【第１０回知的財産翻訳検定試験＜第６回和文英訳＞　１級／電気・電子　【標準解答】

[問 1]

What is claimed is:

1. An optical information reading apparatus which includes a light source projecting light,

a scanning unit scanning, in a predetermined cycle, the light projected from the light source,

a light receiver receiving reflected light from an object having optical information written thereon through the light scanning by the scanning unit and generating an electrical signal in response to the amount of the reflected light received, and

a reading unit reading the optical information based on the electrical signal from the light receiver,

the optical information reading apparatus comprising:

a synchronous adding unit electrically connected in series between the light receiver and the reading unit where the electrical signal passes, and including

a delay line causing the electrical signal from the light receiver to be delayed by a delay amount corresponding to the predetermined cycle in which the scanning unit optically scans in a predetermined direction, and

an adding unit adding the electrical signal delayed by the delay line to the electrical signal output from the light receiver,

wherein the synchronous adding unit outputs to the reading unit an electrical signal in accordance with an addition result obtained by the adding unit.

2. The optical information reading apparatus according to Claim 1, wherein the scanning unit includes a torsion resonator, and the delay line causes a delay of one cycle of a torsion vibration of the torsion resonator.

3. The optical information reading apparatus according to Claim 1, wherein the synchronous adding unit further includes an

attenuator electrically connected in series between the adding unit and the reading unit, causing an output from the adding unit to be attenuated by one half, and outputting the thus-attenuated output to the reading unit.

[問２]

The several attempts described above are examples of efforts made by a number of researchers. Accordingly, the disadvantages of non-monocrystalline silicon solar battery, such as photoelectric conversion efficiency, deterioration, etc., are gradually being improved. However, problems still remain. That is, when a solar battery is configured by forming a semiconductor layer on a conductive substrate with a zinc oxide layer therebetween, neither contact between the conductive substrate and the zinc oxide layer, nor contact between the zinc oxide and the semiconductor layer may be made sufficiently strong.

Therefore, minute separation may be caused in places at such contacts due to the influence of temperature or vibration given during the step of forming the semiconductor layer and subsequent steps. This results in a reduction in the photoelectrical conversion efficiency of the solar battery, which is regarded as a problem in terms of its initial performance.

Since the electrical resistivity of the zinc oxide cannot be made so small as to be entirely neglected, the series resistance of the solar battery may be increased. This also results in a reduction in the photoelectrical conversion efficiency of the solar battery, which is regarded as a problem in terms of its initial performance.

Furthermore, the above-described problems may appear in cases not only where a semiconductor layer is formed on a conductive substrate, but also where a solar battery is made by forming a semiconductor layer on a transparent insulating substrate with a transparent electrode therebetween. That is, since the contact between the transparent electrode and the semiconductor layer may not be made sufficiently strong, minute separation may be caused in places between the transparent electrode and the semiconductor layer during the manufacturing process. This also results in a reduction

in the photoelectrical conversion efficiency of the solar battery, which is regarded as a problem in terms of its initial performance.

[問３]

When an acoustic signal 100, such as a collision sound that occurs at the time of a traffic accident, is supplied to an accident sound detection circuit 20, unnecessary signal components of the acoustic signal 100 are removed by a waveform shaping circuit 21, which generates an output signal 101. The output signal 101 is converted from an analog signal to a digital signal 102 by an analog-to-digital (A/D) converter 22. The output digital signal 102 is then supplied to a differential signal processing circuit 23, which, in turn, outputs a differential signal 103 of the digital output signal 102.

The differential signal 103 represents the variation of the digital output signal 102: the more rapidly the digital output signal 102 changes, the larger the level of the differential signal 103. Thus, even if the digital output signal 102 is large, the level of the differential signal 103 stays small as long as the digital output signal 102 shows a small level of changes. Therefore, when an emergency such as a traffic accident happens, the level of the output signal 102 changes drastically.

Then, a reference differential signal value generating circuit 25 is provided to generate a reference differential signal value, which is compared with the differential signal 103 by a comparison circuit 24. When the differential signal 103 is larger than the reference differential signal, the traffic accident detection circuit 20 judges that it has detected a traffic accident, and a trigger signal 110 is output from the traffic accident detection circuit 20.