

Biodiversity

Mark Scheme 8

Level	International A Level
Subject	Biology
Exam Board	CIE
Topic	Biodiversity, classification and conservation
Sub Topic	Biodiversity
Booklet	Theory
Paper Type	Mark Scheme 8

Time Allowed : 41 minutes

Score : / 34

Percentage : /100

Grade Boundaries:

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

- 1 (a) (i) all arrow heads in correct direction (phytoplankton to herring / krill, krill to herring, herring and krill to whale); [1]
- (ii) secondary / tertiary, consumer;
A third / fourth (trophic level) [1]
- (iii) 1 plenty of food available / AW;
A feeding on more than one trophic level
2 further detail; e.g. phytoplankton efficient at converting light energy
phytoplankton blooms
little / no competition
ref. efficient feeding mechanism
3 short food chains / fewer links of the food chain;
4 less energy lost overall;
A idea in terms of percent lost at each level
5 few, indigestible / inedible parts; [max 3]
- (b) 1 fat / blubber = triglyceride;
2 fat / blubber / triglyceride, used as energy, store / reserve;

decreases
3 less fat in cells; ora
A fewer fat-filled cells / less adipose tissue
4 mobilised / respired / converted to fatty acids (A glucose), to release energy (during non-feeding season);
5 energy (from fat mobilisation) used, qualified; e.g. for movement

increases
6 food eaten / during feeding season, conversion to, fat / AW (for storage);
7 ref. thermal insulation;
A idea of prevents heat loss R keeps it warm [max 2]
- (c) 1 (good) solvent / AW; e.g. (many) ions / minerals dissolve (in water)
A idea of (sufficient) dissolved respiratory gases (to support life)
2 provides, buoyancy / support / AW;
A idea of floating
3 (buoyancy / support) enables some to attain a large size / supports large mass / enables phytoplankton to remain, near / at surface;
4 high specific heat (capacity);
5 qualified; aquatic environment, more temperature stable / slow to change temperature / helps whale to maintain constant body temperature
6 ice, floats / less dense than water;
7 acts as insulator / prevents heat loss from water / water is underneath allowing survival in the winter;
8 transparent, for light penetration / for photosynthesis / for visual cues;
9 (density changes causing convection) currents, maintain circulation of nutrients / make nutrients available to support phytoplankton;
10 AVP; e.g. ref. to surface tension prevents sinking (small organisms) ref. to gamete movement [max 3]

[Total: 10]

- 2 (a) *corals*
1. (cells) have no chloroplasts ;
 2. (cells) have no, cell walls / large vacuoles ;
 3. are heterotrophic / not autotrophic / not photosynthetic ;
- [2 max]

(b) biotic and abiotic components **or** living and non-living components ;
correct ref. to interaction ;

[2]

(c) (i) Indian Ocean = 22(%)
Pacific Ocean = 9(%) ;
both correct for 1 mark

[1]

- (ii) any three from
1. named marine pollutant ; e.g. oil / sewage
 2. example of climate change ; e.g. sea level rising /
change in sea temperature / decrease in oxygen concentration of sea
 3. (increasing carbon dioxide) decrease in pH of sea ;
 4. intensive fishing ;
 5. tourism qualified ;
 6. removal of parts of reef ;
 7. reclaiming land ;
- [3 max]

[Total: 8]

CHEMISTRY ONLINE
— TUITION —

- 3 (a) 1 *idea of* genetic variation ;
2 increased heterozygosity / decreased homozygosity ;
3 hybrid vigour / decreased inbreeding depression ;
4 able to adapt to changing conditions ;
5 *idea of* some individuals surviving ;
6 AVP ; e.g. reduced risk of expression of harmful recessive alleles [3 max]
- (b) (i) *most affected*
almond, because, 100% / all / only, pollinated by honey bee ;
least affected
orange, because only 25% pollinated by honey bee / 75% pollinated by other methods [2]
- (ii) *any three from*
1 parasites / mites / viruses / bacteria ;
A disease
2 detail of climate change ; e.g. temperature change
3 pollution qualified ; e.g. increased use of pesticides / increased sulfur dioxide concentration in air
4 inbreeding ;
5 competition for food / food shortage ;
6 increase in predator numbers ;
7 AVP ; e.g. ref. killer bees / plant monoculture provides limited nutrition [3 max]

[Total: 8]

CHEMISTRY ONLINE
— TUITION —

- 4 (a) 1 pollution ;
- 2 environment / habitat, change qualified ; e.g. increase in water temperature / change in water pH
- 3 overfishing ;
- 4 loss of food / more competition for food ;
- 5 direct human interference qualified ; e.g. pleasure boats [3 max]
- (b) variety of / different / total number of, species ;
- genetic diversity of species / AW ; [2]
- (c) 1 *any three from*
tourism / leisure ;
- 2 economic benefits ;
- 3 food for humans ;
- 4 ref. resource / species, may have use in future / AW ;
- 5 maintains, food webs / food chains ; A description
- 6 nutrient cycling ;
- 7 maintains, (large) gene pool / genetic variation ; [3 max]

[Total: 8]