

Open Source Software -Normal Session Exam

First Year - Computer Science

Date: January 22, 2026

Time: 1:30

SOLUTION KEY

- Q1: 1.....
What is the primary difference between free software (برمجيات حرة) and open source software (برمجيات مفتوحة المصدر)?
Answer: B
Explanation: Free software emphasizes the philosophical aspects of user freedoms (freedom to use, study, modify, and distribute), while open source software focuses on the practical benefits like better quality, reliability, and development model.
- Q2: 2.....
Which Linux distribution (توزيع لينكس) is Ubuntu (أوبونتو) based on?
Answer: B
Explanation: Ubuntu is based on Debian, one of the oldest and most stable Linux distributions. Ubuntu uses Debian's package management system (APT) and repositories.
- Q3: 3.....
What does the GPL license (ترخيص GPL) require when you modify and distribute software (برمجيات)?
Answer: B
Explanation: The GPL (GNU General Public License) is a copyleft license that requires any modifications to be released under the same GPL license, ensuring the software remains open source.
- Q4: 4.....
Which command (أمر) is used to list files (ملفات) in a directory (دليل) in Linux (لينكس)?
Answer: C
Explanation: The 'ls' command lists directory contents in Linux/Unix systems. Common options include 'ls -l' for detailed listing and 'ls -a' to show hidden files.
- Q5: 5.....
What is the main purpose of the Linux kernel (نواة لينكس)?
Answer: B
Explanation: The kernel is the core component of the operating system that manages hardware resources (CPU, memory, devices) and provides essential system services to applications.
- Q6: 6.....
Which of the following is NOT an open source license (ترخيص مفتوح المصدر)?
Answer: C

Explanation: Microsoft Windows EULA is a proprietary license that restricts users' rights. MIT, Apache 2.0, and GPL are all open source licenses that grant users extensive freedoms.

Q7: 7.....

What does the sudo command (**sudo** أمر) do in Linux (لينكس)?

Answer: B

Explanation: 'sudo' (superuser do) allows authorized users to run specific commands with administrative/root privileges without switching to the root account permanently.

Q8: 8.....

What is Git (جيت) primarily used for?

Answer: B

Explanation: Git is a distributed version control system that tracks changes in source code, enables collaboration among developers, and maintains project history.

Q9: 9.....

Which Ubuntu version (إصدار أوبونتو) should you choose for long-term stability (استقرار طويل الأمد)?

Answer: B

Explanation: LTS (Long Term Support) versions receive 5 years of security updates and bug fixes, making them ideal for production environments requiring stability.

Q10: 10.....

What is the purpose of the /etc directory (/etc دليل) in Linux (لينكس)?

Answer: B

Explanation: The /etc directory contains system-wide configuration files and scripts used to configure system behavior, services, and applications.

- Q11: 11
What is the primary function of the CPU's ALU (وحدة ALU في المعالج)?
Answer: B
Explanation: The Arithmetic Logic Unit (ALU) is responsible for performing all arithmetic operations (addition, subtraction) and logical operations (AND, OR, NOT) on data.
- Q12: 12
Which type of memory (ذاكرة) is fastest?
Answer: D
Explanation: CPU Cache (especially L1 cache) is the fastest memory, built directly into the processor chip. Speed hierarchy: L1 Cache > L2 Cache > L3 Cache > RAM > SSD > HDD.
- Q13: 13
What is the main purpose of virtual memory (الذاكرة الافتراضية)?
Answer: B
Explanation: Virtual memory allows the system to use hard disk space as an extension of RAM, enabling programs larger than physical RAM to run by swapping data between RAM and disk.
- Q14: 14
Which scheduling algorithm (خوارزمية جدولة) provides fair CPU time allocation (توزيع) (وقت CPU العادل) to all processes (العمليات)?
Answer: C
Explanation: Round Robin allocates a fixed time quantum to each process in circular order, ensuring all processes receive equal CPU time regardless of their length or priority.
- Q15: 15
What happens during a context switch (تبادل السياق)?
Answer: B
Explanation: A context switch occurs when the OS saves the current process state (registers, program counter) and loads the saved state of another process to execute it.
- Q16: 16
Which file system feature (ميزة نظام الملفات) helps prevent data corruption (فساد البيانات) after unexpected shutdown?
Answer: B
Explanation: Journaling keeps a log (journal) of changes before they're committed, allowing the file system to recover and maintain consistency after crashes or power failures.
- Q17: 17
What is the primary advantage of SSD (SSD) over HDD (HDD)?
Answer: C
Explanation: SSDs use flash memory with no moving parts, providing significantly faster data access and transfer speeds compared to mechanical HDDs with spinning platters.
- Q18: 18
In a multi-core processor (معالج متعدد النواة), what advantage does hyper-threading (التزامن المفرط) provide?
Answer: B
Explanation: Hyper-threading (or SMT - Simultaneous Multithreading) allows each physical core to handle two threads concurrently, improving resource utilization and performance.

Q19: 19
What is the role of a device driver (برنامج التشغيل) in an operating system (نظام التشغيل)?

Answer: B

Explanation: Device drivers act as translators between the operating system and hardware devices, providing a standardized interface for the OS to communicate with diverse hardware.

Q20: 20
Which best describes a microkernel architecture (بنية النواة الدقيقة)?

Answer: B

Explanation: Microkernel architecture minimizes kernel code by running only essential services (IPC, basic scheduling) in kernel space, while other services run in user space for better stability and modularity.

End of Solution Key

Total Points: 100