**HEAT.**

1. The lengths of the mercury column of a thermometer at ice point and steam point are 2.0cm and 22.0cm respectively. The reading of the thermometer when the mercury column is 9.0cm long is

A. 45.00C B. 40.90C C. 35.00C D. 31.80C

1. The cork in the vacuum flask minimizes …

A. Radiation B. Convection C. Conduction D. Conduction and convection

1. Due to the anomalous expansion of water, it has the highest density at 40C. This fact is useful in

A. Purification of water during very cold weather

B. Filtration of minerals useful to aquatic organisms

C. Melting of snow during very cold weather

D. Preservation of aquatic organisms during very cold weather

1. A container is used to cool liquids poured inside it. The best color for the outside of the can is

A. Grey B. White C. Black D. Silvery

1. A bimetallic strip operates on the principle that metals

A. Are heat controllers B. Are good heat conductors

C. Have different rates of expansion D. Have the same rates of expansion

1. Which of the following fluids is the best conductor of heat?

A. Air B. Alcohol C. Water D. Mercury

1. A dull black surface is a good

(i. Absorber of heat energy (ii. Emitter of heat energy (iii. Reflector of heat energy

A. (i. only B. (i. and (ii. only

C. (ii. and (iii. only D. (i., (ii. and (iii.

1. Radiation is the transfer of heat

A. In a liquid which involves the movement of the molecules

B. From one place to another by means of electromagnetic waves

C. Through a material medium without the bulk movement of the medium.

D. Through a fluid which involves the bulk movement of the fluid itself.

1. When some ice blocks are added to a glass of warm water, the glass is cooled by the process of

A. Conduction only B. Convection only

1. The diagram in figure 1 below shows a graph of volume against temperature for ice at -10 0 C, heated to 16 0 C.

**- 10**

**0**

**4**

**16**

Temperature (0 C.

Volume

a

b

c

d

Which of the following statements is true?

A. water has maximum volume at point c. B. ice changes into water at point d.

C. the density of water is lowest at point a. D. water contracts between b and c.

1. Find the pressure exerted by a thrust of 25N on an area of 1.25m2.

A. 31.25 Pa B. 26.25Pa C. 23.75 Pa D. 20 Pa

1. The liquid commonly used in a simple barometer is

A. mercury B. alcohol C. spirit D. water

1. The lengths of the mercury column of a thermometer at ice point and steam

point are 20 mm and 220 mm respectively. The reading of the thermometer when the mercury column is 90 mm long is

A. 45.00C B. 40.90C

C. 35.00C D. 31.80C

**Section B**

1. Define **temperature** and state its *S.I unit*.

(b. Distinguish between **conduction** and **convection**.

(c. State two advantage of mercury over alcohol when used as a

thermometric liquid.

(d. Convert 27 0C into **kelvin**.

(e (i) Define radiation as applied to heat.

(ii) Two flasks with a manometer are arranged as shown in Figure 2. Flask A is painted black while flask B is polished white. A flame is then placed midway between them.

Flask B

**Figure 2**

Flame

Flask A

1. State what is observed.
2. Explain your observation.

1. The diagram in figure 3 shows a flask filled with a liquid and fitted with a narrow tube.

State what is observed when the flask is heated.

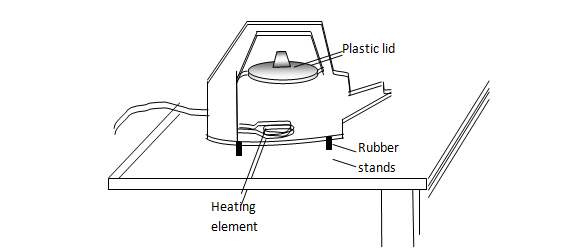
Narrow tube

**Figure 3**

Flask

1. What property of the liquid is illustrated by the observation in (a) above?
2. State one application of liquids demonstrated above.
3. Give two ways in which the arrangement above can be modified so that it is more sensitive.
4. Give two physical properties used in the measurement of temperature.

1. The diagram below shows a shiny silver surfaced electric kettle being used to heat water from a mains supply.



Briefly explain how each of the following features of the kettle enhances its efficiency.

1. The heating element is situated at the bottom of the kettle.

(ii) The kettle is made of shiny silvered surface.

The lid is made of plastic material.

(b) Define the following terms

1. Heat energy
2. Temperature
3. Lower fixed point

1. Upper fixed point
2. Fundamental difference

1. Give any four reasons why water may not be a good thermometric liquid.
2. (i) Explain why gaps are left between railway lines.
3. Give any four types of thermometers.

1. The fundamental interval of an un-graduated thermometer containing mercury in glass is 192 mm. Find the temperature in degrees Celsius when the mercury thread is 67.2 mm long.

(a) Draw a well-labelled diagram of a vacuum flask.

(b) How does the flask minimise loss of heat from a hot liquid inside it by

1. Conduction?
2. Convection?
3. Radiation?

End