2D and 3D Graphic Design Viva Questions

1. What is Pygame?

- Pygame is a Python library used for creating 2D games and multimedia applications.

2. How do you initialize Pygame in a program?

- By calling pygame.init().

3. What is the purpose of the pygame.init() function?

- It initializes all the Pygame modules required for a program.

4. Name the function used to quit Pygame.

- pygame.quit()

5. What is the use of the pygame.display.set_mode() function?

- It creates a window or screen for the game.

6. How can you change the name of a Pygame window?

- By using pygame.display.set_caption('Window Name').

7. What does pygame.display.set_caption() do?

- It sets the title of the Pygame window.

8. What is the function used to set the background color of a Pygame screen?

- By filling the screen surface with a color, e.g., screen.fill((R, G, B)).

9. What is a Pygame Surface?

- A Surface is an object in Pygame that represents images or drawings.

10. How do you create a resizable Pygame window?

- By passing pygame.RESIZABLE as a flag in pygame.display.set_mode().

11. What is the difference between FULLSCREEN and RESIZABLE display modes in Pygame?

- FULLSCREEN makes the window occupy the entire screen, while RESIZABLE allows users to resize the window.

12. What is the role of pygame.display.flip()?

- It updates the entire display.

13. What is the use of pygame.display.update()?

- It updates portions of the display, but by default, it updates the entire display.

14. How is a display mode specified in Pygame?

- Using pygame.display.set_mode((width, height), flags).

15. What is an Event Object in Pygame?

- An Event Object represents user actions like key presses, mouse movements, or quitting the game.

16. Which function is used to handle events in Pygame?

- pygame.event.get()

17. How do you detect a key press event in Pygame?

- By checking for pygame.KEYDOWN in the event loop.

18. What is the purpose of pygame.KEYDOWN and pygame.KEYUP events?

- KEYDOWN detects when a key is pressed, and KEYUP detects when it is released.

19. How do you capture mouse events in Pygame?

- By checking for pygame.MOUSEBUTTONDOWN, MOUSEBUTTONUP, or MOUSEMOTION.

20. What does the pygame.MOUSEBUTTONDOWN event indicate?

- It indicates that a mouse button was pressed.

21. How do you draw a rectangle in Pygame?

- Using pygame.draw.rect(surface, color, rect).

22. Name the function used to draw a circle in Pygame.

- pygame.draw.circle()

23. What parameters are required to draw a line in Pygame?

- surface, color, start_pos, end_pos, and optionally width.

24. How do you change the color of a shape in Pygame?

- By specifying the color parameter in drawing functions.

25. How do you load an image in Pygame?

- Using pygame.image.load('image_path').

26. Which function is used to display an image on a Surface?

- blit(), e.g., screen.blit(image, position).

27. How do you display text in a Pygame window?

- By creating a font object, rendering the text, and blitting it to the screen.

28. What is the role of pygame.font.Font()?

- It is used to define the font type and size for displaying text.

29. How do you use text as a button in Pygame?

- By rendering the text, detecting mouse events, and checking if the mouse is over the text area.

30. How can you move an image using numeric keypads in Pygame?

- By capturing KEYDOWN events for numeric keys and adjusting the image's position.

31. Which event is used to detect mouse movement in Pygame?

- pygame.MOUSEMOTION

32. How can you move a rectangular object in Pygame?

- By updating the rectangle's position in the game loop.

33. What is the purpose of pygame.transform.rotate()?

- It rotates an image by a specified angle.

34. How do you scale an image in Pygame?

- Using pygame.transform.scale(image, (new_width, new_height)).

35. What are the key components of a game loop in Pygame?

- Event handling, game logic updates, and rendering.

36. How do you control the frame rate in a Pygame game loop?

- Using pygame.time.Clock() and clock.tick(fps).

37. What is PyOpenGL?

- PyOpenGL is a Python binding to the OpenGL graphics library.

38. Name two functions provided by PyOpenGL for rendering.

- glBegin() and glEnd().

39. What is the purpose of the Pygame time module?

- To control time-related tasks, like managing delays and frame rates.

40. How do you load a custom cursor in Pygame?

- Using pygame.mouse.set_cursor().

41. How do you create a timer event in Pygame?

- By using pygame.time.set_timer(event_id, milliseconds).

42. What is the purpose of pygame.Surface.convert()?

- It optimizes the Surface for faster blitting to the display.

43. How do you detect if a specific key is currently being held down in Pygame?

- Using pygame.key.get_pressed().

44. What function is used to delay execution in Pygame?

- pygame.time.delay(milliseconds).

45. How can you rotate a Surface around its center?

- By using pygame.transform.rotate() and adjusting the image's position after rotation.

46. What is the difference between blit() and fill() in Pygame?

- blit() places an image onto a Surface, while fill() changes the background color of a Surface.

47. How can you get the current position of the mouse in Pygame?

- Using pygame.mouse.get_pos().

48. What is the purpose of the pygame.Rect class?

- It defines rectangular areas for collision detection and positioning.

49. How do you check if a pygame.Rect object collides with another?

- Using rect1.colliderect(rect2).

50. What happens if you don't call pygame.quit() after exiting a Pygame program?

- The program may not release system resources properly.