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!

Michael Edmonds
Technical Committee Chair
3D Animation and Visualization

Team Number: ____________________________
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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