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

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

Mark Schemes

Q1.

(a) protist

1

(b) any **two** methods with reason from:

1 mark for method and 1 mark for a correctly linked reason

- Method: insecticides
  Reason: to kill mosquitos / vector
  ignore kill insects unqualified

- Method: (mosquito) nets
  Reason: to avoid being bitten
  allow long clothing
  ignore acts as a physical barrier

- Method: insect repellents
  Reason: less likely to be bitten
  allow DEET or named insect repellent

- Method: vaccination
  Reason: so people are immune (to malaria)

- Method: anti-malaria tablets
  allow named anti-malarial e.g. Larium / Malarone
  allow antibiotics

- Reason: kills the pathogen / protist
  allow ecf from part (a)
  ignore kills malaria
  allow
  Method: drain swampy ground
  or
  remove pots of water
  or
  put oil on water / pond
  Reason: fewer breeding grounds for mosquitos

  allow
  Method: release GM / sterile mosquitos
  Reason: prevent / reduce reproduction

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*if no other marks awarded allow **1** mark for kill mosquitos*

4

(c) any **two** from:
(bacterial cell):

does not have a nucleus

allow DNA is free in cytoplasm

allow has a single loop of DNA

allow has a single strand of DNA

has plasmids

allow description, e.g. (small) ring(s) of DNA

is smaller

allow bacterial cells do not have mitochondria or do not have membrane bound organelles

allow bacteria have smaller ribosomes

ignore bacterial cells do not have chloroplasts

2

(d) to allow air / oxygen in for bacteria to respire

allow to allow carbon dioxide produced in respiration to escape

or

so bacteria can respire aerobically

1

(e) (A)
(no change in population size) because no / limited cell division / reproduction

allow (no change in population size) because bacteria / cells adjusting to environment / culture conditions

ignore reference to growth unqualified

1

(B)
(rapid increase in population size) as cells dividing rapidly as (plentiful) supply of nutrients / food

allow rapid binary fission as (plentiful) supply of nutrients / food

1

(C)
(population size stays the same) as rate of cell death equals rate of cell division

1

(D)
(population size decreasing) as cells dying due to nutrients running out
or
(population size decreasing) as cells dying due to toxins / carbon dioxide / cell wastes building up (in solution)

1

(f)

*a ratio of 30 000:1 for **X** and 0.55:1 for **Y** scores **3** marks*

(SA: vol ratio of **X** =)

$2.4 \times 10\text{-}7 : 8 \times 10^{-12}$

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1

or

0.000 000 24 : 0.000 000 000 008

(SA: vol ratio of **Y** =) 726:1331

conversion to same scale: 30 000:1 **and** 0.55:1

if no other calculation marks awarded allow 1 mark for calculation of SA for X and Y

or

*calculation of volume for **X** and **Y***

1

or

*calculation of SA and volume for one **or** both cubes if not given as a ratio*

1

(so) diffusion distance is longer in multicellular organism

allow converse

or

(so) volume supplied by each unit of surface area is greater in multicellular organism

allow converse

allow idea that some cells will have no surfaces exposed to outside in multicellular organism

1

(so) diffusion rate per unit volume is slower in a multicellular organism

allow converse

1

[17]

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