1.

a) Function of Different Hardware Components:

- Arduino Board: I used the Arduino as the central processing unit of the system. It controls operations, runs the software, and manages interactions between the hardware components and the internet.
- BH1750 Light Sensor: This sensor measures the ambient light intensity in lux, providing me with the data necessary to make decisions about when to trigger specific events based on predefined light thresholds.
- WiFi Module: This component is crucial as it enables the Arduino to connect to the internet. It allows the system to send HTTP requests to IFTTT, triggering actions based on the sensor data.

b) IFTTT Trigger Mechanism:

I engage the IFTTT trigger mechanism through HTTP requests sent from the Arduino when certain light conditions are met, such as crossing the 50 lux threshold. These requests are sent to IFTTT's webhook service, which is set up to listen for and react to these triggers from my system.

c) Notification Mechanism:

Once IFTTT receives a trigger, such as sunlight_start or sunlight_stop, it processes this input according to the applets I have defined. These applets can perform various actions, including sending notifications. These notifications can be emails or push notifications to a mobile device, allowing for real-time updates based on the ambient light conditions detected by the sensor.

2.

Functional Testing:

- To start, I would test each hardware component to ensure they function correctly. I'd make sure the Arduino connects to the WiFi and that the light sensor accurately reads and adjusts to different ambient light levels. This step includes exposing the sensor to various light conditions to confirm it registers these changes accurately.
- Next, I would verify the integration with IFTTT by manually adjusting the light levels to trigger the defined thresholds and observing whether the correct events (sunlight_start and sunlight_stop) are triggered appropriately. I would check if I receive the expected notifications on my devices to confirm that both the trigger mechanism and notification processes are functioning correctly.

System Integration Testing:

I'd simulate different lighting conditions to test how sensitive and responsive the system is, especially around the 50 lux threshold. This testing helps me ensure the system reacts accurately under varying environmental conditions. I'd also monitor the system over a longer period to assess its reliability and stability, particularly focusing on its ability to maintain a consistent WiFi connection and manage error

handling without failures. This comprehensive testing is vital to ensure that the system communicates effectively with IFTTT under all operational scenarios.