

Name of the Student: _____

Max. Marks : 21 Marks

Time : 21 Minutes

Mark Schemes

Q1.

(a) (i) L.H.S. – water / H_2O 1

R.H.S. – oxygen / O_2
accept H^2O
accept O^2 / O 1

(ii) chlorophyll
must make it clear that it is the chlorophyll
*do **not** credit chloroplast on its own*
*do **not** accept chloroplast / chlorophyll*
without indication that it is chlorophyll 1

(b) (i) light intensity / temperature is high enough for higher rate or light /
temperature is not limiting 1

low CO_2 available or not enough CO_2
available **or** rate would be higher with more CO_2 1

(ii) temperature
allow water / rain
allow (too) cold / hot as a minimum
allow wave length / frequency / colour
ignore ions
ignore heat 1

[6]

Q2.

- (a) increased speed
or harder exercise / running
→ increased need / use / loss of energy

1

allow further you run / walk the more energy you need

increased mass / bigger → increased use of energy

1

- (b) any **three** from:

- supply / using (more / enough) oxygen
or get (more) oxygen in blood(*)
- remove (more) CO₂(*)
- doing (more) work
or
using (more) energy allow produce energy(*)
()need reference to 'more' ONCE only for full marks*
- for respiration
- prevent build up of lactic acid
or prevent oxygen debt
or prevent anaerobic (respiration)
or allow aerobic (respiration)

3

[5]

Q3.

any **four** from:

more energy / respiration required

*accept it prevents / reduces anaerobic respiration **or** less / no lactic acid*

reference to increase must be made, but only needed once, provided inference is clear for remainder of points.

accept 'delivered more quickly' for 'increase'

increase oxygen uptake into blood (in lungs)

increase oxygen delivery to muscles

increase glucose delivery to muscles

increase removal of heat from muscles **or** increase delivery of heat to skin

increase removal of carbon dioxide from muscles

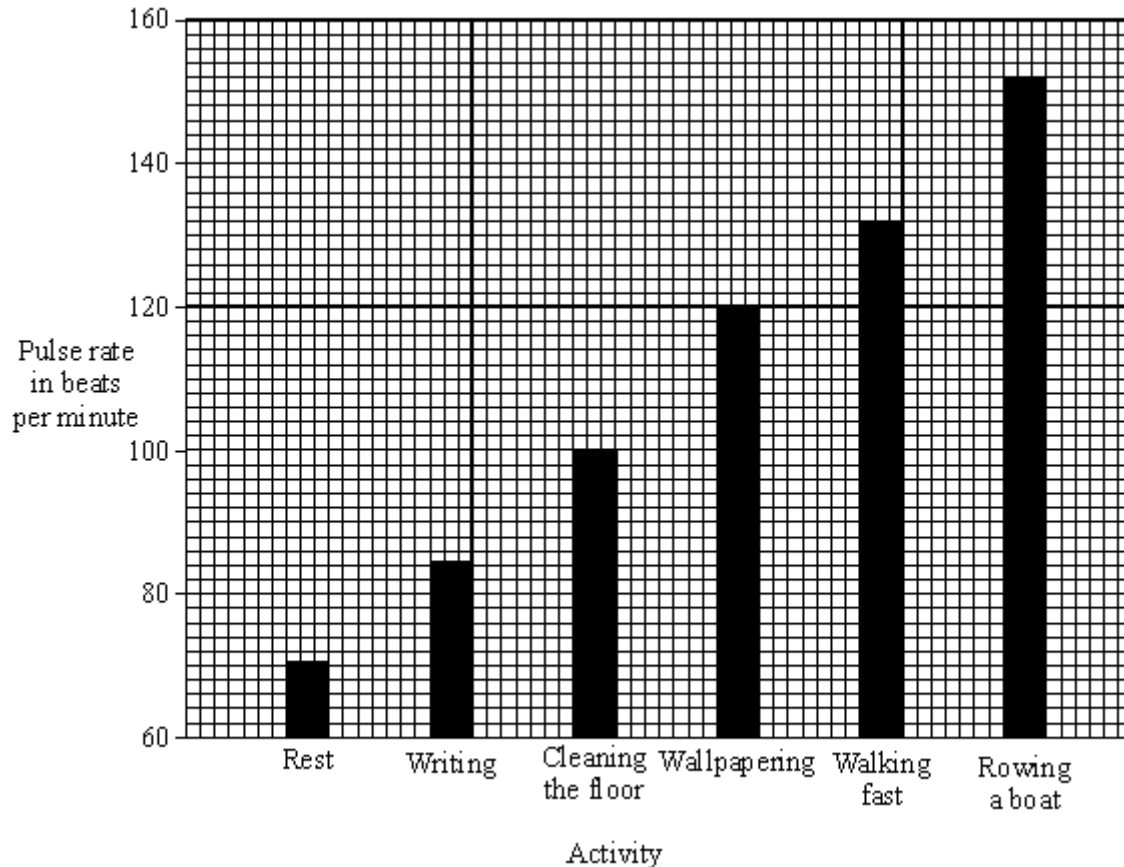
increase removal of carbon dioxide from blood (in lungs)

[4]

Q4.

- (a) (i) plotting values for pulse rates;
2 marks- minus 1 mark for each error to a maximum of 2
Accept values if plotted on blood volume bar chart
Non-horizontal tops to bars producing variable values = 1 error
If drawn as a line graph =1 mark maximum

2



(ii) **Either**

volume of blood went up then fell;

Accept went to a maximum then fell

pulse rate increased (steadily);

*Accept went up steadily **or** kept going up*

2

Or

at first **or** with low activity **or** with moderate activity both pulse and volume increased;

Accept activity up to wall- papering

with more activity pulse continued to increase but volume fell;

(b) Any **two** of

with increased activity greater muscle use **or** greater respiration;

need more glucose **or** oxygen;

Accept more sugar

heart beat faster;

Do not accept more air

*Accept more blood needed **or** blood flows faster*

*If 'more' **or** equivalent stated once it can be accepted elsewhere by implication*