features.✓ NGFW goes beyond typical firewalls by providing deep packet filtering, integrated intrusion detection, application control and increased network visibility.✓ An NGFW is a firewall designed to protect against the modern cyberthreats that companies face.

(3 × 3) (9)

6.3 6.3.1 Phishing is the technique of delivering false communications that appear to be from a valid and trustworthy source,✓ typically by email and text messaging.✓ The attacker's purpose is to steal money, obtain sensitive data and login information or implant malware on the victim's device.

6.3.2 Ransomware is a type of malware✓ that is aimed at preventing a user or organisation from accessing files on their computer.✓ Cyber-attackers place organisations in a position where paying the ransom is the easiest and cheapest option to recover access to their files by encrypting these files and demanding a ransom payment for the decryption key.

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6.3.3 SQL injection (SQLi) is a type of cyberattack in which malicious SQL code is injected into an application,✓ allowing the attacker to see or edit data in a database.✓ Injection attacks, which include SQL injections, were the third most severe web application security risk in 2021, according to the Open Web Application Security Project.

6.3.4 Cross-site scripting (XSS) is a type of attack in which a malicious executable script✓ is injected into the code of a trusted program or website.✓ An XSS attack is frequently initiated by sending a malicious link to a user and tempting the user to click on it. XSS attacks occur when data enters an HTTP application from an unknown source, most commonly an HTTP request. The data is included in dynamic content that is delivered to a web user without being checked for dangerous material.

6.3.5 A distributed denial-of-service (DDoS) attack is a malicious attempt to disrupt regular traffic to a specific server, service or network✓ by flooding the target or its surrounding infrastructure with Internet traffic.✓ DDoS assaults are effective because they use numerous compromised computer systems as attack traffic sources. Computers and other networked resources, like as IoT devices, can be exploited machines. A DDoS assault is analogous to an unforeseen traffic jam obstructing the highway, preventing ordinary traffic from reaching its destination.

(5 × 2) (10)

6.4 An intrusion detection system (IDS) is a system that analyses network traffic✓ for suspicious activity✓ and generates notifications when it detects it.✓ While the major duties of IDS are anomaly detection and reporting, certain intrusion detection systems can take action when malicious behaviour or abnormal traffic is discovered, such as restricting traffic coming from questionable Internet protocol (IP) addresses. (3)

**[25]**

**TOTAL SECTION B: 125**
**GRAND TOTAL: 150**

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