1. In Computer Graphics, the appearance of objects within a scene cannot be influenced by light sources.
   a) True
   b) False

2. Choose the correct statement:
   a) Pinhole cameras have long exposure times.
   b) Additive color scheme is used in printing systems.
   c) OpenGL's synthetic camera model places the image plane in front of the camera, resulting in an inverted image of the viewed object on the image plane.
   d) Both (a) and (b) are correct.

3. Choose the incorrect statement:
   a) OpenGL provides functions to manage window creation and resizing.
   b) OpenGL is a set of specifications that define a standard interface for communicating with the GPU.
   c) Graphics card manufacturers usually implement the OpenGL libraries for their hardware, based on the OpenGL specifications.
   d) OpenGL is compatible with modern graphics hardware.

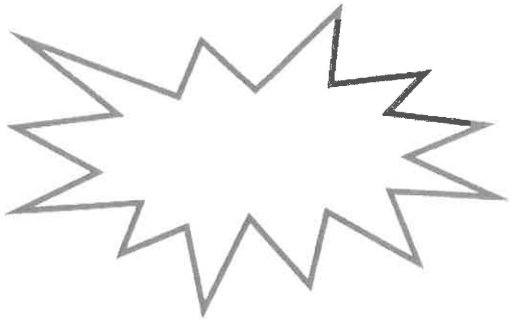
4. Select the valid attribute(s) for polygons (primitive) in OpenGL.
   a) width
   b) color
   c) size
   d) All of the above
   e) both (b) and (c)

5. Which statement is correct about GLUT:
   a) GLUT provides advanced window management features, such as slidebars.
   b) GLUT is designed only for creating 2D graphics.
   c) GLUT only works on Windows operating systems.
   d) GLUT requires extensive modifications to work on different operating systems.
   e) None of the above

6. Color and luminance images can be represented in HSL (Hue, Saturation and Lightness) format.
   a) True
   b) False

7. Which of the following is not an OpenGL primitive?
   a) GL_POINTS
   b) GL_TRIANGLE_LOOP
   c) GL_TRIANGLE_STRIP
   d) GL_LINES
   e) GL_LINE_LOOP

8. Which option is correct for the Polygon given below?



a) It is convex and simple.
b) It is flat and convex.
c) It is non-convex and simple.
d) None of the above

9. Color is an important vertex attribute and can only be computed in Fragment shaders.
a) True
b) False

10. Which statement is true about the OpenGL pipeline?
a) The rasterizer renders the objects that are outside the viewing volume.
b) Vertex processor can only manipulate vertex locations but not vertex colors.
c) Primitive assembler converts 2D vertex data to 3D primitives.
d) Fragment processor projects the 3D objects to frame buffer.
e) None of the above

11. Why do polygons need to be tessellated into triangles in OpenGL?
a) OpenGL only supports rendering triangles.
b) Tessellation produces long and thin triangles.
c) Triangles consume less memory during rendering.
d) Both (a) and (c) are correct.

12. Given, **color** = vec4(1, 2, 3, 4), which of the following option is correct?
a) color.xy is a vec2 made from the first and third components of **color**.
b) color.xyza is legal because the component names can come from different name-sets.
c) color.gbr is a vec3 made from the second, third and fourth component of **color** respectively.
d) None of the above

13. Input Device A returns a string of characters to the Application program, whereas B returns an identifier of an icon selected from the display. In terms of Logical input devices, A and B can be characterised as:
a) Keyboard and Mouse
b) String and Stroke
c) Type and Select
d) String and Pick

14. Which of the following statements about callback functions is true?
    a) Callback functions initialise the OpenGL Context.
    b) A callback function is a function that is called by OpenGL when a specific event occurs.
    c) Callback functions are only used for error handling in OpenGL.
    d) If there is no callback function registered for an event in an OpenGL program, the event will cause an error in the OpenGL context.
    e) Both (b) and (d) are correct

15. Every window created by GLUT has its own OpenGL context:
    a) True
    b) False

16. glBufferSubData() can be used to update a portion of the data in a buffer object without changing its size?
    a) True
    b) False

17. What is the purpose of using buffer objects in OpenGL?
    a) To store vertex data for rendering.
    b) To store shader programs.
    c) To store display lists for rendering.
    d) All the above
    e) Both (a) and (b) are correct

18. Choose the incorrect statement:
    a) A VAO is used to store multiple VBOs for rendering.
    b) We can set multiple viewports in the same rendering window.
    c) Perspective Projection changes the object's size based on their distance from the camera.
    d) In Orthographic Projection, the vertices that are outside the frustum box are automatically scaled to fit within the box.

19. Choose a correct statement:
    a) GLSL is similar to C and uses pointers.
    b) GLSL function parameters are passed by value, rather than by value-return.
    c) GLSL codes such as shaders are stand-alone applications, which run on GPU.
    d) GLSL does not provide any trigonometric or arithmetic functions.
    e) None of the above statements are correct

20. For the given vertex shader code, which of the following statements is true?

```
const vec4 intensity = vec4(1.0, 2.0, 3.0, 1.0);
in vec4 vPosition;
uniform mat4 projection;
out vec4 color;

void main()
{
        gl_Position = vPosition;
        color = projection * intensity;
}
```

a) Variable "**intensity**" can be shared with the fragment shader.
b) **vPosition** must be initialised in the application program and can be shared between the shaders.
c) Variable **color** will have a qualifier **"out"** in the fragment shader.
d) Variable **projection** can be used in vertex shader but not in fragment shader.
e) **projection** is a global variable.

21. A vertex shader processes multiple vertices at the same time.
a) True
b) False

22. In which coordinate system is the camera positioned at the origin looking down the negative z-axis?
a) Object coordinates
b) World coordinates
c) Eye coordinates
d) Clip coordinates

23. Which of the following Transformations can change the size and shape of the objects?
a) Rigid Transformation
b) Affine Transformation
c) Nonlinear transformation
d) Scalar Transformation

24. What is the result of adding two points in homogenous coordinates?
a) A point
b) A vector
c) Another matrix
d) None of the above

25. The order in which rotation (**R**), translation (**T**), and scaling (**S**) matrices are combined into a single matrix **M** does not affect the resulting transformation. For example, **M=TRS** and **M=SRT** both yield the same transformation, allowing for flexibility in how transformations are applied.
    a) True
    b) False

26. Which of the following statement is correct about instancing?
    a) Instancing is designed for efficiently rendering multiple different objects.
    b) glDrawArrays() is commonly used for instancing.
    c) Instances of an object can have different geometry (number of vertices), positions and orientations.
    d) Instancing is designed for efficiently rendering multiple copies of the same object.

27. Select a correct statement:
    a) The trigger of a device can be obtained in three distinct modes, i.e., stable mode and event mode and efficient mode.
    b) In stable mode, the device measure is placed in an event queue.
    c) Each input mode is defined by the relationship between the measure process and the trigger.
    d) Request mode is more suitable for applications such as Flight Simulations, because the user guides the flow of the program.

28. What does glutPostRedisplay() do in a GLUT program?
    a) Sets a flag and posts a new window.
    b) It sets the event loop to infinite.
    c) Sets a flag for the current window to be redisplayed.
    d) It executes the display callback function.

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