HEAT TRANSFER

1. C
2. A
3. C
4. A
5. black or black cools quickly
   better emitter (of heat) A1 OR better radiator/black
   radiates white doesn’t
   radiation/infra-red A1 of heat/infra-red
   Accept in terms of white teapot (NOT better emitter and
   absorber/conductor)

   [Total 3]

6. (a) (i) chemical )
   internal OR heat OR thermal ) any 2
   but also accept )
   nuclear OR kinetic OR potential for one of the
   marks
   2F
   B1,
   B1
   (ii) radiation F B1
   (b) (i) K.E. OR kinetic OR motion C B1
   (ii) conduction F B1
   (iii) 1 gravitational OR P.E. OR potential OR
   position
   F B1
   2 chemical/fuel/food C B1

7. (a) cool air more dense OR cool air falls
   OR warm air rises so it can be cooled B1
   (b) energy/heat removed from store must be released outside store B1
   heat developed by refrigeration unit B1
   (c) reduce/prevent heat coming in from outside NOT cold getting out B1
   reduce/prevent conduction NOT convection/radiation B1
   (d) idea that heat gained from outside = heat removed by refrigeration unit B2
   allow B1 for idea of thermostatic control [7]

8. (a) (i) evaporation at all temperatures - boiling at specific temperature 1
evaporation at surface - boiling in body of liquid 1
boiling the molecules have more energy than evaporation/higher energy molecules escape 1
(b) liquid molecules much closer together or vv 1
intermolecular forces therefore much greater in liquids or vv 1 2
(c) warms the room 1

(d) (i) \[ P = VI \] seen or implied 1
\[ I = 0.5 \text{ (A)} \] 1
(ii) \[ R = \frac{V}{I} \] seen or implied 1
\[ 440 \text{ (}\Omega\text{)} \] 1
Both units correct 1

9.
(a) time or observe when wax melts/falls or states first to melt/fall B1
first to do so or less wax left (after given time) (transfers heat best) B1