

or duplication of DNA occurs. (4)

(C) G₂ (Second Gap period):— In this period, Growth of cytoplasm takes place.

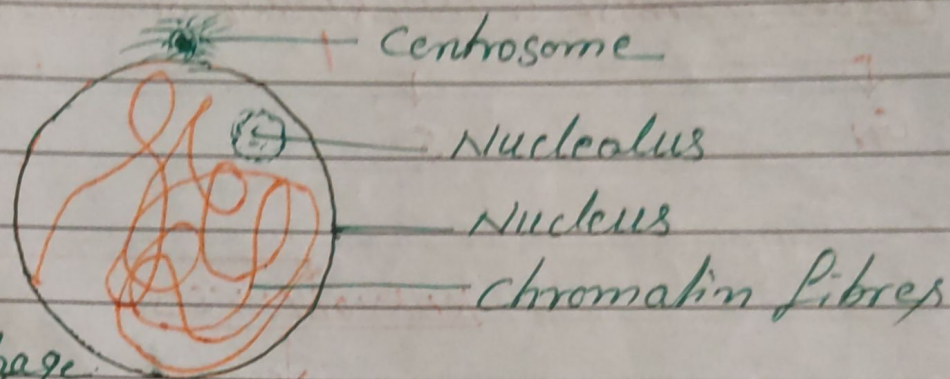


Fig - Interphase.

(B) DIVISION PHASE or MITOSIS PHASE:—

This phase of cell cycle may be divided into two stages:—

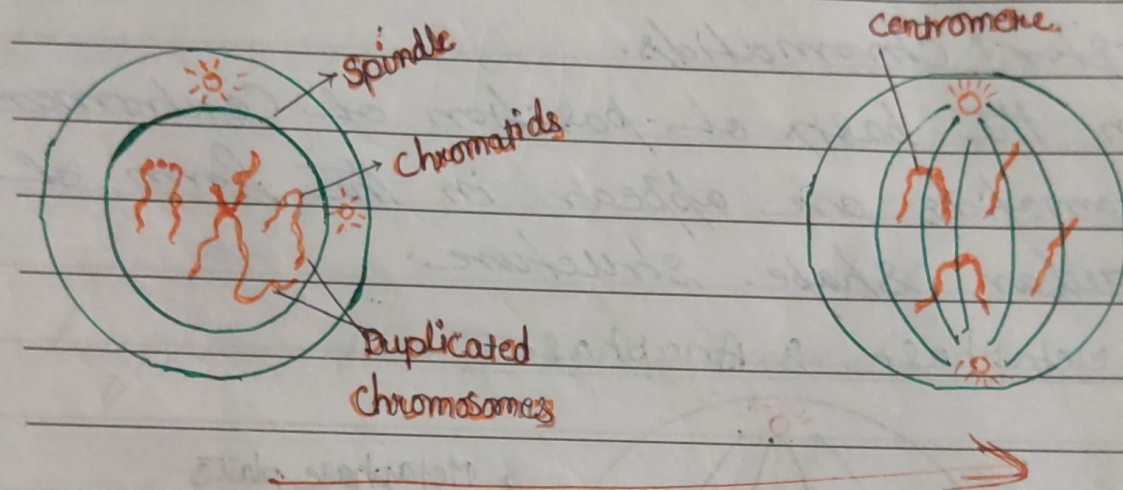
KARYOKINESIS:— In this stage, division of nucleus occurs it may be divided into four phases:— (1) Prophase (2) Metaphase

(3) Anaphase (4) Telophase.

(1) PROPHASE:— (a) In this stage, due to dehydration, chromosomes are clearly visible in the form of elongated, uncoiled, single stranded filamentous thread like structure.

(b) After sometimes due to coiling, double stranded nature of chromosome is poorly visible.

- (c) In late stage, nuclear membrane starts disappear and each chromosome splitted vertically but attached at the position of Centromere. (5)



- (2) METAPHASE: — (a) In this stage, nuclear membrane and nucleolus disappeared.
- (b) Chromosome are arranged at the equatorial plate of cell called metaphase plate.
- (c) Some Spindle fibres are develop from opposite pole (in plant cell) or Centrosomes (in animal cell), which attached with Centromere. But some fibres continuous with fibres of other end.
- (3) ANAPHASE: — (a) Due to Contraction of spindle fibres, each chromosome is splitted at the position of Centromeres.

As a result two sister chromatids are joined.

(b) Due to contraction of spindle fibres, sister chromatids move towards opposite pole of cell.

(c) Some interzonal fibres are developed between sister chromatids.

(d) on the basis of position of centromere, chromatids appear in the form of angular shape structure.

Fig of Metaphase & Anaphase

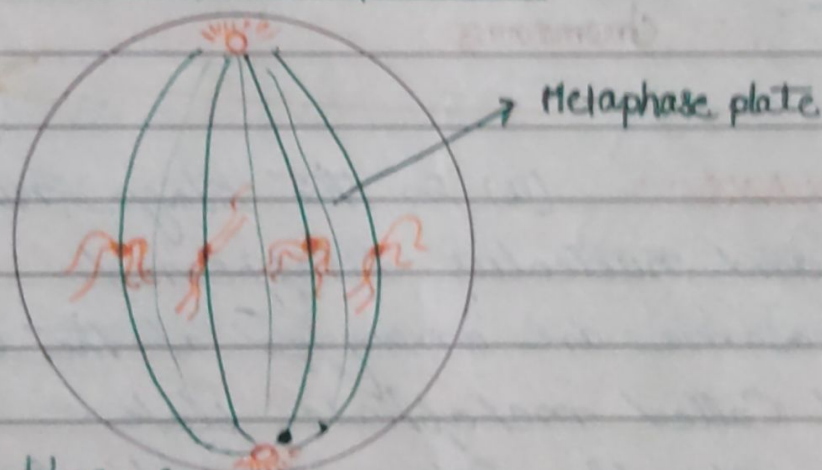
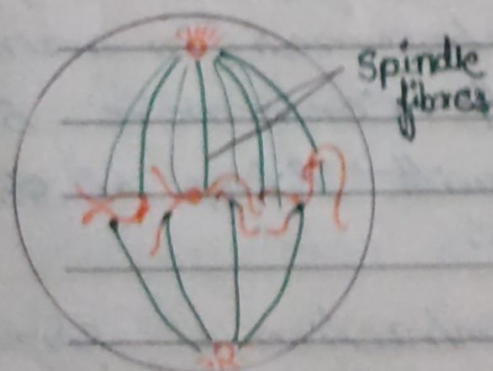
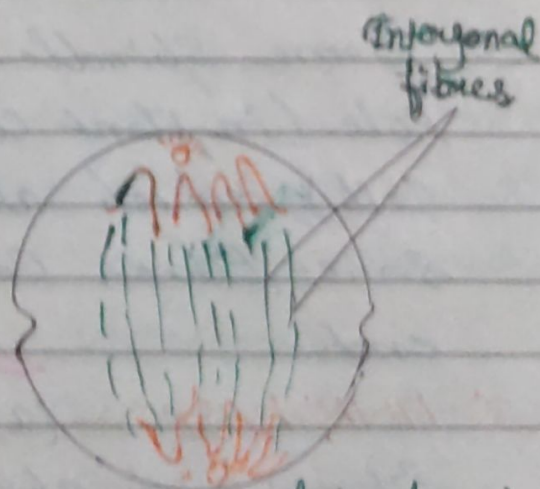


Fig: - Metaphase (a) (a)



(b) Early Anaphase



(c) Late Anaphase

Fig: - Anaphase (b & c).

(4) **TELOPHASE:** — (a) In this stage, due to contraction of spindle and relaxation of interzonal fibres, sister chromatids reach at opposite pole of cell.

(b) Nuclear membrane and nucleolus reappeared

(c) In early stage, chromosomes are clearly visible, but at later stage it loses its shape.

(d) In this way, at the end of telophase, two daughter nuclei are formed.

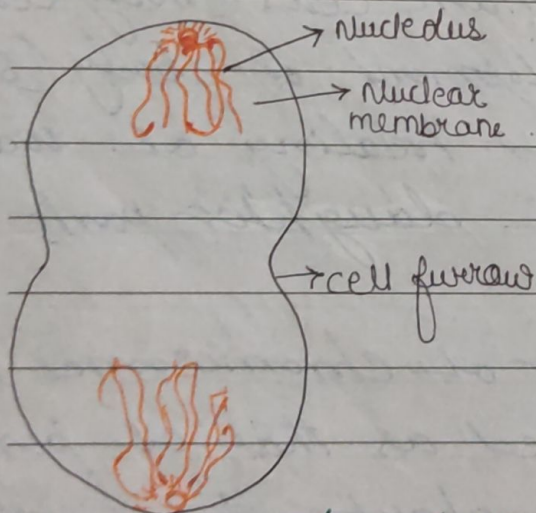


Fig: (a) Early Telophase.

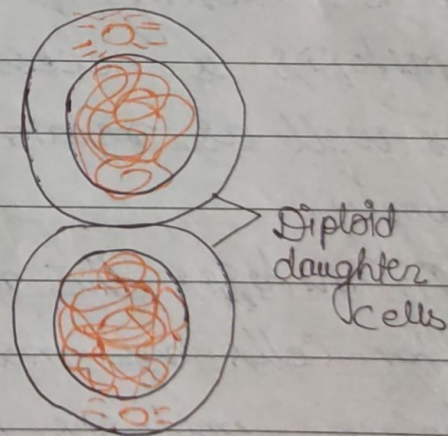


Fig: (b) Late Telophase.

Fig: — (a) & (b) Telophase (Early & late Telophase)

CYTOKINESIS: — The phenomenon of formation of two cells is called cytokinesis. In animal cells,

after Karyokinesis, cell develop at the position of metaphase plate which constricted in middle and hence two daughter cells are formed in plant cell, firstly some drops of Calcium pectate, and magnesium pectate are deposited between two daughter nuclei which very soon fuse together and form cell plate b/w two daughter nuclei, hence two daughter cells are formed.

- (a) mitosis occurs in somatic cells (body cells), hence it is necessary for development of body (soma).
- (b) mitosis is necessary for healing of wounds as well as repairing of ~~daughter~~ part of body.
- (c) In mitosis, the number of chromosomes in daughter cells are maintained as that of parent cells. hence, mitosis brings about the constancy of chromosome number in body cells of same organism.

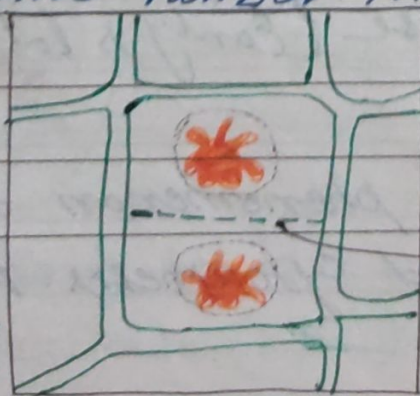


Fig- Cytokinesis
in plant cell

Cell plate