受験番号：24IPE002

問１）

1. An alternating current arc welding device comprising:

a welding controller;

a storage unit;

an alternating current frequency setting unit for setting an alternating current frequency;

a reverse polarity period setting unit for setting a reverse polarity period;

a calculation unit for calculating a positive polarity period and a reverse polarity period to output the calculated positive polarity period and the calculated reverse polarity period to the welding controller; and

a selection unit for selecting an output from among a plurality of outputs from the storage unit to output the selected output to the calculation unit,

wherein the welding controller is configured to conduct, before a polarity inversion occurs at which the positive polarity period ends, a positive polarity base current that is lower than a peak current during the positive polarity period, and conducts, before a polarity inversion occurs at which the reverse polarity period ends, a reverse polarity base current that is lower than a peak current during the reverse polarity period,

the storage unit is configured to

(a) store a plurality of combinations of, in the positive polarity period, a positive polarity base ratio that is a ratio of a period during which the positive polarity base current is conducted and, in the reverse polarity period, a reverse polarity base ratio that is a ratio of a period during which the reverse polarity base current is conducted, or,

(b) store a plurality of combinations of, in the positive polarity period, a positive polarity peak period that is a period during which the peak current is conducted, and a positive polarity base period that is a period during which the positive polarity base current is conducted, and, in the reverse polarity period, a reverse polarity peak period that is a period during which a peak current is conducted, and a reverse polarity base period that is a period during which the reverse polarity base current is conducted, and

the selection unit is configured to select, based on an inductance on a welding load side, a combination from among the plurality of combinations stored in the storage unit.

問２）

（A）

A conventional monitoring system is capable of, for example, when a sensor is installed on a gate of a parking lot, detecting a vehicle at the gate, causing a mobile robot to move to the gate on which the sensor is installed, processing an image captured and obtained during the mobile robot is moving to the gate, determining a vehicle color of the vehicle, and sending information on the vehicle color to a center. At this time, it is advantageous that monitoring system captures the image including information useful for identifying the vehicle.

However, it is difficult to estimate beforehand how a vehicle will be parked because a character of a thief and a situation of a parking lot might differ. Therefore, the mobile robot sometimes faces difficulty in capturing an image of a vehicle with which a vehicle color of the vehicle can be identified.

For example, even when a color visible light camera is used to capture an image of a vehicle to determine a vehicle color, there would be a difference in color due to sunlight between an image captured in a daytime and an image captured at dusk, and, even if a vehicle color of a vehicle is white, the vehicle color would likely be determined as orange with an image captured at dusk. Further, even in a nighttime, depending on an illumination apparatus installed in a parking lot, or depending on light components from an illuminated advertising apparatus installed on an outer wall of a nearby commercial building, a color would have an impression that differs from an impression when a human sees an identical object.

（A）’

問３）

（B）

Upon a cancellation of overcooling is detected, a temperature Th_2 of a food product immediately after the cancellation of overcooling corresponds to a freezing point of the food product. Based on this temperature, a target temperature Tc_set in a vessel under a chilled room is set to a temperature at which an ice crystal can be melted to an extent that there will be no cell damage, for example, Th_2+2 [°C] (S9). An inside set temperature at which an ice crystal can be melted to an extent that there will be no cell damage is referred to as an ice crystal melting set temperature.

Next, at a time when an ice crystal generated in the food product has been melted, and a temperature of the food product starts to rise, the target temperature Tc_set in

the vessel under the chilled room is kept to Th_2+2 [°C] until, for example, a temperature Th of the food product rises to a temperature Th_2+1 [°C] that is lower than the ice crystal melting set temperature and that is used for determining that an ice crystal is melted (S10). To form this state, for example, a dumper is kept fully closed to allow a temperature in the vessel under the chilled room to rise. Upon the temperature Th of the food product after the cancellation of overcooling reaches Th_2+1 [°C] or higher, a control from S1 to S8 is kept continued to confirm whether an introduction of overcooling and a cancellation of overcooling are present.

(B')