Name of the Student:_____
Max. Marks : 22 Marks **Time : 22 Minutes**

Mark Schemes

Q1.

(a) (i) any **three** from:

*if diet given as answer = max **2***

- age (of athlete)
- gender (of athlete)
- starting concentration of glycogen
- type / intensity of exercise
- length of exercise period
- number of training sessions

*if none of these points gained amount of exercise = **1** mark*

- time interval between exercise sessions
- exercise at same time of day

*if last four points not awarded allow time (for exercise) for **1** mark*
ignore references to amount of energy
ignore they are both athletes

3

(ii) any **two** from:

- intensity of exercise
- amount of exercise between sessions
- starting concentration of glycogen
- fitness / health
- metabolic rate / respiration rate
- amount / mass of muscle / physique
- aspects of diet qualified, eg amount of food eaten

*do **not** accept amount of carbohydrate*
*if no other marks awarded allow height / mass / weight for **1** mark*

2

(iii) (B has) less glycogen

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he = B

or (B's glycogen) fell more

accept use of approximate figures

or (B's glycogen) built up less

allow other correct observations from graph eg A is lower at end of first session

ignore rate of fall

1

(b) athlete **A** (no mark)

to gain full marks 'more' must be given at least once

athlete **A** had more glycogen / **B** has less (only if A chosen to complete marathon)

*accept converse argument for **B***

1

(glycogen / glucose) used in respiration

ignore anaerobic

1

(more) energy released / available in athlete **A**

allow 'energy made'

1

and either energy used for movement / muscle action / to run
or
(extra) glycogen → (more) glucose

1

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Q2.

(a) (i) colour of light / bulb / lamp

allow wavelength for colour
allow bulb alone
*do **not** accept light / colour unqualified*

1

(ii) any **one** from eg

- temperature
  allow heat
- light intensity **or** distance between lamp and plant / tube
  allow amount / brightness of light
  ignore light unqualified
- carbon dioxide
  allow symbols
- other light in room
  allow use a dark room
- mass / size / amount / age / type of pondweed
  allow same piece of pondweed
  ignore pondweed unqualified
- volume / amount of water
  ignore reference to time

1

(iii) improved reliability

*allow for reliability **or** less likely to lose count*

or

can spot anomalies / changes

allow reference to calculating a mean / average
ignore reference to accuracy / precision / fair

1

(b) (i) green

1

(ii) any **two** from:

ignore references to colour

- least / less bubbles / gas / oxygen / mean
  *reference to least / less needed only once, in context, for **2** marks*
- least / less photosynthesis
- least / less glucose / sugar / carbohydrate / food made

only penalise no once, ie
*no bubbles = **0** mark*
*no bubbles so no photosynthesis = **1** mark*
allow most / more green light reflected (by chloroplasts)

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[6]

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Q3.

(a) (i) 6 peaks in heart rate

*accept 6 increases / spikes **or** goes very high 6 times*

allow heart rate increases each time he runs

1

(ii) 2.5 / 2½

allow 2 minutes 30 seconds

*do **not** accept 2.3 / 2:3 / 2.30*

1

(b) *more / faster / a lot **must** be stated at least once for full marks*

(more) oxygen supplied / needed

allow less anaerobic (respiration)

or (more) aerobic respiration

***or** prevents oxygen debt*

1

(more) glucose / sugar / food supplied / needed

ignore feeding

1

(more) energy needed / released

allow energy produced / made

1

(more) carbon dioxide / heat / lactic acid removed (from muscles) **or** more cooling

or less lactic acid formed

1

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