DPP
DAILY PRACTICE PROBLEMS

Class : XIth
Date :

Solutions

Subject : BIOLOGY
DPP No. : 1

Topic :- Cell cycle and Cell Division

1 **(c)**

Meiosis first is allowed by second meiotic division, which is essentially a mitotic division and is referred as mitotic. In anaphase-II of meiosis-II, the chromosome and centromere divide. The sister chromatids separate and move towards opposite pole.

2 **(a)**

In meiosis (meiotic-I), chromosome number becomes half to that of parent chromosome.

3 **(d)**

Plant cytokinesis usually occurs by cell plate method. The spindle usually pesists during cytokinesis. Central part of spindle grows in size and forms an interdigited complex called phragmoplast. Cell plate grows centrifugally

4 **(d)**

A-G_1, B-S, C-G_2.

Post reproductive stage of a cell includes cell growth. The term cell growth is used in the contexts of cell development and cell division. As we are concerned about growth (development) only, it refers to the growth of cell that is to increase in cytoplasmic and organelle volume that is in G_1-phase

S-phase is the sub-phase between G_1-phase and G_2-phase, during which DNA synthesis or replication takes place.

In animal cells, during the S-phase, DNA replication begins in the nucleus and the centriole duplication in the cytoplasm. The amount of DNA per cell doubles in the nucleus. If the initial amount of DNA is denoted as 2C, then it increases to 4C. However, there is no increase in the chromosome number

5 **(a)**

S or **synthetic** phase marks the period during which DNA synthesis or replication takes place. During this phase, the amount of DNA per cell doubles.

The second stage of prophase-I is called zygotene. During this stage, chromosomes start pairing together and this process of association is called **synapsis**. Such paired chromosomes are called **homologous chromosomes**. Synapsis is accompanied by the formation of a complex structure called **synaptonemal complex**.

6 **(a)**

Mitosis is one of the types of cell division, which helps in regeneration. Because it keeps all the somatic cells of an organism genetically similar, so that they are able to regenerate a part or whole of the organism

7 **(b)**

During meiosis, four haploid cells are produced by reductional division from a single diploid cell. Parent cell contains replicated chromosomes, but the daughter cells contains unreplicated chromosomes

8 **(d)**

The interphase, as called the resting phase, is the time during which the cell is preparing for division by undergoing both cell growth and DNA replication.
It is the phase between two successive M-phases
The interphase is divided into three further classes
G_1-phase (Gap 1), S-phase (synthesis) and G_2-phase (Gap 2)

9 **(c)**

Crossing over occurs during **pachytene** or **thick thread** or **pachynema** substage of prophase-I of meiosis. During this stage, an exchange of portions of chromatids between homologous chromosomes occur. At chiasma, the chromatids break rejoin in such a way that sections are exchanged.

10 **(d)**

Out of two alleles present at the same locus of two chromosomes of a homologous pair, one is transmitted to a gamete as the later receive one chromosome of a homologous pair.

11 **(b)**

In plant cells, cytokinesis occurs by cell plate formation. A number of elements called phragmoplasts are derived from ER and Golgi body. These elements line up at equator during anaphase and later fuse to form cell plate.

12 **(b)**

During metaphase, the nuclear envelope disintegrates and the chromosomes are spread through the cytoplasm of the cell. Condensation of chromosomes is completed and it can be observed under the microscope. At this stage, the morphology as well as the number of chromosomes can be easily studied

13 **(a)**

Interphase has variable duration. During this period, the DNA of chromosomes replicates. Chromosome material is in the form of very loosely coiled threads called chromatin. Centrioles already have replicated

14 **(a)**

During **anaphase-I**, the number of chromosomes become half.

15 **(b)**

G_0-phase.

Some cells that do not divide further, exit G_1-phase and enter an inactive stage called quiescent stage (G_0) of the cell cycle. Cells in this stage remains metabolically active but no longer proliferate unless called on to do so depending on the requirement of the organism

16 **(d)**

The interphase is also called the resting phase. It is the time during which the cell gets prepared for division by undergoing both cell and DNA replication in an orderly manner

17 **(c)**

The cells, which do not divide further, do not proceed beyond the G_1-phase and start undergoing differentiation into specific type are said to be in G_0-phase.

18 **(c)**

Division of **cyptoplasm** is called cytokinesis (Gr. *kitos*=cell; **kinesis**=movement).

19 **(d)**

At the end of prophase, several characteristic events can be observed. Chromosomal material condenses to form compact mitotic chromosomes. Two chromatids attach together to form chromosomes

Assembly of mitotic spindle is initiated by, microtubules (proteinaceous components) of the cell cytoplasm. When observed under the microscope cells at the last stage of prophase, do not shows cell organelles like, Golgi complexes, endoplasmic reticulum, nucleolus and the nuclear envelope

20 **(c)**

Prophase-I of Meiosis	**Prophase of Mitosis**
Prophase-I is very long and elaborate, comprising 5 sub-phases	Prophase is relatively very short and simple
Prophase chromosomes appear double from the very start	Prophase-I chromosome do not look double in the beginning
There is no pairing of homologous Chromosomes, hence no chance of crossing over	Homologous chromosomes pair and often undergo crossing over in prophase-I

ANSWER-KEY										
Q.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A.	**c**	**a**	**d**	**d**	**a**	**a**	**b**	**d**	**c**	**d**
Q.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
A.	**b**	**b**	**a**	**a**	**b**	**d**	**c**	**c**	**d**	**c**