

★★★ <第22回知的財産翻訳検定試験【第12回和文英訳】> ★★★

≪ 1級課題-電気・電子工学-≫

【問1】

What is claimed is:

1. A light sensor comprising:

a light emitting portion emitting pulsed light externally in response to a pulse signal;

a light receiving portion generating a photocurrent corresponding to the intensity of external incident light;

a current-voltage conversion circuit converting the photocurrent to a voltage signal;

a high-pass filter extracting an alternating-current component having a predetermined frequency or more from the voltage signal and outputting it as a filter output showing a signal waveform centered around a reference voltage;

a polarity inversion amplifier switching between a normal amplification state and an inversion amplification state in response to the pulse signal, and in the normal amplification state, outputting the filter output without inversion, and in the inversion amplification state, inverting the filter output about the reference voltage and outputting it; and

an integrator integrating the output from the polarity inversion amplifier with respect to the reference voltage.

2. The light sensor according to claim 1,

further comprising a delay circuit delaying the pulse signal and outputting it to the polarity inversion amplifier.

【問2】

Game systems that generate an image seen from a given observation point in an object space serving as a virtual three-dimensional space are known. Such game systems are popular because they allow a user to experience so-called

virtual reality. For example, in a roleplaying game, a player operates a character (an object) to move on a map in the object space. The player enjoys the game by allowing the character to fight against enemy characters, to talk to other characters, or to visit various towns.

In such game systems, an object that represents a character is usually configured by a plurality of polygons. The object configured by polygons is arranged in the object space. By performing so-called geometry processing, an image seen from an imaginary camera is generated. Due to this, game images with no contradiction can be generated even when the object is seen from various directions by the imaginary camera.

Game images generated in this way, however, have a problem that they cannot sufficiently appeal to the emotion of a player, although they are correct images in a mathematical sense. For example, when a character that appears in an animation or a cartoon is represented by an object, shading applied to the object using Gouraud shading or the like may provide a real image. On the other hand, this generates an image with an atmosphere that is different from one familiar to the viewers of animations or cartoons.

【問3】

As shown in FIG. 4, if the human-detection sensor 25, which is installed on the outdoor side of the entrance door together with the illumination apparatus 20, senses a human body 30, the illumination lamp of the illumination apparatus 20 turns on first. If the illumination lamp of the illumination apparatus 20 turns on, the current flowing through the illumination apparatus 20 is detected by the current detection circuit 14 (FIG. 3).

The control unit 200 uses a current detection signal output from this current detection circuit 14 as a trigger to cause the illumination lamp of the illumination apparatus 10 to turn on after a certain turn-on time interval elapses after the illumination light of the illumination apparatus 20 turns

on, based on setup condition information set in advance, for example. Due to this, when the human body 30 is a prowler, for example, use of this illumination system 100 may cause the prowler to think that a resident is at home, allowing the system to serve for security or the like.

The controller 15 controls the LED circuit 17, for example, in response to the current detection signal from the current detection circuit 14 to turn on the LED, thereby informing the lighting condition of the illumination lamp of the illumination apparatus 20. In addition, it sets the switch member 19 to an ON state, after a preset turn-on time interval t1 elapses after the turn-on of the illumination lamp of the illumination apparatus 20. When the switch member 19 is set to the ON state, a current flows in the electrical wiring of the illumination apparatus 10, causing the illumination lamp of the illumination apparatus 10 to be in a lit state.