

CELL CYCLE AND CELL DIVISION

Que.1. Continuation of life mainly depends on meiotic division. Substantiate? [Marks :(2)]

Ans. Meiosis is reduction division that ensures formation of haploid gamete in sexually reproducing organisms.

It causes genetic variability that leads to evolution.

Que.2. Stages that occur during karyokinesis of mitosis are given below. [Marks :(2)]

Anaphase, prophase, telophase, metaphase.
Write them in correct sequence of occurrence.

Ans. Prophase, metaphase, anaphase, telophase

Que.3. Write any two significance of mitosis. [Marks :(2)]

Ans. Growth of multicellular organisms.

Helps to restore the nucleo-cytoplasmic ratio.

Cell repair

Que.4. Choose the correct answer. [Marks :(1)]

Synapsis is associated with:

A. Pachytene

B. Zygotene

C. Leptotene

D. Diplotene

Ans. B. Zygotene

Que.5. Name the nuclear division that is known as equational division. Write its stages.

[Marks :(3)]

Ans. Mitosis

Prophase, metaphase, anaphase, telophase

Que.6. Fill in the blank.

Cell division that is known as reduction division is-----.

[Marks :(1)]

Ans. Meiosis

Que.7. Choose the correct answer

[Marks :(1)]

Cell plate represents the:

- A.Cell wall**
- B.Plasma membrane**
- C.Primary wall**
- D.Middle lamella**

Ans. D.Middle lamella

Que.8. Three phases of interphase are given below.

[Marks :(2)]

G1 Phase, S phase, G2 Phase

a)Identify the phase where replication of DNA takes place.

b) What do you mean by G0 phase?

Ans. a) S phase

b) Go -stage or quiescent stage of a cell ,is the inactive stage of a cell in which the cell is metabolically active but no longer divide unless call on to do so.

Que.9. During diakinesis terminalisation of chiasmata occurs.

a) Write any other two changes that occur during this stage.

b) Identify the stage that follows diakinesis.

[Marks :(2)]

Ans. a) Chromosomes get fully condensed.

Nucleolus disappears and nuclear envelope breaks down.

b) Metaphase I

Que.10. Identify the correctly matched pair.

Anaphase :Chromosomes get aligned at the equator

Metaphase : Centromeres split and chromatids separate

Telophase : Chromosomes cluster at opposite poles

[Marks :(1)]

Ans. Telophase : Chromosomes cluster at opposite poles

Que.11. Karyokinesis is followed by cytokinesis.

[Marks :(3)]

a. Define cytokinesis.

b. Differentiate cytokinesis in plant cell and animal cell.

Ans. a) Cytokinesis: Division of cytoplasm

b) Animal cell - Furrow appear in the plasma membrane which gradually deepens and joins in the centre.

Plant cell : Cell plate formation starts in the centre of the cell and grows outward to meet the existing lateral walls.

Que.12. One kind of cell division is referred to as equational division.

a. Identify that division. Justify your answer.

[Marks : (2)]

Ans. a. Mitosis. The number of chromosomes in the parent and daughter cells is the same.

Que.13. The interphase in cell cycle is divided into three subphases. Name that subphases and write the significance of the second sub phase.

[Marks : (2)]

Ans. G1 phase

S Phase

G2 Phase

S / synthesis phase – DNA synthesis / replication of DNA.

Que.14. Observe the relationship between the first two terms and fill in the blank.

Prophase : Nucleolus and golgi complex disappear

.....: Nucleolus and golgi complex reform

[Marks : (2)]

Ans. Telophase

Que.15. Notice the four stages of mitosis given below.

[Marks : (2)]

1. Prophase

2. Metaphase

3. Anaphase

4. Telophase

a. Identify the stage at which the maximum condensation of chromosomes occur.

b. Name the stage that follows the above identified stage and write any two peculiarities of the stage.

Ans. a) Metaphase

b) Anaphase- Centromere split and chromatids separate. Chromatids move to opposite poles.

Que.16. Identify the subphases of prophase I from the following description.

[Marks :(2)]

a. Formation of the X- shaped structure called chiasmata.

b. Synapsis

c. Terminalisation of chiasmata.

d. Crossing over

Ans. a. Diplotene

b. Zygotene

c. Diakinesis

d. Pachytene

Que.17. Anaphase and Anaphase I leads to separation of chromosomes in different ways. Substantiate the statement with suitable explanation.

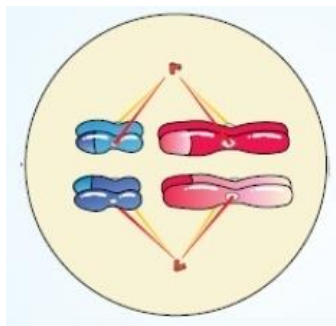
[Marks :(2)]

Ans. Anaphase ; Centromeres split and chromatids move to opposite poles.

Anaphase I :Homologous chromosomes separate to opposite poles ,while sister chromatids remain associated at their centromeres.

Que.18. Observe the figure given below.

[Marks :(2)]



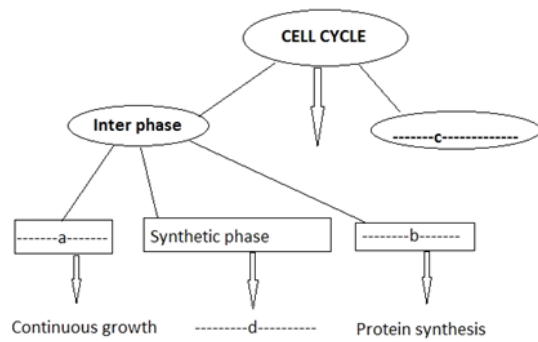
Identify the stage and write its peculiarity

Ans. Metaphase 1

Spindle fibers attach to kinetochores/Chromosomes move to spindle equator and get aligned along metaphase plate

Que.19. Complete the illustration related to cell cycle appropriately.

[Marks :(2)]



Ans. a) G 1 phase ,b) G 2 phase, c) Mitosis Phase , d) DNA replication