**Grade 12**

**Practical 1.1 Meiosis**

**MEMORANDUM**

**QUESTION 1**

|  |  |  |
| --- | --- | --- |
| 1.1. |  |  |
| 1.1.1 | Centromere 🗸  | (1) |
| 1.1.2 | (Homologous) chromosomes🗸 (NOT chromatids) | (1) |
| 1.1.3 | (a) 4🗸 (b) Gametes🗸/Sex cells | (2) |
| 1.1.4 | Ovaries🗸 | (1) |
| 1.1.5 | It reduces the diploid number of chromosomes to the haploid number🗸, ensures gametes with half the number of chromosomes🗸 to prevent the doubling of chromosomes 🗸during reproduction (Any 2) | (2) |
| 1.1.6 | 23 🗸 | (1) |
|  |  | **(8)** |
| **QUESTION 2** |
| 2.1 |  |  |
| 2.1.1 | Crossing over 🗸 | (1) |
| 2.1.2 | Prophase **I** 🗸 | (1) |
| 2.1.3 | Crossing over introduces genetic variation🗸 in gametes which may lead to new (favourable) characteristics🗸 | (2) |
| 2.1.4 |

|  |  |
| --- | --- |
| **ASSESSING THE DIAGRAM** |  |
| CRITERIA | MARKS |
| Chromatid Q represented (must be labelled if the whole chromosome is represented) | 1 |
| Alleles indicated correctly | 1 |

 | (2) |
| 2.1.5 | - Homologous chromosomes lie next to each other🗸/ bivalent forms- Chromatids overlap. 🗸- at points called chiasmata. 🗸- and genetic information is exchanged/swopped🗸  | (2) |
|  |  | **(8)** |
| **QUESTION 3** |
| 3.1 |  |  |
| 3.1.1 | Age of mothers🗸 | (1) |
| 3.1.2 | The older the female, 🗸 the higher the risk🗸 of having a child with Down syndrome  | (2) |
| 3.1.3 | Due to the non – disjunction 🗸 of chromosomes from its homologous pair during Anaphase 🗸 of meiosis, an ovum (female gamete) may contain two sets of chromosome 21 | (2) |
| 3.1.4 |

|  |  |
| --- | --- |
| **Criteria and marks** |  |
| Heading (both variables) | 1 |
| Line graph is drawn | 1 |
| X – axis (label, unit, scale) | 1 |
| Y – axis (label, unit, scale) | 1 |
| Plotting and joining | 2 |

 | (6) |
| 3.1.5 | 0,5 200 100 x 1 🗸 = 1 baby 🗸 | (2) |
| 3.1.6 | Increase the reliability🗸 | (1) |
|  |  | **(14)** |
|  |  **TOTAL**  | **30** |