

**Trade code SWD EXAM TITLE**

**SYSTEM ADMINISTRATION**

**Day, ...../02/2025**

**PERIOD: 3 hours**

**QUESTION PAPER**

**OPTION/TRADE: SWD**

**SUBJECT/EXAM: SYSTEM ADMINISTRATION**

**DURATION: 3 HOURS**

**INSTRUCTIONS TO CANDIDATES:**

**This Exam paper is composed of Three Sections (A, B, and C). Follow the instructions given below, and answer the indicated questions for a total of 100 marks**

Section **A**: Fourteen (**14**) questions, all **Compulsory** **55 marks**

Section **B**: Among the five (**5**) questions, attempt any three (3) **30 marks**

Section **C**: Among the two (**2**) questions, attempt any one (1) **15 marks**

**Allowed materials:**

- Ruler
- Blue or black pen
- Calculator

**SECTION A: Attempt all questions****(55 marks)**

01. Which of the following is NOT a type of web server? **(3Marks)**

- A) Apache
- B) IIS
- C) MySQL
- D) Nginx

02. What is the primary purpose of an IP address? **(3Marks)**

- a) To store files on a computer
- b) To identify and locate devices on a network
- c) To increase internet speed
- d) To encrypt network traffic

03. Match the **RAID level** with its correct characteristic: **(4Marks)**

RAID Level	Description	Answer
1.RAID 0	A) Uses mirroring for redundancy	1.....
2.RAID 1	B) Provides striping without redundancy	2.....
3.RAID 5	C) Requires at least 3 drives and offers fault tolerance	3.....
4. RAID 10	D) Combines mirroring and striping for performance & redundancy	4.....

04. What is the main advantage of using a network in a business environment? **(4Marks)**

- a) Increases privacy
- b) Reduces communication time
- c) Decreases hardware costs
- d) Simplifies system updates

05. Fill blank spaces(\_\_\_\_\_) by your own words: **(4Marks)**

- a. The **IIS Web Server** is mainly used in the \_\_\_\_\_ operating system.
- b. \_\_\_\_\_ is a web server that is optimized for Java-based applications.

06. Which of the following is NOT a type of DNS record? **(4Marks)**

- A) A
- B) MX

- C) DHCP  
D) CNAME
07. Which of the following is a valid IPv4 address? **(3Marks)**  
a) 256.100.50.25   b) 192.168.1.1   c) 2001:db8:85a3::8a2e:370:7334   d) 300.10.10.10
08. Define the flowing terms: **(5Marks)**  
  
i) Network Operating System (NOS)  
ii) Virtualization
09. Name two types of user accounts commonly used in a computer system. **(3Marks)**
10. **How does the use of fiber optic cables benefit a network compared to twisted pair cables?** **(3Marks)**  
  
a) They are cheaper to install.  
  
b) They are more resistant to electromagnetic interference.  
  
c) They are easier to terminate.  
  
d) They have lower bandwidth capacity.
11. Explain the difference between a server and a client in a network base on definition, role, processing power, and example. **(5Marks)**
12. **You are tasked with setting up a network for a small office. You need to choose the appropriate network media. Which type of cabling would you select for high-speed, long-distance communication within the office, and why?** **(4Marks)**  
  
a) Twisted pair cables because they are cost-effective  
  
b) Fiber optic cables because they offer high bandwidth and are immune to interference  
  
c) Coaxial cables because they are easy to install  
  
d) Shielded twisted pair cables because they are less prone to damage
13. A customer is using a Class C network of 192.168.10.0 subnetted with a 28-bit subnet mask. **(6Marks)**

- i. How many subnets can be created by using this subnet mask?
- ii. How many host can each subnet has?
- iii. How many valid IP address can each subnet has?

**14. What is the primary difference between a Standard user account and an Administrator account? (4Marks)**

- a) Standard users can install software, but administrators cannot
- b) Administrators have full control over system settings, while standard users have limited access
- c) Standard users can modify security settings, but administrators cannot
- d) Both accounts have the same privileges

**Section B: Attempt any three (3) questions**

**(30 marks)**

**15. A client computer in the network is currently in a Workgroup but needs to be joined to the domain. Explain the process of switching the computer from Workgroup to Domain. (10marks)**

**16. A medium-sized company relies on a local area network (LAN) to manage its daily operations, including file sharing, email communication, and access to internal applications. The IT department follows a maintenance routine, performing both hardware and software preventive maintenance to ensure smooth operations. From those two types of maintenance answer the flowing question: (10marks)**

- a. How do hardware and software preventive maintenance work together to maintain a stable network environment?
- b. If a company only focused on hardware maintenance and neglected software updates, what problems could arise?

**17. Scenario for Question 3: Analyzing Hosting Options (10marks)**

A startup company, TechSolutions Ltd., is developing a new web-based project management application. The development team has completed the web app and is now considering where to host it. They must choose between free hosting and paid hosting based on their technical and business requirements.

As a web administrator, analyze the advantages and limitations of free vs. paid hosting and recommend the best hosting solution for

TechSolutions Ltd. Justify your decision based on the company's **technical and business needs**.

18. You have been tasked with configuring a new office network using a static IP address allocation scheme. Evaluate the advantages and potential drawbacks of using static IP addressing compared to dynamic IP addressing (DHCP) in terms of network management and security. (10marks)
19. The IT team has established a **preventive maintenance plan** to ensure the network remains secure, efficient, and stable. The team regularly performs **hardware** and **software preventive maintenance** to avoid downtime and improve system performance of his network. (10marks)

The team has identified that some **network devices** need cleaning, and the **firmware** for several devices is outdated. They are also concerned about network security and are considering updating the **credentials** of network devices to prevent unauthorized access. Additionally, they use **network monitoring software** to track the health of network equipment and **alert** them in case of failures.

From given **scenario above**, answer the following questions:

1. **What is the key aspect of hardware preventive maintenance in the scenario?**
  - a) Updating network software
  - b) Regular cleaning of network devices
  - c) Changing network device credentials
  - d) Monitoring network traffic
2. **In the context of the scenario, what is the main purpose of updating the firmware on network devices?**
  - a) To increase hardware processing power
  - b) To fix security vulnerabilities and enhance performance
  - c) To change network device credentials
  - d) To check physical equipment condition
3. **Which tool is being used to detect and alert the IT team about potential hardware failures in the company's network?**
  - a) Network monitoring software
  - b) Antivirus software
  - c) Backup software
  - d) Email client
4. **In the context of the scenario, what is part of software preventive maintenance that helps improve network security?**
  - a) Checking the server room temperature
  - b) Repairing damaged equipment
  - c) Updating network device credentials
  - d) Cleaning network cables

- 20.** Given the following IP address: 192.168.10.0/24, what would be the subnet mask and how many subnets can be created if you want to divide the network into 4 smaller subnets? **(15marks)**

Show how would you calculate the range of IP addresses available for each subnet?

- 21.** You are the IT administrator at a secondary school responsible for managing user accounts in the school's computer lab. The school has different groups of users, including teachers, students, and lab assistants. To ensure organized access and security, you need to create and manage user groups. **(15marks)**

Your task is Write a simple, easy-to-follow guide on:

1. **Create a user group called "Students"** to group all student accounts together.
2. **Add users (students) to the "Students" group** so they can access shared resources like educational software and printers.
3. **Remove a student from the "Students" group** if they graduate or no longer need access to the lab.

**END OF ASSESSMENT**

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