Scientific Foundations of Video Game History

Video Game History · Answer Key · 12 Questions

1. Which technical limitation primarily defined the 'flicker' effect seen in early Atari 2600 sprites?

A) RAM addressing constraints
B) NTSC interlace timing
C) Television refresh frequency
D) Color palette bit-depth

2. The 1962 game 'Spacewar!' was developed for which specific minicomputer architecture at MIT?

A) PDP-1
B) IBM 7090
C) DEC VAX-11
D) UNIVAC I

3. In the context of early 3D rendering, what mathematical operation is most critical for mapping 3D vertices to a 2D screen?

A) Linear regression
B) Matrix transformation
C) Bayesian inference
D) Fourier analysis

4. What hardware component did the Nintendo Entertainment System (NES) lack that necessitated the use of 'Memory Management Controllers' (MMCs) in cartridges?

A) Internal bank switching hardware
B) Floating point processor
C) Graphics coprocessor
D) Direct memory access

5. Before the widespread use of GPUs, which technique was most commonly used in early 3D games like 'Wolfenstein 3D' to simulate depth?

A) Ray tracing
B) Ray casting
C) Subsurface scattering
D) Photon mapping

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6. The Magnavox Odyssey, released in 1972, utilized which physical component to generate video signals instead of a microprocessor?

A) Discrete transistor-diode logic
B) Vacuum tubes
C) Programmable logic arrays
D) Magnetic core memory

7. What is the primary scientific reason 'anti-aliasing' is required in computer graphics?

A) To correct frame rate drops
B) To mitigate spatial aliasing caused by pixel grid sampling
C) To increase the color bit-depth
D) To optimize memory bandwidth

8. In 1980, the game 'Battlezone' utilized wireframe vector graphics rather than raster graphics to:

A) Simulate 3D perspective more efficiently
B) Reduce memory usage of textures
C) Increase the color depth
D) Enable online multiplayer

9. Which algorithm is fundamental to 'A*' pathfinding, frequently used in NPC movement?

A) Dijkstra's algorithm
B) QuickSort
C) Fast Fourier Transform
D) Binary Search

10. The 'Donkey Kong' arcade board (Nintendo TKG4) used which specific clock frequency for its Z80 CPU?

A) 3.072 MHz
B) 1.024 MHz
C) 4.000 MHz
D) 5.500 MHz

11. What scientific principle allows for the 'persistence of vision' that enables smooth animation in video games?

A) Beta movement
B) Chromatic aberration
C) Relativistic time dilation
D) Capillary action

12. Which early standard for game audio synthesis relied on frequency modulation (FM) rather than wave-table synthesis?

A) Yamaha YM3812

B) MOS Technology 6581

C) Texas Instruments SN76489

D) General MIDI