Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Mark Schemes

Q1.

(a) (i) vacuum

do not allow stopper

1

(ii) (absence of particles) means no (transfer of energy between) particles for conduction

*accept particles **or** atoms **or** molecules **or** electrons*

1

no movement of molecules for (transfer of energy by) convection

accept particles/atoms/electrons

if answer to (a)(i) is correct: then in (a)(ii) have stated 'conduction and convection both need a medium/particles/materials' = 2 marks

(If medium is specified, it must be correct, conduction can be solid, liquid or gas, convection must be liquid or gas)

if answer to (a)(i) is incorrect then in (a)(ii) have stated 'conduction and convection both need a medium...'= 1 mark, unless further qualified by stating about absence of particles, in which case get a second mark.

1

(b) (i) silvered surface

accept silver surface

1

(ii) silvered is a bad emitter/radiator

1

surface reflects heat/energy/radiation (at inner and outer surface) **or** is a bad absorber (of energy)

accept bounces off

1

[6]

Q2.

(a) sound with a frequency above audible

do not accept answer in terms of λ

do not accept sound which cannot be heard unless obvious from context

accept above 20 kHz

1

(b) (i) to show detail **or** to give a clear image/picture

*accept the generators **or** transducers can be small*

accept so the beam does not spread out/beam in focus

***not** 'good picture'*

1

(ii) (much) smaller wavelength

allow higher frequency/pitch

1

(iii) no damage to living cells (provided low power)

accept the converse

*accept no damage to baby **or** not dangerous to baby*

1

(iv) any **two** forms

sex

stage of development

or specific examples

abnormalities

general health

potential problems (at birth)

accept specific examples e.g. umbilical cord around neck

size of head

accept multiple births

2

[6]

Q3.

(i) radiation **or** infra red

*do **not** accept rays*

*do **not** accept waves*

accept electromagnetic waves

1

(ii) good absorber (of heat) to absorb heat (**or** infrared)

*do **not** accept 'attract' **or** 'capture' **or** soak*

1

(iii) reduce heat loss (from the panel)

accept (good) (heat) insulator

*accept stop **or** reduce conduction*

*accept stop **or** reduce convection*

accept traps heat

accept keeps water hot

1

(iv) to reflect (back into the panel) heat **or** infrared **or** Sun's energy

*do **not** accept 'bouncing'*

*do **not** accept reflect Sun*

*do **not** accept reflect sunlight **or** sun's rays*

1

radiated **or** given out by the (black) pipe

accept back to pipe
accept reduce heat loss for 1 mark
accept reduce heat loss by radiation for 2 marks
accept stop heat loss by radiation for I mark

1

[5]