受験番号：24IPE003

問１）

What is claimed is:

1. An alternating current arc welding apparatus, comprising:

a welding controlling unit;

a memory unit;

an alternating current frequency setting unit that sets an alternating current frequency;

a negative polarity period setting unit that sets a negative-polarity period;

a calculation unit that calculates a positive-polarity period and the negative-polarity period and outputs the positive-polarity period and the negative-polarity period to the welding controlling unit; and

a selection unit that selects one output from outputs of the memory unit and outputs the one output to the calculation unit,

wherein the welding controlling unit causes a positive-polarity base current lower than a peak current at the positive-polarity period to flow before polarity reversal during which the positive-polarity period is finished and causes a negative-polarity base current lower than a peak current at the negative-polarity period to flow before polarity reversal during which the negative-polarity period is finished,

wherein the memory unit stores (a) a plurality of sets of a positive-polarity base ratio that is a ratio of a period during which the positive-polarity base current flows at the positive-polarity period and a negative-polarity base ratio that is a ratio of a period during which the negative-polarity base current flows at the negative-polarity period, or stores (b) a plurality of sets of a positive-polarity peak period that is a period during which the peak current flows at the positive-polarity period, a positive-polarity base period that is a period during which the positive-polarity base current flows, a negative-polarity peak period that is a period during which the peak current flows at the negative-polarity period, and a negative-polarity base period that is a period during which the negative-polarity base current flows, and

wherein the selection unit selects one set from the plurality of the sets stored in the memory unit on the basis of an inductance on a welding load side.

問２）

For example, in the case where a sensor is installed on a gate of a parking lot, it is possible for a conventional monitoring system to detect an automobile at the gate, to

process an image captured by a mobile robot until the mobile robot arrives at the gate on which the sensor is installed, to identify the color of the automobile, and to send this information to a center. At this time, the monitoring system preferably captures the image such that information useful to identify the automobile can be obtained.

However, how to park an automobile depends on, for example, the character of a thief and the conditions of the parking lot and cannot be expected. Accordingly, in some cases, it is difficult for the mobile robot to capture the image of the automobile such that the color of the automobile can be identified.

For example, the image of an automobile is captured by using a visible-light color camera to identify the color of the automobile. However, the color is affected by the sunlight and varies between the case where the image is captured during daytime and the case where the image is captured during evening, and in the case where the image is captured during night, there is a possibility that the color is incorrectly identified to be orange even when the actual color of the automobile is white. In the case of night, there is a possibility that the color is identified to be different from the color perceived by visual observation depending on lighting equipment installed in the parking lot and light components from an illuminated advertisement placed on an outer wall of a neighboring commercial building. There are such problems.

問３）

When the release of the excessive cooling is detected, the temperature Th_2 of the food right after the release of the excessive cooling corresponds to the freezing point of the food. The target temperature Tc_set in the lower container in the chilled room is set on the basis of this temperature to a temperature at which the ice crystals can be melted without a cell damage, for example, Th_2 + 2 [°C] (S9). A predetermined temperature inside the refrigerator at which the ice crystals can be melted without a cell damage is referred to as an ice-crystal melting temperature inside the refrigerator.

Subsequently, when the melting of the ice crystals in the food is finished and the temperature of the food starts to increase, for example, until the temperature Th of the food increases to a temperature of Th_2 + 1 [°C] that is lower than the ice-crystal melting temperature inside the refrigerator and at which the melting of the ice crystals is determined, the target temperature Tc_set of the lower container in the chilled room is maintained at Th_2 + 2 [°C] (S10). To make this state, for example, a state where the dumper is fully closed is maintained to increase the temperature in the lower container in the chilled room. After the temperature Th of the food after the release of the excessive cooling becomes Th_2 + 1 [°C] or more, the control S1 to S8 is continued

again to check the presence or absence of the introduction of the excessive cooling and the release of the excessive cooling.