

Advanced Computational Ecology and Informatics

Basic Computer Skills · Answer Key · 8 Questions

1. Which file format is most commonly used by the GBIF (Global Biodiversity Information Facility) to encode species occurrence records for high-speed data processing?

- A) JPEG
- B) CSV**
- C) MP4
- D) WAV

2. When calculating the migration patterns of the Arctic Tern using a distributed computing cluster, which term describes the process of breaking a large dataset into smaller independent chunks?

- A) Data sharding**
- B) Packet filtering
- C) Cache invalidation
- D) Kernel panic

3. In the context of wildlife tracking using satellite telemetry, what is the primary function of an API (Application Programming Interface) between the GPS collar and the cloud database?

- A) To amplify radio signals
- B) To physically charge the battery
- C) To allow two software components to communicate**
- D) To compress digital imagery

4. Which layer of the OSI model is responsible for the actual transmission of raw bit streams over physical media, such as undersea cables that connect global environmental research networks?

- A) Application Layer
- B) Physical Layer**
- C) Transport Layer
- D) Session Layer

5. What is the 'bit rate' requirement typically needed for uncompressed, high-definition live-streaming of deep-sea hydrothermal vent activity to a remote research facility?

- A) Less than 1 kbps
- B) Approximately 1-5 Mbps
- C) Over 1 Gbps**
- D) Exactly 128 bps

6. Which storage device technology, frequently used in remote field sensors due to its lack of moving parts and vibration resistance, uses NAND-based flash memory?

- A) Hard Disk Drive (HDD)
- B) Solid State Drive (SSD)**
- C) Magnetic Tape
- D) Optical Blu-ray

7. In bioinformatics, what does a 'recursive algorithm' do when searching for repetitive DNA sequences within an animal genome?

- A) It deletes all data
- B) It calls itself until a base case is met**
- C) It permanently locks the CPU
- D) It encrypts the hard drive

8. Which specific command-line utility is standard on Unix-based systems for monitoring the real-time resource consumption (CPU and RAM) of environmental monitoring processes?

- A) Ping
- B) Top**
- C) Format
- D) Exit