Rewarding Learning

General Certificate of Secondary Education
2018

Double Award Science: Biology

Unit B2

Foundation Tier

[GSD41]

FRIDAY 8 JUNE, MORNING

MARK SCHEME

General Marking Instructions

Introduction

Mark schemes are published to assist teachers and students in their preparation for examinations. Through the mark schemes teachers and students will be able to see what examiners are looking for in response to questions and exactly where the marks have been awarded. The publishing of the mark schemes may help to show that examiners are not concerned about finding out what a student does not know but rather with rewarding students for what they do know.

The Purpose of Mark Schemes

Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of students in schools and colleges.

The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

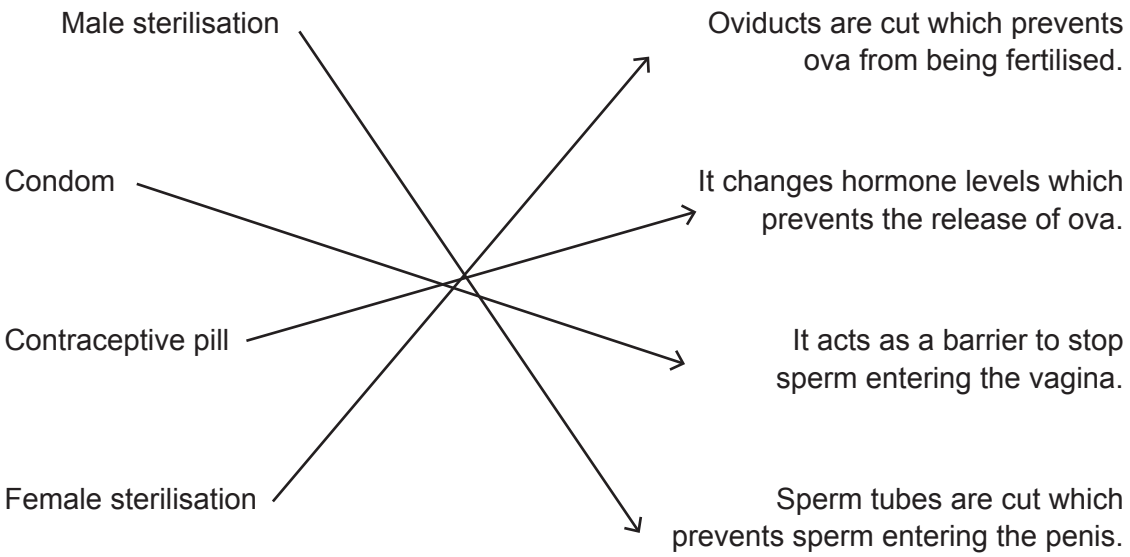
The questions and the mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes, therefore, are regarded as part of an integral process which begins with the setting of questions and ends with the marking of the examination.

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all the markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed using the mark scheme and samples of the students' work in the form of scripts. Consideration is also given at this stage to any comments on the operational papers received from teachers and their organisations. During this meeting, and up to and including the end of the marking, there is provision for amendments to be made to the mark scheme. What is published represents this final form of the mark scheme.

It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published: the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience of the examiner, for example, where there is no absolute correct response – all teachers will be familiar with making such judgements.

AVAILABLE MARKS

1 (a)



4/3 correct = [3] marks
2 correct = [2] marks
1 correct = [1] mark [3]

(b) (i) condom [1]

(ii) chlamydia; gonorrhoea [2]

(iii) (female/male) sterilisation [1] 7

2 (a) (i) coronary [1]

(ii) glucose; oxygen [2]

(iii) die/cannot contract [1]

(b)

	Arteries	Veins	Capillaries
Carry blood away from the heart	✓		
Have valves		✓	
Allow exchange of materials			✓

only 1 correct tick on each row [3] 7

3 (a) differences in genetic material/differences in a characteristic or trait/ differences in DNA [1]

(b) discontinuous [1]

(c) environmental/diet/food;
genetic/genotype/gene/inherited from parents/mutation [2] 4

			AVAILABLE MARKS
4	**(a)**	A – nucleus/nuclear membrane B – chromosome [2]	
	(b) **(i)**	• sugar (or deoxyribose); • phosphate; • base/named base [3]	
	(ii)	double helix [1]	6
5	**(a)**	penicillin [1]	
	(b) **(i)**	stop bacteria leaving/escaping/entering/avoid contamination [1]	
	(ii)	harmful bacteria grow best at 35 °C/to reduce growth of harmful bacteria [1]	
	(c)	A; bigger/biggest clear area; antibiotic has killed/destroyed the bacteria/has stopped the growth of the bacteria [3]	6
6	**(a)** **(i)**	4 × 2 = 8 + 2 =10; 14 – 10 = 4 units; 4/2 = 2 pints [3]	
	(ii)	binge drinking [1]	
	(b) **(i)**	increased risk of accident with more alcohol/increased when over the legal limit [1]	
	(ii)	• age 19 and under; • 126–132 times the risk; age 20–29 = 70–74 times } either of age 19 and under = 20–24 times } these data [3]	
	(iii)	10 [1]	9

				AVAILABLE MARKS
7	**(a)**	ovaries/ovary	[1]	
	(b)	hormones/female hormone/sex hormones/fertility hormones/named hormone/FSH/LH (not testosterone)	[1]	
	(c)	in the Petri dish	[1]	
	(d)	check the embryo has reacted/8, 16 or 32 cell stage/to make sure division is normal	[1]	
	(e)	uterus/womb	[1]	
	(f)	Any **two** from: • endometriosis • sex hormones too low/early menopause • low sperm count/unable to produce sperm • low sperm motility • hostile environment/acidic environment/mucus too thick • failure to produce ova/polycystic ovaries • chemotherapy/radiotherapy/cancer treatment/cancer • blocked sperm ducts/blocked sperm tubes • erectile dysfunction/impotence • STIs or named	[2]	7
8	**(a)**	**(i)** type of exercise	[1]	
		(ii) duration of exercise/intensity of exercise/recovery time	[1]	
		(iii) before exercise/at rest; and after exercise	[2]	
		(iv) beats per minute/bpm	[1]	
		(v) repeat	[1]	
	(b)	lung: increased lung capacity/increased O_2 uptake mental health: reduces depression or anxiety or stress/produces endorphins blood/heart: strengthened heart muscle/increased volume of blood per beat/lowers bp/ less risk of heart disease/less risk of heart attack/ prevents CDH/lowers heart rate/less risk of stroke/slows pulse weight: reduces fat/lose weight/lowers cholesterol/reduces obesity/less risk of diabetes muscles: stronger muscles (named muscle)/larger muscle	[1]	7

AVAILABLE MARKS

9 **(a)** **(i)** Jenner [1]

(ii) milkmaids who had cowpox; did not get smallpox/immune to smallpox [2]

(b) **(i)** C [1]

(ii) B and C [1]

(iii) immediate/don't have to wait for antibodies to be produced [1]

(iv) A [1]

7

10 **(a)** **Indicative content**

Any **five** from:

- cut out cylinders using cork borer;
- cut each cylinder to the same length (using a scalpel)/given length;
- weigh (each cylinder)/put on balance;
- place one cylinder in beaker of sugar solution/potato cylinder in beaker or solution;
- leave for a time/specified time/set timer;
- dry cylinders;
- reweigh cylinders

Band	Response	Mark
A	Candidates use appropriate terms throughout to give **at least five** points to describe how to carry out the experiment. They use good spelling, punctuation and grammar skills. Form and style are of a high standard.	[5]–[6]
B	Candidates use appropriate terms throughout to give **at least three or four** points to describe how to carry out the experiment. They use satisfactory spelling, punctuation and grammar. Form and style are of a satisfactory standard.	[3]–[4]
C	Candidates use appropriate terms throughout to give **one or two** points to describe how to carry out the experiment. They use limited spelling, punctuation and grammar and have made little use of specialist terms.	[1]–[2]
D	Response not worthy of credit.	[0]

[6]

(b) points plotted correctly = [2] marks
line joining points;
x-axis scale correctly drawn (must use over half the grid) [4]

			AVAILABLE MARKS
(c)	Any **two** from: • where the line crosses x-axis/goes through 0; • there is no % change in mass; • concentration of solution or water outside is the same as inside the cylinder/6.6 inside and out; • water is **not** moving in or out/no net movement of water • isotonic [3]		13
11 **(a)**	Punnett; one parent Dd; second parent Dd; correct cross [4]		
(b)	purple and white; ratio 3 : 1 must have phenotypes to get ratio mark [2]		6
12 **(a)**	transpiration/photosynthesis/turgid/support/transport/cooling/solvent [2]		
(b)	timer/stopclock/clock [1]		
(c) **(i)**	bar bigger than B [1]		
(ii)	allow to settle/allow to acclimatise/allow to reach steady rate/allow bubble to begin to move [1]		
(iii)	Describe mark: higher water uptake in B (or lower for C) Explain: stomata mark – more stomata on the lower surface/less stomata on upper surface/more stomata blocked in C/less stomata blocked in B water loss mark – more evaporation/more transpiration/more diffusion in B or less evaporation/less transpiration/less diffusion in C [3]		
(d)	rate of uptake decreases/bubble moves less; (increased) humidity (in the bag)/water builds up in the bag/described; less water loss/less transpiration/less evaporation/less diffusion/less gradient for water loss [3]		11
		Total	**90**