

# Respiration and Exercise MS

## QUESTION 1

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	any three from: <input type="checkbox"/> rose rapidly (during exercise) / use of approximate figures <input type="checkbox"/> then more slowly (during exercise) <input type="checkbox"/> to max 126 / at 5 minutes / end of exercise <input type="checkbox"/> rapid fall (during recovery) or use of approximate numbers <input type="checkbox"/> then less rapid fall / use of approximate numbers <input type="checkbox"/> returned to resting rate (60 bpm) by 11 minutes	accept rate (of increase) slows down	3
b)	arteries dilate / widen	accept muscle in wall relaxes	1
c)	any four from: muscles using more energy or more energy released  muscles respire faster  supply more oxygen  supply more glucose / sugar  remove more CO <sub>2</sub>  remove lactic acid	do not accept energy produced   allow for aerobic respiration or to prevent anaerobic respiration   'more' needed ONCE only for full marks	4

	<input type="checkbox"/> remove heat / to cool		
Total marks			8

## QUESTION 2

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	19 800	for correct answer ignore working or lack of working 165 × 120 but no answer / wrong answer = 1 mark (ignore extras)	2
b)i	any two from: <input type="checkbox"/> for respiration <input type="checkbox"/> energy released <input type="checkbox"/> prevents anaerobic respiration <input type="checkbox"/> prevents build-up of lactic acid	ignore oxygen debt allow energy produced	2
b)ii)	any two from: •increased breathing rate •increased depth of breathing or deep breathing •dilation of arteries / vasodilation •blood diverted from elsewhere	more breathing is max 1 mark  ignore increase in heart rate  allow heavier breathing  do not allow harder breathing  allow blood vessels dilate  do not allow veins / capillaries dilate  ignore name of organ	2

Total marks			6
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### QUESTION 3

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	insufficient / no oxygen available for (just) aerobic respiration or respire anaerobically		1 1
Total marks			2

### QUESTION 4

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	brain		1
a)ii)	skin		1
a)iii)	1/25 or 4% or 0.04 or 1 in 25 or 1:25 or 1 out of 25	1000/25000	1
b)i)	any two from: <input type="checkbox"/> increased / high heart rate / pulse rate <input type="checkbox"/> dilation / widening of arteries/ arterioles (to skeletal muscles) or less blood flow to other organs	do not allow pumps more blood unqualified accept vasodilation unqualified  do not accept reference to veins /	2

	□ increased stroke volume/described	capillaries	
c)	more respiration / description or more energy required or to provide more energy		1  1  1
	respiration / process described → CO2 CO2 diffuses into blood		
Total marks			8

### QUESTION 5

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	increased speed or harder exercise / running → increased need / use / loss of energy increased mass / bigger → increased use of energy	allow further you run / walk the more energy you need	1  1
b)	any three from: <ul style="list-style-type: none"> <li>• supply / using (more / enough) oxygen or get (more) oxygen in blood</li> <li>• remove (more) CO2</li> <li>• doing (more) work or using (more) energy allow produce energy</li> <li>• for respiration</li> <li>• prevent build up of lactic acid</li> </ul> or prevent oxygen debt or prevent anaerobic (respiration) or allow aerobic (respiration)	need reference to 'more'  ONCE only for full marks	3
Total marks			5

### QUESTION 6

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	150		1
a)ii)	any two from:  <input type="checkbox"/> <input type="checkbox"/> lower resting rate <input type="checkbox"/> <input type="checkbox"/> lower rate during exercise  <input type="checkbox"/> <input type="checkbox"/> recovers faster after exercise	accept correct use of numbers accept pulse rate allow a general statement about lower rate if neither of the first two points given	2
b)	glucose oxygen		1 1
Total marks			5