Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Mark Schemes

Q1.

(a) (1) carrying

(2) niche

(3) abiotic

(4) community;;

*All 4 correct = **two** marks.*
*2 or 3 correct = **one** mark.*
*1 correct = **zero**.*
(3) Accept physical, chemical, physicochemical or non-living.

2

(b) 1. Conserve/protect species/plants/animals/organisms

OR

For (bio)diversity;

2. Conserve/protect habitats/niches

OR

Provides/many habitats/niches;

Accept conserving land (and ways of life) for indigenous communities.

3. Reduces climate change;

Accept 'reduces global warming', 'reduces greenhouse effect', 'removes/takes up carbon dioxide' or 'produces/provides oxygen'.

4. Source of medicines/drugs/wood;

5. Reduces erosion/eutrophication;

6. (For) tourism;

2 max

(c) 1. Heat (loss) from respiration;

2. (Food) not digested

OR

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Not all eaten;

Accept faeces for not digested.

3. Excretion;

Accept urine/urea for excretion.

3

[7]

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Q2.

(a) 1. Volume of (stock) bacteria (culture);

If not credited accept number/mass of bacteria for 1 mark.

Ignore volume/concentration of liquid culture.

Ignore amount.

2. Concentration of (stock) bacteria (culture);

If not credited accept number/mass of bacteria for 1 mark.

Ignore volume/concentration of liquid culture.

Ignore amount.

3. Concentration of glucose

OR

Concentration of (respiratory) substrate;

Accept concentration of ion/named ion but ignore ammonium chloride.

Ignore 'same bacteria/species/type'.

Ignore 'sugar'.

Ignore amount.

Ignore nutrients.

4. Volume of ammonium chloride;

Ignore amount.

Ignore nutrients.

5. Time (bacteria/culture left to divide);

6. Concentration/volume of oxygen;

Ignore amount.

Ignore availability/access/exposure.

7. Concentration/volume of nitrogen;

Ignore amount.

Ignore availability/access/exposure.

Accept vol. for volume and conc. for concentration.

2 max

(b) **(For)**

1. Nitrogenase activity decreases with increase in ammonium chloride (concentration);

Accept ammonia for ammonium chloride.

Accept negative correlation between nitrogenase activity and ammonium chloride (concentration).

2. Nitrogenase activity zero with high (concentration of) ammonium chloride

OR

Ammonium chloride remains (in medium) when nitrogenase activity zero;

Accept ammonia for ammonium chloride.

Accept nitrogenase activity zero at 80/100/120/above 60 (µg cm^3 of ammonium chloride).

Accept 'stops' for zero.

(Against)

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3. Only used one species;

Accept only Azotobacter/A. chroococcum/ chroococcum/one nitrogen-fixing bacterium/one type/strain used.

4. (Inhibition/results) may be due to chloride (ions)
OR
(Investigation) uses ammonium chloride not ammonia;

Reject 'chlorine'.

Ignore reference to statistical tests.

3 max

(c) 1. Less/no ATP/energy required/used
OR
More ATP/energy available;

2. ATP/energy can be used for growth/synthesis/replication
OR
Lower (rate of) respiration required
OR
ATP for phosphorylation;

Accept ATP can be used for 'other reactions', 'movement', 'active transport' or correctly named reaction.

Ignore 'aerobic', 'anaerobic' in context of respiration.

Reject ATP/energy used for/in respiration.

Reject mitosis.

2

[7]

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Q3.

(a) Automarked question − ☑ *N = I − (F + R)*;
(Box 2)

1

(b) 21.6
OR
22;

1

(c) Correct answer of 88500/89000 = **2 marks**;;

Incorrect but shows 1.8975/1.898/1.9/1.90 (million) /1897500 = **1 mark**
OR
Incorrect but shows 1.809/1.81/1.8/1.80 (million) / 1809000 = **1 mark**
OR
Incorrect but shows 885/89/90 with incorrect position of decimal point = **1 mark**

*Accept 90000 for **2 marks**.*

Accept any of the answers in any correct mathematical form e.g., shows 1.8 (million) as 1800000.

2

(d) 1. Energy lost between/at trophic/feeding levels;

Accept description of trophic levels e.g., food chain.

2. Energy lost via respiration/excretion/faeces;

Accept energy lost via heat/metabolism/food not eaten/digested/muscle contraction/movement/maintaining temperature.

Reject energy used in respiration.

Reject energy produced/generated.

2

[6]

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