

SkillsUSA National Championships 3D Visualization and Animation 2018

Written Examination

Overview: There are 100 possible points in this examination, which will count for ten percent (10%) of the overall score for the 2018 NLSC in 3D Visualization and Animation.

Teamwork: You and your teammate may work on the exam together. This is competitive, so take care not to expose your answers to other teams. Also note, it is a “closed book” examination.

Instructions: Please read the questions carefully. For true/false and multiple-choice questions, only the answer that is *most specific and most correct* will be credited.

A maximum of forty-five minutes will be allowed to complete and turn in your answers.

Scoring: Scoring shall be as follows:

- The twenty-five true/false and multiple-choice questions are worth four points each.

Good Luck!

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Technical Committee Chair
3D Animation and Visualization

Team Number: _____

1. The reason for storyboarding and pre-visualization is _____.
 - a. so story, environment, animation, lighting, and camera placement can be planned and communicated before actual production begins
 - b. to determine how much to charge the client
 - c. to create artistic drawings
 - d. to create content that will be used later in the production phase of the project

2. 32 bit color information includes an alpha channel. (T/F)

TRUE / FALSE

3. Tessellation does what to a computer model?
 - a. Approximates NURBS curves at polygons for rendering
 - b. Increases the polygon count
 - c. Destroys it
 - d. Matches it with similar models in a scene

4. Which of the following are transforms?
(Check all that apply)
 - a. Move
 - b. Rotate
 - c. Scale
 - d. Pivot

5. In this projection method, surfaces are mapped with converging lines, which meet at one or two points on the horizon:
 - a. Orthographic projection
 - b. Axonometric projection
 - c. Perspective projection
 - d. All the above

6. Which of the following are components of a 3 point lighting set up
 - e. Key Light
 - f. Fill Light
 - g. Rim Light/Back Light
 - h. All the above

7. Depth mapped shadows render faster than ray traced shadows. (T/F)

TRUE / FALSE

8. A normal is a vector that defines which way a face or vertex is pointing. (T/F)

TRUE / FALSE

9. Multiple UV maps can be placed on the same 3D model. (T/F)

TRUE / FALSE

10. When smooth colors gradients distort into blocks, it's called..?

- a) Blotching
- b) Decomposition
- c) Pixilation
- d) Aliasing

11. Clipping planes allow for excluding certain geometry from rendering. (T/F)

TRUE / FALSE

12. Associating the bones and muscles in a character rig to the visible mesh is called:

- a) Tracking
- b) Adhering
- c) Skinning
- d) Sticking

13. Polygonal meshes are defined by points in 3D space. What is the line segment where two polygons meet called?

- a) Boundaries
- b) Vectors
- c) Edges
- d) Chines

14. What is the angle between axes in a common UVW coordinate system?

- a) 30 degrees
- b) 60 degrees
- c) 90 degrees
- d) 120 degrees

15. NTSC is the U.S. Video Standard. (T/F)

TRUE / FALSE

16. HDR stands for
- a) High Density Rendering
 - b) High Dynamic Range
 - c) High Definition Rendering
 - d) High Dynamic Response
17. Real-time rendering can be used to make films, videos and even live action TV. (T/F)
- TRUE / FALSE
18. Global Illumination takes into account ...
- a. Direct light
 - b. Indirect light
 - c. Diffuse Inter-reflection
 - d. All the above
19. Physics Based Rendering (PBR) is too slow for real-time playback in video games.
- TRUE / FALSE
20. Soft body dynamics are an example of physics-based computer graphics.
- TRUE / FALSE
21. Omni lights will directly illuminate all spaces in a scene, no matter where you place them relative to the models in the scene.
- TRUE / FALSE
22. Unlike fluid dynamics, with soft bodies, objects retain their shape to some degree.
- TRUE / FALSE
23. How do texture artists grunge materials?
- a) Paint them dark and moody
 - b) Create natural irregularities
 - c) Randomize their placements
 - d) Download them for free

24. An object is twice the distance from a light source as compared to another object.
With a constant light intensity, the further object will be...

- A. Twice as bright
- B. Half as bright
- C. Four times less bright
- D. Just as bright

25. Occlusion culling keeps off-camera objects from rendering and improves render speed.

TRUE / FALSE