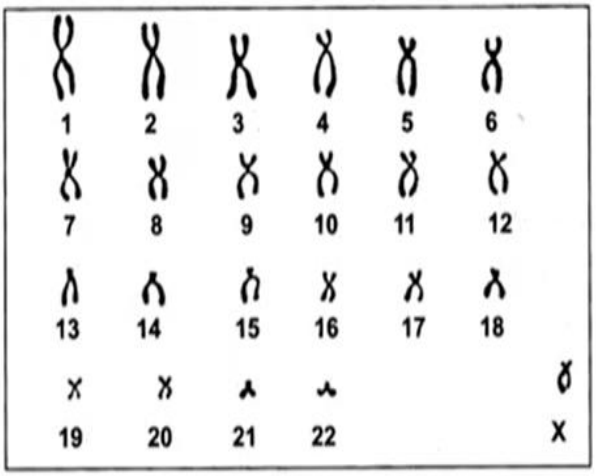
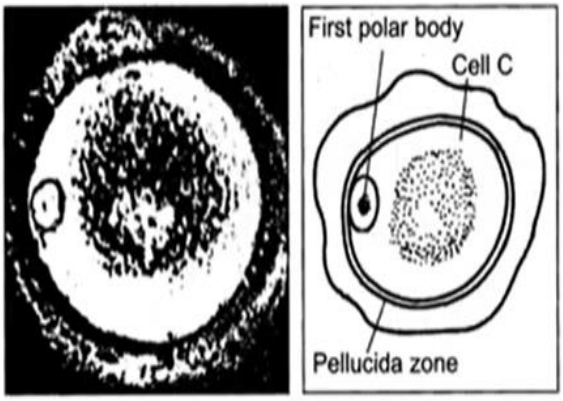
Quiz Oogenesis

Figure 1 represents the karyotype of a female sex cell (C) and figure 2 is a photograph accompanied by an interpretation diagram of this cell.



■ **Figure 1:**
Karyotype of a female sex cell.



■ **Figure 2:**
Photo and diagram of a sex cell

1. **Is this sex cell haploid or diploid? Justify (1pt)**
   It is a haploid cell since it contains n chromosomes=23 chromosomes. The chromosomes are unpaired.
2. **Identify this cell C (1pt)**
   The karyotype shows n chromosomes but each chromosome is still made of 2 chromatids. This indicates that it finished Meiosis I (Reductional) but not Meiosis II(Equational). This is also verified by the presence of 1st polar body which is released after Meiosis I; This cell is therefore Oocyte II blocked at Metaphase II.
3. **From which cell is it derived? When will it continue its division and what will be the result? (1.5 pts)**
   It is derived from Oocyte I. It will continue if fertilization occurs to give an ootid and the 2nd polar body.
4. **Indicate the quantity of DNA in cell C, the cell that it is derived from, and the cell that result from its division.(1.5 pts)**
   Cell C: **Oocyte II**: n chromosomes, 2 chromatids each. Quantity of DNA= q a.u
   The cell it is derived from: **Oocyte I**: 2n chromosomes, 2 chromatids each .Q DNA=2q a.u
   The cell resulting from its division: **Ootid**: n chromosomes, 1 chromatid each.Q DNA = q/2 a.u