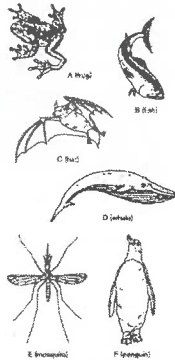


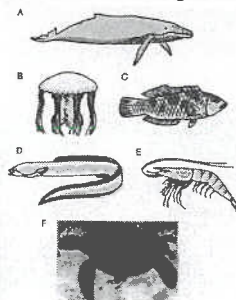
Past HKCEE Questions
Diversity of Organisms and Classification
Paper I

1. The diagrams below show a variety of animals.



- (i) All the animals shown except E can be classified into one group. State the structural feature on which this classification is based. (1 mark)
- (ii) Two of the five animals mentioned in (i) belong to the same group as the rabbit. Name the group and the two animals. (2 marks)
- (iii) *With reference to the animals shown*, name the respiratory structures that can be found in
 (1) animal A only. (2 marks)
 (2) animal B only. (HKCEE 1989)

2. In a marine museum, living marine animals are kept in different exhibition areas according to their animal group. Some of the animals in the museum are shown in the diagram below:



- (i) Using the letters provided, state all the animal(s) that should be placed in the exhibition area for reptiles. (1 mark)
- (ii) B and E are kept in the same exhibition

- area. Name the animal group to which they belong. (1 mark)
- (iii) State two structural differences between A and C which explain why they are kept in different exhibition areas. (2 marks) (HKCEE 1998)

3.

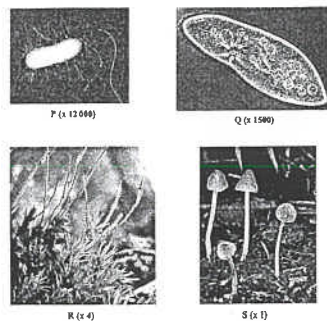


Photograph 1 (magnification $\times \frac{1}{5}$)

Source: N.P.O. Green, G.W. Stout, D.J. Taylor, *Biological Science*, Cambridge: Cambridge University Press, 1990.

- (i)
 (1) To which group of vertebrates do bats belong? (1 mark)
 (2) Referring to photograph 1, state one external feature of bat A through which it is classified into the group you stated in (1). (1 mark) (HKCEE 2002)

4. The following pictures show four different organisms:



Source: Starr, C., and Taggart, R., *Biology - the Unity and Diversity of Life*, Belmont: Brooks/Cole - Thomson Learning, 2004.
 Zhu, R.L., and Se, M.L., *Insects and Livestock of Hong Kong* (vol.2), HK: Heavenly People Press, 1998.
 Griffiths, D.A., *Hong Kong Fungi*, HK: Urban Council & Urban Services Dept., 1977.
 Weiss, R.W., et al., *Microbiology - A Human Perspective*, International ed., 4th ed, McGraw Hill, 2004.

- (a) Organisms can be classified into five kingdoms. Name the kingdom that P and Q each belongs to. (2 marks)
- (b) State *two* cell structures that can be found in Q, R and S, but not in P. (2 marks)
- (c) Explain the role of S in the cycling of materials in nature. (2 marks)
- (d) A number of human diseases such as influenza and SARS are caused by viruses. Some *scientists consider viruses as organisms, but some do not*. Give one reason for each of these views. (2 marks) (HKCEE 2005)

5. Three samples of specimen were examined in a laboratory. The results are shown below:

Feature of specimen	Sample 1	Sample 2	Sample 3
Size (mm)	8.802	8.563	180
Cell wall	-	+	+
Membrane	-	-	+
Protein	-	-	+
Unsat. fatty acids (EHA)	+	-	+

Key: "+" means present
 "-" means absent

The following paragraph summarizes the report about the three samples. Complete the paragraph with suitable word(s). (4 marks)

With reference to the results, the groups that samples 1 and 2 belong to are (a) and (b) respectively. For sample 3, it remains unclassified. It could belong to one of the following groups: plants, (c) or (d).

(HKCEE 2007)

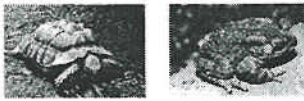
Past HKCEE Questions
Diversity of Organisms and Classification
Paper II

99-1

Which of the following animals have scales covering the skin?



(1) (2)



(3) (4)

- A. (1) and (4) only
 B. (2) and (3) only
 C. (1), (2) and (3) only
 D. (1), (2), (3) and (4)

99-2

The dichotomous key below lists some features of four different plants P, Q, R and S:

- 1a with flowers..... P
 1b without flowers..... 2
 2a with seeds..... Q
 2b without seeds..... 3
 3a with roots..... R
 3b without roots..... S

Which of the four plants is a gymnosperm?

- A. P
 B. Q
 C. R
 D. S

99-3

Which of the following correctly describes the plant in the diagram below?



(Magnification x3)

- A. no true roots present
 B. using seeds for dispersal
 C. commonly found on dry soil
 D. capable of producing pollen grains

00.

Directions: Questions 1 and 2 refer to the photographs below, which show four different plants:



W (Magnification x $\frac{1}{4}$)



X (Magnification x $\frac{1}{4}$)



Y (Magnification x $\frac{1}{16}$)



Z (Magnification x 3)

00-1

Which plant can only survive in a moist and shady environment?

- A. W
 B. X
 C. Y
 D. Z

00-2

Which plants are capable of producing seeds?

- A. W and X only
 B. Y and Z only
 C. W, X and Y only
 D. X, Y and Z only

00-3

The table below lists some features of three animals:

	Animal		
	P	Q	R
Vertebral column	x	✓	✓
Scales	x	✓	x
Hair	x	x	✓

Key: ✓ = present x = absent

The three animals could be

- | | | |
|--------------|----------|---------|
| P | Q | R |
| A. jellyfish | snake | rabbit |
| B. jellyfish | starfish | chicken |
| C. goldfish | rabbit | bat |
| D. goldfish | turtle | horse |

01-1

Which of the following animals lays eggs with a hard shell?

- A. toad
 B. snake
 C. whale
 D. goldfish

02-1

Scientists classify organisms into groups on the assumption that closely related organisms

- A. are found in similar habitats.
 B. have similar behaviour.
 C. have similar structures.
 D. have similar diets.

02-2

Which of the following statements about plants is/are correct?

- (1) Flowering plants can produce seeds.
 (2) Non-flowering plants cannot produce fruit.
 (3) Flowering plants cannot reproduce asexually.
 A. (1) only
 B. (1) and (2) only
 C. (1) and (3) only
 D. (2) and (3) only

03-01

A student examined four plants, P, Q, R and S, in the field. He constructed the dichotomous key below to identify these plants

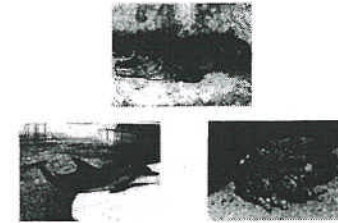
- | | |
|-------------------------|---|
| 1 a with leaves | 2 |
| 1b without leaves | P |
| 2a with cones..... | Q |
| 2b without cones | 3 |
| 3a with pollens..... | R |
| 3b without pollens..... | S |

One of them is a potato plant. Which one is it?

- A. P
 B. Q
 C. R
 D. S

04-35

What is the common feature possessed by the three animals shown in the photographs?



Source: Physical Sciences Section, E.D., Kadoorie Farm & Botanic Garden, and Ocean Park, 綜合科學科教材——觀察大自然, HK: Education Department, 1998.

A. laying eggs

- B. breathing with lungs
 C. presence of scales on the skin
 D. living both in water and on land

04-58

Which of the following plants does *not* bear flowers but reproduces by seeds?

- A. fern
 B. grass
 C. a pine tree
 D. an onion plant

06

Directions: Questions 3 and 4 refer to the key below, which is used for classifying some groups of organisms:

- | | |
|------------------------------|-----------|
| (1) Presence of protein coat | W |
| Absence of protein coat | Go to (2) |
| (2) Presence of mitochondria | Go to (3) |
| Absence of mitochondria | X |
| (3) Presence of chloroplasts | Y |
| Absence of chloroplasts | Z |

06-3

Which of the following combinations correctly matches the descriptions given in the key?

- | | W | X | Z |
|---------------|------------|--------|---|
| A. prokaryote | fungus | animal | |
| B. virus | protocist | fungus | |
| C. virus | prokaryote | animal | |
| D. prokaryote | protocist | fungus | |

06-4

Which of the following structures may be possessed by organisms in group Y?

- (1) seed
 (2) cone
 (3) spore
 A. (1) and (2) only
 B. (1) and (3) only
 C. (2) and (3) only
 D. (1), (2) and (3)

06-5

The table below lists some features of three organisms, P, Q and R.

	Features		
	Chlorophyll	Fruits	Cell wall
P	x	x	✓
Q	✓	x	✓
R	✓	✓	✓

Which of the following correctly matches the identity of the three organisms?

	P	Q	R
A.	bacterium	pine	grass
B.	fungus	rose	fern
C.	moss	fern	rose
D.	snail	grass	pine

07-06

Which of the following features is common to dogs, ducks and dolphins?

- They breathe with lungs.
- They have claws on their limbs.
- They possess mammary glands.
- They have hairs on their bodies.

Past HKCEE Questions
Diversity of Organisms and Classification
Suggested Answer

Paper I

- Vertebral column / backbone 1
 - Mammals 1
 - Bat and whale (0.5 x 2) 1
- (1) Skin 1
 - (2) Gills 1
- F 1
 - Invertebrates 1
 - 1 mark for each difference (1,1) 2

	A	C
Breathing organ	Lungs	Gills
Skin surface	No scales	With scales

- (1) mammal 1
 - (2) body covered with hair 1
- P : * Prokaryotes 1
 - Q : * Protocists 1
 - nucleus, mitochondria 1,1
 - S breaks down dead organic matter 1
 - into inorganic matter which can be used by plants for growth 1
 - Support virus as organisms: because it can reproduce in a cell / it has genetic materials to control its life processes 1
 - Against virus as organisms: because it is non-cellular / has no cytoplasm / cannot replicate by itself/ has no metabolism unless it is within a host cell 1
- Virus 1
 - Prokaryotes 1
 - Fungi / Protocist 1
 - Protocist / Fungi 1

Paper II

99-1	B
99-2	B
99-3	A
00-1	D
00-2	C
00-3	A
01-1	B
02-1	C
02-2	A
03-01	C
04-35	B
04-58	C
06-3	C
06-4	D
06-5	A
07-06	A