Practice Question Set For GCSE
Subject : Biology
Paper-1 Topic: B1 Cell Biology

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Name of the Student:_____
Max. Marks : 28 Marks **Time : 28 Minutes**

Mark Schemes

Q1.

(a) gene

chromosome

nucleus

cell

must be in this order

1

(b) differentiation

ignore specialisation

1

(c) 4

allow 15

1

(d) 46

allow 23 pairs (of chromosomes)

1

(e) **Stage 1** any **one** from:

- (cell) growth
- increase in number of sub-cellular structures

allow increase in number of organelles / ribosomes / mitochondria

- DNA replicates

allow genetic material for DNA
allow DNA doubles / duplicates

- chromosomes double / duplicate / replicate

1

Stage 2 any **one** from:

ignore mitosis occurs

- (one set of) chromosomes is pulled to each end of cell

allow chromosomes line up
across the centre of the cell
allow chromosomes move to opposite ends of the cell

- two nuclei form

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allow nucleus divides / splits (into two)

1

Stage 3 any **one** from:

- cytoplasm / membrane divides

  allow cytokinesis

- two identical cells formed

1

(f) **Level 2:** Scientifically relevant features are identified; the way(s) in which they are similar / different is made clear and (where appropriate) the magnitude of the similarity / difference is noted.

4–6

Level 1: Relevant features are identified and differences noted.

1–3

No relevant content

0

Indicative content

General comparisons:

- boys height at birth (slightly) greater than girls height
- boys are (slightly) taller than girls up to age 11
- correct height comparisons eg boys are approximately 4 / 5 cm taller than girls up to age 11
- girls and boys are the same height at age 11
- girls are taller than boys between age 11 and age 14
- girls and boys are the same height at age 14
- boys are taller than girls above age 14
- correct height comparisons eg boys are 5 to 18 cm taller than girls above age 14
- boys (eventually) grow taller than girls
- boys carry on growing for a longer time than girls
- girls stop growing age 13 / 14 / 15 **and** boys stop growing age 17 / 18

Rate comparisons:

- rate of growth similar up to age 10 / 11
- girls grow faster than boys between 10 / 11 and 14

  allow girls have a greater increase in height between 11 and 14

- growth spurt occurs at a younger age in girls
- growth spurt starts age 10 / 11 in girls **and** age 13 / 14 in boys
- increased rate of growth in girls aged 10 to 13 /14 **and** in boys aged 13 to 17 / 18

Key points for Level 2 are correct reference to 0-11 year period, 11-14 period and after age 14, with at least one correct reference to rate of growth or use of correct values of

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height and age to illustrate rate.

(g) repair of tissues

allow repair of organs

ignore repair of cells

or

replacement of cells

allow replacement of tissues

ignore replacement of organs

ignore growth

1

[14]

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Q2.

(a) amylase

allow phonetic spelling
allow carbohydrase
*do **not** accept amylose*

1

(b) small intestine

1

(c) any **one** from:

- greater magnification
- higher resolving power

allow can see (smaller) sub-cellular structures / parts
allow can see more detail (inside cells)
allow reference to 3-D images

1

(d) capillary

1

(e)

$$20 = \frac{\text{image length}}{0.8}$$

1

image length = 0.8 x 20

1

image length = 16 (mm)

1

(f) diffusion

1

(g) active transport

allow active uptake

1

(h) any **one** from:

- respiration

allow as an energy source
*do **not** accept to make / use / create / produce energy*

- to form glycogen
- to make amino acids / proteins

allow to make lipid / fat

1

(i) **Level 2:** Relevant points (reasons/causes) are identified, given in detail and logically linked to form a clear account.

3–4

Level 1: Points are identified and stated simply, but their relevance is not clear and there is no attempt at logical linking.

1–2

No relevant content

0

Indicative content

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- have (many) microvilli
- (to) increase surface area

- wall of villus only one cell thick **or** is thin
- capillaries are close to surface
- (so) short pathway

- good blood supply
- (to) transport food molecules away **or** to the body
- (and) maintain a diffusion gradient

- cells have many mitochondria
- (where) respiration takes place
- (where) energy is transferred
- (as) active transport requires energy
- energy is needed to absorb sugar / food / molecules

For Level 2 must make links between structure and it's function

[14]

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