



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

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**MARINE SCIENCE**

**5180/01**

Paper 1

**For Examination from 2014**

SPECIMEN MARK SCHEME

**1 hour 30 minutes**

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**MAXIMUM MARK: 80**

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This document consists of **6** printed pages.



- 1 (a) Reference to gravitational effect ;  
Of the Sun and Moon ;
- (b) (i) Tide with the greatest change in sea level / highest high tide / Sun, Moon and Earth  
180°, occurs when there is a full or new Moon ; [1]
- (ii) Tide with the least change in sea level / lowest high tide / Sun, Earth and Moon at 90°,  
occurs when there is a half Moon ; [1]
- (c) Quality of drawing showing three concentric circles ;  
Crust labelled correctly ;  
Mantle labelled correctly ;  
Core labelled correctly ; [4]
- [Total: 8]
- 2 (a) (y-axis labelled) temperature / °C ;  
(x-axis labelled) percentage of water frozen ; [2]
- (b) (i) Accept answers in range 87 to 88 °C ; [1]
- (ii) -8 °C ; [1]
- (c) Presence of salt / dissolved substances in the water in the fish / eq ; [1]
- (d) Any two of:  
Fish would begin to spoil / decay ;  
Reference to autolysis / action of enzymes ;  
Reference to putrefaction / bacterial growth ;  
Reference to rancidity / oxidation of fats ; [2]
- [Total: 7]

3 (a) Organisms without a (true) nucleus ;

(b)

Phylum	Letter
Arthropods	B ;
Chordates	E ;
Cnidaria	A ;
Echinoderms	C ;
Molluscs	D ;

[5]

(c) An animal that catches and kills ;  
Another animal / prey ;

[2]

[Total: 8]

4 (a) Species in danger of becoming extinct / dying out / eq ;  
Rare / eq ;  
Too few to maintain population ;  
Over-exploited / eq ;

[2]

(b) Safe place for turtles to lay eggs / for nesting ;

[1]

(c) Ban catching turtles / extend current ban ;  
Ban use of turtle shell ;  
Do not collect eggs ;  
Ban use of turtle meat ;

[2]

(d) Any two of:

Giant clam ;  
Sea cucumber ;  
Mother of pearl shells ;  
Black-naped tern ;  
Whale shark ;  
Black coral ;  
Thresher shark ;

[2]

[Total: 7]

- 5 (a) (i) 1987 ;  
(ii) 1989 ;
- (b) Large numbers caught ;  
Fall in exports ;  
Reduced demand ; [2]
- (c) (i) *H. atra* ; [1]  
(ii) *T. ananas* ; [1]
- (d) Any two of:  
Reference to quotas ;  
Ban collection in some areas ;  
Only catch most abundant species / eq ;  
Collect up to MSY ;  
Do not collect by SCUBA diving ; [2]
- [Total: 8]
- 6 (a) Pectoral ;  
Pelvic ; [2]
- (b) (i) Dorsal / anal ; [1]  
(ii) Pectoral ; [1]  
(iii) Dorsal / anal ; [1]
- (c) Swim continuously ;  
Have elongated pectoral fins ;  
(Which) provide lift ; [2]
- [Total: 7]
- 7 (a) Atmosphere ;  
Warms ;  
Infra-red ;  
Carbon dioxide ; [4]
- (b) Any two of:  
Rise in sea level / flooding / eq ;  
Reference to climate change ;  
Death of corals ;  
Reference to effect on food supply ; [2]
- [Total: 6]

- 8 (a) Wood ;  
Aluminium ;  
Fibreglass / GRP ;
- (b) Boats can go further ;  
Faster ;  
Reference to increased catch ; [2]
- (c) Any four of:  
Boat building / repair / maintenance ;  
Provide navigational aids ;  
Utilities / fuel / water / oil / electricity / eq ;  
Fishing gear manufacture / supply ;  
Deep water landing / deep channel / wide entrance ;  
Quays / cranes / loading / unloading facilities ;  
Means of handling / processing catch / freezing ;  
Markets / selling ;  
Good road connections / transport facilities ; [4]
- [Total: 9]
- 9 (a) (i) Sun / light ; [1]
- (ii) They are producers ;  
Trap light ;  
Produce food / eq ;  
By photosynthesis ;  
Provide food for consumers / mussels / zooplankton / anchovies ; [3]
- (iii) Arrows represent the movement of energy / biomass ;  
Reference to one animal feeding on another ; [2]
- (iv) Pyramid drawn the correct shape ;  
Three trophic levels labelled correctly ; [2]
- (b) Energy lost as heat ;  
Respiration / movement ;  
Not all parts eaten / eq ;  
Energy losses in faeces ; [3]
- [Total: 11]

- 10 (a)** Production / rearing / growing / eq ;  
Of aquatic organisms / eq ;  
In enclosures / cages / eq ;  
In freshwater / sea water ;  
Environment controlled ;
- (b) (i)** No need for expensive fishing vessels / does not deplete wild stocks / more predictable yield ; [1]
- (ii)** Water of good quality needed / large area of land needed for ponds / may be difficult to control diseases ; [1]
- (c)** Any two of:
- Japanese carpet shell ;
  - Pacific cupped oyster ;
  - Carp ;
  - Kelp ;
  - Scallop ;
  - Prawns ;
  - Sea cucumbers ;
- [credit will be given for other correctly named examples] [2]
- (d)** Grows quickly / easy to feed / lives in shallow water / tolerates wide range of temperatures / high demand / eq [1]

[Total: 9]