

Reproduction

Mark Scheme 1

| | |
|-------------------|------------------------------|
| Level | IGCSE(9-1) |
| Subject | Biology |
| Exam Board | Edexcel IGCSE |
| Module | Double Award (Paper 1B) |
| Topic | Reproduction and Inheritance |
| Sub-Topic | Reproduction |
| Booklet | Mark Scheme 1 |

Time Allowed: 62 minutes

Score: /51

Percentage: /100

Grade Boundaries:

| | | | | | | | | |
|------|-----|-----|-----|-----|-----|-----|-----|-----|
| 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| >90% | 80% | 70% | 60% | 50% | 40% | 30% | 20% | 10% |

| Question number | Answer | Notes | Marks |
|-----------------|--|---|-------|
| 1 (a) | 1. larger (petals); 2. colour; 3. enclosed anther / enclosed stamens / shorter stamen / shorter filament; 4. enclosed stigma / enclosed carpels / shorter style / stigma not feathery; 5. nectary; | ignore amount of pollen or nectar allow converse for wind-pollinated for all Mps ignore attractive / smell / sticky as not structures | 3 |
| (b) | A petal / petals / corolla; | | 1 |
| | B anther; | | 1 |
| | C filament; | | 1 |

| | | | |
|-----|---|--|---|
| (c) | <ol style="list-style-type: none">1. stigma;2. pollen tube grows (down style);3. into ovule / ovary;4. enters via micropyle;5. (male nucleus / (pollen grain) nucleus /male gamete;6. fertilisation / fuse / join / eq;7. ovum / egg / (female) nucleus / female gamete;8. ovule becomes seed;9. ovule wall becomes seed coat / testa;10. ovary becomes fruit; | allow if shown on clearly labelled diagram | 5 |
|-----|---|--|---|

Total 11 marks

| Question number | Answer | Notes | Marks | | | | | | | | | | | | | | | | | | |
|----------------------------------|---|-----------------|---------------------|------------|--------------------------------|--------|--------|------------------------------|--------|---------|---------------------------------|-------------|-------------|----------------------------------|-------|-----------------|------------------------|------|---------|--|---|
| 2 (a) | 1. large (petals); 2. coloured / bright / white (petals) / eq; 3. scent / smell; 4. <u>nectar</u> / <u>nectary</u> ; | | 3 max | | | | | | | | | | | | | | | | | | |
| (b) | <table border="1" data-bbox="510 655 1211 1286"> <thead> <tr> <th></th> <th>In flowering plants</th> <th>In mammals</th> </tr> </thead> <tbody> <tr> <td>female gametes are made in the</td> <td>ovule;</td> <td>ovary;</td> </tr> <tr> <td>male gametes are made in the</td> <td>anther</td> <td>testes;</td> </tr> <tr> <td>gametes are brought together by</td> <td>pollination</td> <td>copulation;</td> </tr> <tr> <td>fertilisation takes place in the</td> <td>ovule</td> <td>fallopian tube;</td> </tr> <tr> <td>embryo develops in the</td> <td>seed</td> <td>uterus;</td> </tr> </tbody> </table> | | In flowering plants | In mammals | female gametes are made in the | ovule; | ovary; | male gametes are made in the | anther | testes; | gametes are brought together by | pollination | copulation; | fertilisation takes place in the | ovule | fallopian tube; | embryo develops in the | seed | uterus; | | 5 |
| | In flowering plants | In mammals | | | | | | | | | | | | | | | | | | | |
| female gametes are made in the | ovule; | ovary; | | | | | | | | | | | | | | | | | | | |
| male gametes are made in the | anther | testes; | | | | | | | | | | | | | | | | | | | |
| gametes are brought together by | pollination | copulation; | | | | | | | | | | | | | | | | | | | |
| fertilisation takes place in the | ovule | fallopian tube; | | | | | | | | | | | | | | | | | | | |
| embryo develops in the | seed | uterus; | | | | | | | | | | | | | | | | | | | |

| Question number | Answer | Notes | Marks |
|-----------------|---|------------------------------------|----------------------|
| 2 (c) | <ol style="list-style-type: none"> 1. used in growth / used in repair / used in asexual reproduction / eq; 2. no genetic variation / clones /genetically identical cells produced /exact genetic copies of cells / eq; 3. chromosome number stays the same / eq; 4. one round of division / 2 cells produced; 5. diiploid cells produced / not used to make gametes; | Allow converse answers for meiosis | 3 max |
| (d) | <ol style="list-style-type: none"> 1. same <u>colour</u> / no <u>colour</u> variation / same <u>phenotype</u> / <u>look</u> the same / all identical / same characteristics / eq; 2. no genetic variation / clones / alleles the same; 3. quicker production; 4. production all year round | Ignore more produced / profit | 2 max |
| | | | Total 13 Marks |

| Question number | Answer | Notes | Marks | | | | | | | | | | | | |
|-----------------|--|-------|---------------|---|----------|---|--------|---|--------|---|----------|---|------|--|---|
| 3 (a) | <table border="1"> <thead> <tr> <th>Order</th> <th>Name of stage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>gametes;</td> </tr> <tr> <td>2</td> <td>zygote</td> </tr> <tr> <td>3</td> <td>embryo</td> </tr> <tr> <td>4</td> <td>foetus;;</td> </tr> <tr> <td>5</td> <td>baby</td> </tr> </tbody> </table> | Order | Name of stage | 1 | gametes; | 2 | zygote | 3 | embryo | 4 | foetus;; | 5 | baby | 1 mark for gametes 1 mark for baby 2 marks for zef 1 mark for zfe or ezf or fez | 4 |
| Order | Name of stage | | | | | | | | | | | | | | |
| 1 | gametes; | | | | | | | | | | | | | | |
| 2 | zygote | | | | | | | | | | | | | | |
| 3 | embryo | | | | | | | | | | | | | | |
| 4 | foetus;; | | | | | | | | | | | | | | |
| 5 | baby | | | | | | | | | | | | | | |
| (b) (i) | connection between <u>atria</u> / eq; connection between arteries / pulmonary artery and aorta; | | 2 | | | | | | | | | | | | |
| 3 (c) (i) | XY; | | 1 | | | | | | | | | | | | |
| (ii) | 46 or 23 <u>pairs</u> | | 1 | | | | | | | | | | | | |

TOTAL 8 MARKS

| Question number | Answer | Notes | Marks |
|-----------------|---|---|-------|
| 4 (a) (i) | P oviduct / fallopian tube; Q ovary; R uterus / womb; S vagina; | allow ovaries allow uterine wall / uterine lining | 4 |
| (b) (i) | O from oestrogen peak to trough; | | 1 |
| (ii) | M from start until oestrogen line levels at start of cycle / from where progesterone peaks to end of cycle | | 1 |
| (iii) | 1. grows / thickens / build up / repaired / eq; 2. maintained / remains / eq; 3. breakdown / loss / shedding / eq; 4. not broken down if pregnant / egg fertilised / egg implanted / eq; | allow vascularisation | Max 3 |

| Question number | Answer | Notes | Marks |
|-----------------|--|-----------------------------|-------|
| (c) | 1. ovulation may vary within one woman / ovulate on different day each month / length of cycle varies / cycle can be irregular / ovulate early / ovulate late / error in calculating days / hard to tell when ovulation occurs / eq; 2. sperm survive; | | 2 |
| (d) | 1. <u>secondary</u> sexual characteristics; 2. start menstruation / ovulation / periods / eq; 3. hips widen; 4. growth of breasts; 5. growth of pubic hair / body hair; 6. change distribution of fat; | 5. ignore ref to hair alone | Max 3 |

Total 14 marks

| Question number | Answer | Notes | Marks |
|-----------------|---|---|-------|
| 5 (a) | mitosis; | | 1 |
| (b) | 1. A produces <u>two</u> daughter cells; 2. A has <u>one</u> round of division / A splits <u>once</u> ; 3. A produces cells with four chromosomes / diploid cells / full set of chromosomes / eq; | allow converse for B use of 'it' assumes A ignore ref to size of cells ignore identical / varied as not shown in the diagram | Max 2 |

| Question number | Answer | Notes | Marks |
|-----------------|--|--|-------|
| 5 (c) | A any correctly named plant part; B anther / ovule / ovary; | eg growing region tip / stem / root / buds / leaf / embryo / cuttings / callus / bulb / pollen tube | 2 |