

# **BIOLOGY** UNIT 2



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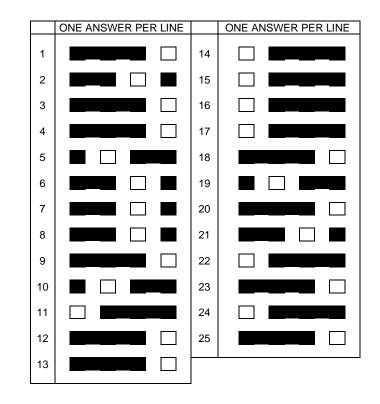
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Use this page as an overlay for marking the multiple choice answer sheets. Simply photocopy the page onto an overhead projector sheet. The correct answers are open boxes below. Students should have shaded their answers. Therefore, any open box with shading inside it is correct and scores 1 mark.



### TEACHERS, PLEASE NOTE:

In marking the Trial Exam, teachers should keep in mind that the language used in the suggested answers is sometimes more sophisticated than a student would offer since these answers are written for teachers' information in their correction of the Trial Exam. The answers suggested here might not be the only correct responses possible. Teachers must use their professional judgement in awarding marks for other answers offered. However, in accordance with the VCAA practice, students who give a correct response, and then offer a contradictory incorrect response within the same part of the question, should **not** be awarded any marks for the correct part of the response. Also in accordance with the VCAA practice, no half marks should be given.

1	D	14	A
2	С	15	A
3	D	16	A
4	D	17	A
5	В	18	D
6	С	19	В
7	С	20	D
8	С	21	С
9	D	22	A
10	В	23	D
11	Α	24	A
12	D	25	D
13	D		

SECTION A – Multiple-choice questions (1 mark each: 25 marks)

## **SECTION B**

#### **Question** 1

a	metaphase II	1 mark
b	anaphase II	1 mark
с	a nucleus with a single set of chromosomes	1 mark
d	46 chromosomes (23 pairs)	1 mark
е	During meiosis chromosome 21 fails to separate at the centromere (1) causing a gamete cell to have 2 copies of chromosome 21 (1). When the gametes meet, the final fertilised	
	cell ends up with 3 copies of chromosome 21 (1).	3 marks
f	Pregnancies diagnosed with Down Syndrome were not carried to term.	1 mark
	Total Question 1:	8 marks

# **Question 2**

a	dd	1 mark
b	any one of the following for 1 mark: lack of water OR nutrients OR sunlight	1 mark
с	recessive trait	1 mark
d	Recessive (white) traits when self-pollinated will remain recessive homozygous	
	white (1). Recessive white crossed with red had 100% red. Therefore, red is a	
	dominant trait and white is recessive (1).	2 marks
e	DD	1 mark
f	Incomplete dominance occurs when neither trait is fully expressed (1). As the final seeds	
-	are either red or white (not pink or patches) (1) it is not incomplete dominance.	2 marks
g	When two genes are located on the same chromosome (1), and are inherited together (1).	2 marks
-	Total Question 2:	10 marks

#### Question 3

Que	estion 3	
a	structural adaptation: flat tail / webbed feet $(1)$ – able to swim fast to catch prey to eat	
	to survive (1)	
	$OR \ spur(1) - to \ inject \ poison(1)$	
	OR sensors to detect pressure or electrical activity $(1)$ – detect prey to eat to survive $(1)$	
	physiological adaptation: redirect blood flow (1) – prevent heat loss (1)	
	behavioural adaptation: avoids contact (1) – survive predators (1)	6 marks
b	chromosomes that determine the sex of an organism	1 mark
с	autosome	1 mark
d	Low density can make it difficult for animals to find a mate (1) reducing the number of	
	offspring in each generation (1).	2 marks
е	Lack of genetic diversity means most individuals have similar alleles (1). A disease or	
	predator that affects one individual, will affect all of them (1). Therefore, a single	
	disease could kill every organism in a population (1).	3 marks
	Total Question 3:	
		10
Que	estion 4	
a	The quoll population would decrease as they ate the spreading poisonous cane toads.	1 mark
b	Any two of the following for one mark each:	
-	• birds, rodents, invertebrates, frogs, reptiles or plants increase	
	<ul> <li>kites, feral cats, dingoes, owls or snakes decrease</li> </ul>	2 marks
	Total Question 4	
Oue	estion 5	
a	If the temperature that the turtles eggs are incubated at is decreased from 28°C to 27°C,	
	then the proportion of male turtles that will be born will increase to 60% because	
	temperatures higher than 28°C increase the number of females.	1 mark
b	Large sample size (>50 eggs) (1)	
Ū	Divide into two groups: one group at 28°C, the other at 27°C (1)	
	Maintain water, sand, sunlight etc at same conditions (1)	
	Measure the proportion of hatched males and females in each group (1)	4 marks
с	an environmental influence that affects the phenotype	1 mark
L	Total Question 5	
	10111 Question 5	• • •••••••
Que	estion 6	
a	homozygous: having two identical alleles for a particular gene (1)	
	heterozygous: having two different alleles of a particular gene (1)	2 marks
_		

heterozygous: having two different alleles of a particular gene (1) *b* Perform a test cross (1).
Breed a long haired cat with a short haired cat (ll – homozygous recessive) (1).
The phenotypes of the offspring will show if the recessive allele is present in the new long haired cat (1).

	L	l	
l	Ll long hair	ll short hair	
l	Ll long hair	ll short hair	(1)
			-

	L	L	
l	Ll long hair	Ll long hair	
l	Ll long hair	Ll long hair	(1)

# *c parthenogenesis*

- *d advantage: any one of the following for one mark:* 
  - *able to reproduce quickly without a partner*
  - populate an area quickly
  - conserve energy from not needing to find a mate disadvantage: any one of the following for one mark:
  - *reduced genetic diversity*
  - changes in environment could affect all individuals
  - overcrowding lead to increase competition for resources
  - unhealthy mutations are inherited
  - susceptible to disease

2 marks Total Question 6: 10 marks Total Section B: 50 marks

Total Trial Exam: 75 marks

### END OF SUGGESTED SOLUTIONS