



Rewarding Learning

**General Certificate of Secondary Education
2016**

GCSE Biology

Unit 2

Foundation Tier

[GBY21]

FRIDAY 17 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 | uncontrolled; [1] malignant; [1] capsule; [1] surgery; [1] | [4] | 4 |
| 2 | (a) (i) Artery; | [1] | |
| | (ii) Capillary; | [1] | |
| | (b) Prevent backflow/maintain blood flow in one direction [/towards heart]; | [1] | |
| | (c) Withstand [high] pressure of blood; | [1] | |
| | (d) Pulmonary (vein); | [1] | 5 |
| 3 | (a) Mouse → Length, Yeast → count number of cells, | [2] | |
| | (b) Any three from: Weigh on balance; Dry in oven; Reweigh/weigh to constant mass; Calculate difference in mass; | [3] | 5 |
| 4 | (a) Short length of DNA; | [1] | |
| | (b) (i) RR; [1] Rr/rR; [1] | [2] | |
| | (ii) Circle drawn around rr ; | [1] | |
| | (iii) Half/50% | [1] | 5 |
| 5 | (a) (i) Bar chart; | [1] | |
| | (ii) Survey more pupils; | [1] | |
| | (b) (i) Discontinuous; | [1] | |
| | (ii) Environment/diet; | [1] | 4 |
| 6 | (a) Hormone; | [1] | |
| | (b) Ovary; | [1] | |
| | (c) Testosterone; | [1] | |
| | (d) (i) Body more muscular/voice deepens/enlargement of penis; | [1] | |
| | (ii) Pelvis and hips widen/breasts develop/menstruation; | [1] | 5 |

| | | AVAILABLE MARKS |
|---|---|-----------------|
| 7 | (a) (i) Accurate plots [2]; correct use of key [1]; | [3] |
| | (ii) [Percentage treated] increases with age [up to 39]; [1] Then decreases; [1] | [2] |
| | (b) more men; [1] 82% males and 56% females; [1] | [2] |
| 8 | (a) (i) Florey; [1] Chain; [1] | [2] |
| | (ii) Fungus; | [1] |
| | (b) Sterilised/heat kills bacteria; Prevent entry of microbes; Prevent spread of infection; | [3] |
| | (c) Antibiotic D; [1] 380 mm ² ; [1] Kills most bacteria; [1] | [3] |
| 9 | (a) (i) DNA/deoxyribonucleic acid | [1] |
| | (ii) Double helix; [1] | [1] |
| | (b) (i) Circle drawn around a sugar; [1] | [1] |
| | (ii) T; [1] C; [1] | [2] |
| | (c) (i) A – nuclear membrane; [1] B – chromosome; [1] | [2] |
| | (ii) Same number/4 chromosomes; [1] Identical; [1] | [2] |
| | (d) 4; [1] 2; [1] | [2] |
| | | |

| | | | AVAILABLE MARKS |
|-------------------|---|-----|-----------------|
| 10 (a) | Louise; [1] | | |
| | Any two pairs of points from: | | |
| | • Lower heart rate at rest; 56 bpm; | | |
| | • Slower/more time to reach maximum heart rate; 9 mins/3 to 12 mins/at 12 mins; | | |
| | or | | |
| | • Lower maximum heart rate; 132 beats per min; | | |
| | or | | |
| | • Faster return to resting/starting rate; 4 min/14 to 18 min/at 18 min; [4] | [5] | |
| (b) | Strengthened heart muscle/increased cardiac output; | [1] | |
| (c) (i) | Coronary artery; | [1] | |
| (ii) | Ventricle; | [1] | |
| (iii) | Clot/build up of fat/cholesterol; | [1] | |
| (iv) | No blood flow; [1] No oxygen/sugar to cells; [1] Cells cannot respire/release energy; [1] | [3] | 12 |
| 11 | Virus; [1] Vaccination; [1] Fungus; [1] Salmonella; [1] Sexual intercourse; [1] | [5] | 5 |
| 12 (a) | $8 \div 5$; [1] 1.6; [1] | [2] | |
| (b) | Any two from: wind [speed]; Temperature; Humidity/light; Size of plant; | [2] | |
| (c) | B – highest water loss of 2g per day; [1] B – largest number of stomata – 74; [1] (More) water transpires/diffuses [1] through the stomata; [1] Accept: converse for C | [4] | 8 |
| 13 (a) (i) | Amniotic fluid; | [1] | |
| (ii) | Cushions the foetus; | [1] | |
| (b) (i) | Large surface area/villi; good blood supply; thin membrane | [1] | |
| (ii) | Carbon dioxide/nitrogen wastes; | [1] | 4 |

14 Indicative Content

1. Chemical;
2. Less chance of pregnancy than mechanical type;
3. More chance of pregnancy than surgical types;
- 4 and 5. **Maximum of two** from:
 - Convenient;
 - Reversible;
 - Does not interrupt sexual intercourse;
 - Less risk than surgery;
 - Reduces bleeding;
6. **One** from:
 - May increase risk of blood clotting/may cause headaches/may cause tender breasts;

Accept: bullet points which start with capital letter, contain a verb and end in full stop as sentences.

| Band | Response | Mark |
|------|--|---------|
| A | Candidates must use appropriate, specialist terms throughout using five of the above points . They use good spelling, punctuation and grammar and the form and style are of a high standard . | [5]–[6] |
| B | Candidates use some appropriate, specialist terms throughout using three of the above points . They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard . | [3]–[4] |
| C | Candidates make little use of specialist terms throughout using some or all of the above points . The spelling, punctuation and grammar, form and style are of a limited standard . | [1]–[2] |
| D | Response not worthy of credit. | [0] |

[6]

TotalAVAILABLE
MARKS

6

90