UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level and GCE Advanced Level

MARK SCHEME for the May/June 2011 question paper

for the guidance of teachers

9693 MARINE SCIENCE

9693/01 Paper 1 (AS Structured Questions), maximum raw mark 75

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

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UNIVERSITY of CAMBRIDGE
International Examinations

1 (a) (i) algae;
turtle grass; [2]

(ii) transfer of energy;
transfer of biomass/idea of consumption of organism; [2]

(iii) shrimp;
clown fish; [2]

(iv) correct shape;
and order;
correct names; [3]

(b) (i) interaction/relationship/association between organisms (of different species);
where both benefit;
e.g. coral and zooxanthellae/other e.g.; [3]

(ii) interactions/relationship between organisms (of different species);
one organism, the parasite, benefits at the expense of the host/owtte;
e.g. tuna and nematodes/other e.g.; [3]

[Total: 15]

2 (a) any 3 of:
coral growth;
subsidence/island/volcano sinks;
erosion/wave action/energy;
changes in sea levels;
sedimentation/owtte; [3]

(b) any 2 of:
carbon dating;
drilling/core sampling;
rock analysis/geomorphology; [2]

(c) (i) 96; [1]

(ii) suitable scale on *y*-axis;
both axes labelled;
correct plots;;

5 plots correct = 2
-1 each incorrect
+/- ½ square
allow ecf from **(c)(i)** if no figures [4]

(d) any 2 of:

fenua tapu	max height 3.5 m	730 m wide +/- 0.5	conglomerate platform	part below sea level	No rubble
fongafale	max height 4.5 m;	710 m wide; +/- 0.5	No conglomerate platform;	all above sea level;	rubble;

other valid difference; [2]

(e)

Sequence	Stage
1	fringing reef develops on island;
2	barrier reef forms;
3	island subsides;
4	atoll forms;

4 correct = 3;;;
2/3 correct = 2;;
1 correct = 1; [3]

[Total: 15]

3 **(a)** total quantity of salt(s)/ions/minerals (dissolved) in (sea) water/ocean; [1]

(b) 70.07; [1]

(c) **(i)** 21 / 22 (cm); [1]

(ii) 32.6 to 35.6 / 3.0; [1]

(iii) falls;
(rapid) rise;
any correct figures; e.g.
(falls) 33.10 to 32.6 by 0.5
(rise) 32.60 to 35.10 by 2.5 [3]

(iv) salinity falls as rainfall increases/ora/inverse relationship; [1]

(v) evaporation;
underwater volcanoes/vents;
fresh water inflow/glacial/icebergs melting/owtte; R runoff [2]

(d) any 4 of:
temperature rise of air/water/warmer;
melting icebergs;
release of (fresh) water;
fall in salinity;
(alternative)
temperature rise;
increased evaporation;
rise in salinity; [4]

[Total: 14]

4 **(a)** any 2 of:
low pressure;
warm air/sea (above 26 °C);
moist/humid air; R humidity
rising air;
low wind shear; [2]

(b) **(i)** as distance increases, rainfall decreases/ora;
any correct reference to figures; [2]

(ii) figure between 12 and 26; [1]

(c) any 2 of:
high winds;
circular wind patterns/cyclic movement of storm;
low air pressure;
thunderstorms/lightning;
warm air; [2]

(d) **(i)** any 3 of:
damage to buildings/property/infrastructure/e.g. flooding;
changes to coastline/erosion/e.g.;
removal of vegetation/destruction of habitats;
deaths/reference to disease explained; [3]

(ii) any 1 of:
rain to desert/dry areas;
increase fertility/qualified reference to nutrients in soil;
ovp; [1]

[Total: 11]

5 (a) (i) any 2 of:
respiration uses up oxygen;
photosynthesis produces oxygen;
reference to number of organisms; (must be linked to 1 of above)
decomposition; [2]

(ii) any 3 of:
temperature;
salinity;
pressure;
depth;
reference to turbulence/owtte; [3]

(b) (i) (200 metres) 6.13; [1]

(ii) any 2 of:
rule out anomalies/owtte;
rule out errors;
improve reliability; [2]

[Total: 8]

6 (a) any 4 of:
reference to Earth's crust/surface is made up of plates;
reference to continents and oceans rest on crust;
reference to plates are continually shifting/moving;
reference to because hot, soft mantle below plate is moving (slowly);
reference to driven by heat/density;
named plates/one named type of boundary; [4]

(b) (i) underwater mountain range;
+
1 of:
sea floor spreading/divergent boundaries;
flow of magma at plate boundaries forming new crust; [2]

(ii) (series of) fast/high/large (ocean) waves;
rapid movement of plate/underwater earthquake/underwater volcano; [2]

(iii) flat/owtte ocean floor/owtte;
movement of crust/plates away (from ocean ridges); [2]

(c) (i) (water) heated by magma; [1]

(ii) (water) rising through vent picks up (dissolved minerals)/e.g.; [1]

[Total: 12]