

# Biodiversity

## Mark Scheme 4

Level	International A Level
Subject	Biology
Exam Board	CIE
Topic	Biodiversity, classification and conservation
Sub Topic	Biodiversity
Booklet	Theory
Paper Type	Mark Scheme 4

Time Allowed : 45 minutes

Score : / 37

Percentage : /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	77.5%	70%	62.5%	57.5%	45%	<45%

1 (a)  $\frac{(275-90)}{10}$  or  $\frac{185}{10}$  or  $\frac{1705}{10}$  for 1 mark

18.5 ;;

19 R 18

[2]

- (b)
- 1 avoid disturbance to, nest sites/nesting females ; R ref. to mating
  - 2 protect, nest sites/young, from predators ;
  - 3 avoid sea pollution ;
  - 4 example of pollution ; e.g. do not throw rubbish into sea / avoid discharge from boats/light pollution (beaches)
  - 5 take care when fishing (with nets) ;
  - 6 stop hunting of adults ; A trading ban on turtle products
  - 7 captive breeding programmes/AW ;
  - 8 conservation areas/zoos ;
  - 9 education/ecotourism ;

[5 max]

[Total: 7]

CHEMISTRY ONLINE  
— TUITION —

- 2 (a) change in, DNA/base sequence ;  
produces different allele ;  
ref. different, protein/polypeptide, produced ; [2 max]

- (b) 1 –  $X^rX^r$  ;  
3 –  $X^rY$  ;  
9 –  $X^RX^r$  ;  
10 –  $X^RY$  ; [4]

(c) *answers must refer to phosphate ions*

- 1 altered shape/non-functional/no, carrier protein ;
- 2 less/no, reabsorption of phosphate ions (into blood) ;
- 3 from, glomerular filtrate/lumen of/proximal convoluted tubule ;
- 4 more/all, phosphate ions excreted ;
- 5 low phosphate ion concentration in, blood/bones ; **R** no phosphate ion conc [2 max]

**[Total: 8]**

CHEMISTRY ONLINE  
— TUITION —

3 (a) habitat ;  
all the organisms / plants and animals / populations / AW, in the ecosystem / forest / place / area / habitat ;  
niche ;  
population ; [4]

(b) (i) primary consumer / herbivore ; [1]

(ii) (sloth) cannot digest, cellulose / cell wall (in leaves), itself ;  
**R** cannot digest leaves **R** allows sloth to digest cellulose  
able to, absorb / use, products / sugars, from, cellulose / cell wall, digestion ;  
provide, vitamins / minerals ;  
ref to, protein / nitrogen, recycling ;  
idea of protection from gut, pathogens / parasites ; [1 max]

(iii) predators are, secondary consumers / tertiary consumers / top carnivores ;  
(population, size / number of) predators limited by numbers of prey / sloths / AW ;  
energy loss, between trophic levels / along food chain / inefficient energy transfer ;  
detail e.g. only 10% transfer / respiration / heat / movement / excretion / inedible parts / egestion / to decomposers ;  
(prey numbers small so) competition for, food / prey ;  
predators hunted by humans ;  
habitats / areas, of predators destroyed ; [3 max]

**[Total: 9]**

CHEMISTRY ONLINE  
— TUITION —

4 (a) (i) any **two** of the following for one mark

amphipods  
shrimps  
Arctic cod  
little auk ;

[1]

(ii) some animals feed at different (trophic) levels / animals do not obtain all their food from one (trophic) level ; **A** correct reference to at least two consumer levels  
animals may feed on different (trophic) levels at different, times / seasons ;  
some food chains, do not start from primary producers / start from decomposing matter ;

named examples from food web ;

[2]

(b) proportion of, phytoplankton / copepods, that is digested / some remains undigested ;  
phytoplankton have cell walls ;  
proportion that is absorbed after digestion ;  
loss in, egestion / faeces ;  
loss in, excretion ;  
loss in, respiration / heat (by copepods) ;  
energy losses in movement / AW ;  
AVP ; e.g. denser phytoplankton means less energy loss in feeding

} *in terms of energy  
loss or energy  
availability*

[2 max]

**[Total: 5]**

CHEMISTRY ONLINE  
— TUITION —

- 5 (a) higher population (growth), higher (rate of) deforestation / ora ;  
ref. 2 named countries (or letters) and paired figs ;  
ref. Vietnam (not fitting trend) ; [2 max]

- (b) (i) 1 ref. variety of, species / organisms / plants / animals ;  
2 variation **within** species / AW ;  
3 genetic diversity **between** species / AW ; [2 max]

- (ii) *economic*  
1 (some, species / plants / animals may have) uses in the future ;  
2 medical uses / example ;  
3 resource material ; e.g. wood for building / fibres for clothes  
4 food (for humans) / agriculture ;  
5 tourism / example ;  
6 ref. maintain gene pool / genetic diversity ;  
7 prevention of natural disasters ;  
8 AVP ; e.g. ref. biological control (predators / parasites reduce pest populations) [4 max]

[Total: 8]

CHEMISTRY ONLINE  
— TUITION —