Cosmic Computing Fundamentals

Basic Computer Skills · Practice Test · 18 Questions

1. Which onboard computer system was used by the Apollo Guidance Computer (AGC) to navigate to the Moon, utilizing rope memory?

A) IBM System/360
B) Block II AGC
C) Univac 1108
D) PDP-8

2. What is the primary programming language used for the flight software of the Mars Perseverance Rover?

A) Fortran
B) C++
C) Assembly
D) Python

3. In orbital mechanics, what computational term describes the point in a satellite's orbit closest to Earth?

A) Apogee
B) Periapsis
C) Zenith
D) Nadir

4. How many bits of memory did the Apollo Guidance Computer's volatile RAM (Erasable Memory) contain?

A) 2,048 words
B) 4,096 words
C) 8,192 words
D) 1,024 words

5. Which space telescope uses a complex onboard data compression algorithm to transmit deep-space imagery via the Deep Space Network?

A) Hubble
B) James Webb
C) Kepler
D) Spitzer

6. What data transmission protocol is required to overcome the significant signal latency involved in communicating with the Voyager probes?

A) TCP/IP
B) CCSDS
C) FTP
D) UDP

7. The 'Voyager Golden Record' serves as a form of analog storage; what is the physical medium used?

A) Gold-plated copper disc
B) Magnetic tape
C) Optical glass
D) Silicon wafer

8. What type of computer architecture is typically used in radiation-hardened spacecraft processors like the RAD750?

A) PowerPC
B) x86
C) ARM
D) RISC-V

9. Which planet has the longest orbital period, requiring significant long-term data logging for space probes studying it?

A) Saturn
B) Uranus
C) Neptune
D) Jupiter

10. What file format is most commonly used by NASA to archive raw FITS (Flexible Image Transport System) data from space observatories?

A) JPG
B) PNG
C) FITS
D) TIFF

11. To calculate the exact positions of planets in real-time, NASA's JPL HORIZONS system relies on which mathematical numerical integration?

A) Runge-Kutta
B) Monte Carlo
C) Fourier Transform
D) Boolean Algebra

12. What is the maximum data rate (in bits per second) currently supported by the Laser Communications Relay Demonstration (LCRD)?

A) 1.2 Gbps
B) 500 Mbps
C) 10 Mbps
D) 100 Mbps

13. Which specific operating system kernel is commonly used in modern cubesat flight software for its real-time task scheduling?

A) FreeRTOS
B) Windows 10
C) macOS
D) iOS

14. What unit is used to measure the computational throughput of space-grade processors in terms of instruction cycles?

A) MIPS
B) FLOPS
C) Hertz
D) Baud

15. Which computer peripheral was used on the International Space Station to provide a physical interface for crew-operated software?

A) ThinkPad Laptop
B) Tablet PC
C) Custom mechanical keypad
D) Commodore 64

16. The 'Great Red Spot' on Jupiter is a storm being tracked by computer models; what is its approximate longitudinal drift?

A) 10 degrees per year
B) 2 degrees per year
C) 50 degrees per year
D) 0.5 degrees per year

17. What computational error led to the loss of the Mars Climate Orbiter in 1999?

A) Floating point overflow
B) Metric/Imperial unit conversion
C) Buffer overflow
D) Logic gate failure

18. Which storage device is utilized on the ISS to mirror critical mission databases for redundancy?

A) Solid State Drives
B) Floppy disks
C) Punch cards
D) Magnetic drums