**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** |