Very Short Answer Type Questions

Q.1. What is G_0 phase? [KVS Agra 2016]

Ans. G_0 phase is the arrest of cell cycle and onset of differentiation.

Q. 2. Mention two significance of mitosis. [KVS Guwahati 2016]

Ans. Two significance of mitosis are:

(i) Mitosis is essential for growth and development of multicellular organisms.

(ii) Mitosis is the method of multiplication of unicellular organisms.

Q.3. Which type of mitosis is known as direct cell division.

Ans. Amitosis is called direct cell division.

Q. 4. What are the three phases of interphase?

Ans. The three phases of interphase are G_1, S and G_2 phase.

Q.5. What is mitotic apparatus?

Ans. Asters and spindle fibers are collectively called mitotic apparatus.

Q. 6. Who discovered mitosis?

Ans. Flemming (1882)

Q. 7. Who is premitosis or intranuclear mitosis ?

Ans. Mitosis taking place within the nuclear membrane is called premitosis.

Q.8. What is genome ?

Ans. Genome is a one set of DNA instruction or single set of chromosome in a cell.

Q. 9. Which type of cell division helps in regeneration?

Ans. Mitosis, 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.

Q. 10. Name the chemical that arrests the cell division in cells.

Ans. The two chemicals that arrest the cell division in a cell are (i) Colchicine (ii) Cyanides.

Q. 11. What is a kinetochore ?

Ans. Kinetochore is a part of a chromosome for the attachment of chromosomal fibres.

Q. 12. How do cell stop dividing?

Ans. When cell enters in G_0 cycle.

Q. 13. Name the forces which help in chromosomal movement during cell division.

Ans. Contraction of chromosome fibres, formation and expansion of interzonal fibres and poleward dissolution of microtubules of chromosome fibres..

Q. 14. What are kinetochores ?

Ans. Small disc-shaped structures at the surface of the centromeres which serve as the sites of attachment of spindle fibres are called as kinetochores.

Q. 15. When does syncytium condition takes place?

Ans. When nuclear division takes place without cytoplasmic division it results in the formation of large number of nuclei in a cell. This condition is called syncytium.

Q. 16. Name the enzymes which help in breakage and reunion of chromatids.

Ans. Enzyme that help in breakage is endonuclease and enzyme that help in reunion is R-protein.

Q. 17. What is a metaphase plate?

Ans. It is an imaginary plane perpendicular to the spindle fibers of a dividing cell, along which chromosomes align during metaphase.

Q. 18. What is nucleocytoplasmic ratio ?

Ans. It is a ratio of the size (*i.e.* volume) of the nucleus of a cell to the size to the cytoplasm of that cell.

Q. 19. What is the average cell cycle span for a mammalian cell ?

Ans. 24 hours is average duration.

Q. 20. Name the longest and shortest phase of mitosis ?

Ans. Prophase has longest duration, while anaphase has the shortest duration.

Q. 21. By which method cytokinesis occurs in an animal cell ?

Ans. By furrowing.

Q. 22. What do you understand by synaptonemal complex? [KVS-2007]

Ans. It is made up of two lateral arms and a medium element, which forms pairing of homologous chromosomes.

Q. 23. What Is generation time ?

Ans. The time interval between two cell cycles is called generation time.

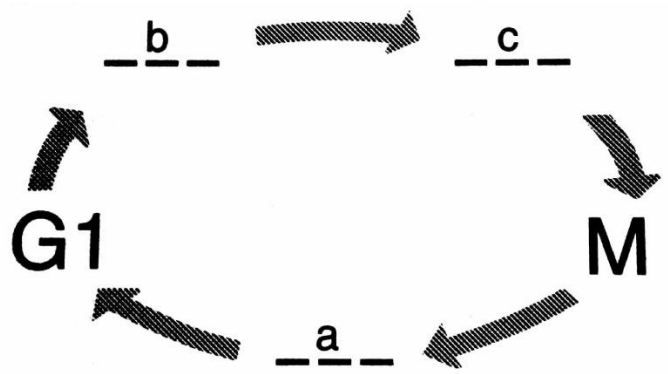
Q. 24. Name the point from which colchicine is extracted.

Ans. It is extracted from *colchicum autumnale.*

Q. 25. In Which stage of cell division chromosome are seen best?

Ans. At metaphase stage, as they are shortest and thickest.

Q. 26. Complete the following figure for cell cycle.



Ans. $a \rightarrow G_0, b \rightarrow S, \ c \rightarrow G_2$

Q. 27. Why is meiosis known as "Reduction Division'? What is its significance?

[**KVS Silchar 2017**]

Ans. Meiosis is called as reduction division because the chromosome number gets reduced to its half. It helps in producing haploid gametes in sexually reproducing organisms.

Q. 28. Name the phase of meiosis I which is characterized by the appearance of recombination nodules?

Ans. Pachytene.

Q. 29. Name the cells where mitosis and meiosis occur.

Ans. Mitosis occurs in somatic cell whereas meiosis occurs in diploid.

Q. 30. Why is meiosis called the reductional division whereas mitotic division is called as equational division? **[NCT-2008, 11]**

Ans. Meiosis is called as reductional division because the chromosome number gets reduced to its half whereas mitosis is equational division because the chromosome number remains the same after division.

Q. 31. What are interzonal fibres ?

Ans. The protein fibres are formed in between the centromeres of homologous chromosomes during metaphase I stage of meiosis are called interzonal fibres.

Q. 32. Define crossing over.

Ans. Crossing over is the exchange of genetic material between the non-sister chromatids of homologous chromosomes during pachytene of prophase.

Q. 33. What are dyads?

Ans. The separated chromosomes are called dyads.

Q. 34. What do you understand by synaptonemal complex ? [KVS-2007]

Ans. It is made up of two lateral arms and a medium element, which forms pairing of homologous chromosomes.

Q. 35. Name three types of life cycles on the basis of meiosis.

Ans. On this basis, of meiosis, life cycles are- diplontic, haplontic and diplo-haplontic.

Q. 36. Name the enzyme on which the process of crossing over is dependent.

Ans. Recombinase