



BIOLOGY

BOOKS - MODERN PUBLICATION

CELL CYCLE AND CELL DIVISION

Exercise

1. Define cell reproduction.



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2. Name two processes involved in cell cycle.



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3. What is interphase?



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4. Name three phases of interphase.



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5. Give the phase of DNA replication in interphase.



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6. What initiates cell division?



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7. Name two types of cells dividing by amitosis?



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8. What is drawback of amitosis?



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9. Why is mitosis called equational division?



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10. Who gave the term mitosis?



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11. Differentiate between

Karyokinesis and cytokinesis.



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12. What is kinetochore? What is its function?



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13. Name the phase of mitosis of longest and shortest duration.



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14. Name two types of spindle fibres.



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15. What is peculiar about metaphase of mitosis?



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16. What is peculiar about metaphase of mitosis?



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17. Write significance of mitosis.



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18. How does spindle of a dividing animal cell differ from that of plant cell?



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19. How does cytokinesis in plant cells differ from that in animal cells?



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20. Give the main factor regulating the mitosis.



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21. What is nature of daughter cell produced by meiosis?



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22. Who gave the term meiosis?



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23. Give the site of occurrence of meiosis.



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24. Define

synapsis



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25. Define crossing over. What is its significance?



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26. What is peculiar about Metaphase -I of meiosis?



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27. Define disjunction.



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28. What is interkinesis?



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29. Why is Meiosis-I called heterotypical division?



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30. Write significance of mitosis.



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31. Meiosis results in

A. Production of gametes

B. Reduction in the number of
chromosomes

C. Introduction of variation

D. all of the above

Answer:



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32. At which stage of meiosis does the genetic constitution of gametes is finally decided

- A. Metaphse I
- B. Anaphase II
- C. Metaphase II
- D. Anaphase I

Answer:



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33. Meiosis occurs in organisms during

- A. Sexual reproduction
- B. Vegetative reproduction
- C. Both sexual and vegetative reproduction
- D. None of the above

Answer:



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34. During anaphase-I of meiosis

A. Homologous chromosomes separate

B. Non-homologous chromosomes
separate

C. Sister chromatids separate

D. Non-sister chromatids separate

Answer:



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35. Mitosis is characterised by

- A. Reduction division
- B. Equal division
- C. Both reduction and equal division
- D. None of the above

Answer:



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36. A bivalent of meiosis-I consists of

- A. Two chromatids and one centromere
- B. Two chromatids and two centromere
- C. Four chromatids and two centromere
- D. Four chromatids and four centromere

Answer:



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37. Cells which are not dividing are likely to be at

A. G_1

B. G_2

C. G_0

D. S phase

Answer:



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38. Select the wrong statement:

A. Pairing of homologous chromosomes

B. Four haploid cells are formed

C. At the end of the meiosis the number of chromosomes are reduced to half

D. Two cycle of DNA replication occurs

Answer:



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39. Select the correct statement about G_1 phase

A. Cell is metabolically inactive

B. DNA in the cell does not replicate

C. It is not a phase of synthesis of macromolecules

D. Cell stops growing

Answer:



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40. Name the cell divisions which help in growth and recombination of genes.



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41. Which types of bonds are found in nucleic acids?



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42. Define chiasmata.



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43. In which phase of interphase, DNA replication occurs?



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44. Which type of cell division occurs in meristematic cells of root apex?



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45. What is cell cycle?



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46. Name the protein found in white and yellow fibres.



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47. Name five substages of prophase I of meiosis.



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48. Which type of coiling is found in mitosis and meiosis?



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49. What is kinetochore? What is its function?



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50. What are Meocytes ?



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51. Replication of chromosomes in meiosis occurs in:



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52. Give the term for the failure of separation of homologous chromosomes.



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53. Define karyokinesis.



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54. What is kinetochore? What is its function?



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55. Give the significance of synaptonemal complex.



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56. What is the significance of meiosis?



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57. Define cytokinesis.



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58. What is congression?



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59. Define crossing over. What is the significance of crossing over ?



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60. Name three phases of interphase.



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61. Why is mitosis called equational division?



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62. What is kinetochore? What is its function?



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63. Define apiculture. Give two advantages of apiculture.



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64. How do diploblastic and triploblastic animals differ from each other?



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65. Give the site of occurrence of meiosis.



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66. Distinguish between metaphase of mitosis and metaphase I of meiosis.



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67. Why is meiosis essentially in sexually reproducing organisms?



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



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69. What is interphase? Why was it previously known as resting phase?



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70. What is G_0 ?





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71. Give the structure of ethanol



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72. Distinguish between plant and animal cell mitosis.



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73. What is micropropagation. Describe its significance.



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74. Why is meiosis called the reductional division, whereas mitosis is called equational division?



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75. What is a synaptonemal complex?



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76. Differentiate between gametic meiosis and zygotic meiosis.



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77. Define the term synapsis. Name the stage of cell cycle when it occurs.



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78. Define the term crossing over. Name the stage of cell cycle when it occurs.



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79. Define the term chiasmata. Name the stage of Prophase-I when it occurs.



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80. How does cytokinesis in plant cells differ from that in animal cells?



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81. Write significance of mitosis.



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82. What are homologous chromosomes?

What happens to homologues during meiosis?





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83. Describe the different steps in one complete cycle of PCR.



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84. Why does a multicellular organism require two types of cell division? Which of two produces the greater number of cells.



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85. Give the sequence of the events occurring during prophase of mitosis.



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86. Write significance of mitosis.



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87. Why is meiosis called the reductional division, whereas mitosis is called equational

division?



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88. Describe types of mitosis.



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89. List the most important feature of the following stages: S-phase.



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90. List the most important feature of the following stages: Zygotene.



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91. List the important sources of sulphur.



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92. List the most important feature of the following stages: Anaphase-I



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93. Draw a neat and labelled diagram of a sarcomere.



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94. List the main differences between mitosis and meiosis.



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95. Describe the events taking place during interphase.



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96. Give the technical terms used for the following:

The sequence of processes in the overall life history of a cell or an organism including growth, differentiation, Maturation and senescence.



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97. During anaphase-I of meiosis



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98. Describe three types of modified leaves.



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99. List the main differences between mitosis and meiosis.



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100. Vacuole in a plant cell:



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101. What are homologous chromosomes?

What happens to homologues during meiosis?



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102. Name two types of cells.



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103. What is peculiar about Metaphase -I of meiosis?



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104. In the biological practical class, the teacher asked the students to identify the

stage of cell division in a slide of runder the objective of a microscope. Some students identified it as of Metaphase of mitosis while other students identified it as of Metaphse-I of meiosis. Finally, the teacher told the students that it was of Metaphse-I.

Enlist the differences between Metaphse-I and Metaphase-II of meiosis.



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105. In the biological practical class, the teacher asked the students to identify the stage of cell division in a slide of runder the objective of a microscope. Some students identified it as of Metaphase of mitosis while other students identified it as of Metaphse-l of meiosis. Finally, the teacher told the students that it was of Metaphse-l.

What is significance of meiosis?



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106. What are the essential stages occurring during meiosis?



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107. The replication of DNA is a pre-requisite for a eukaryotic cell to undergo division.

During the cell cycle. The DNA replicates in

A. S-phase

B. G_1 -phase

C. G_2 -phase

D. M-phase

Answer:



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108. Crossing over that results in genetic recombination in higher organisms occurs between

A. Sister chromatids of a bivalent

B. Non-sister chromatids of a bivalent

C. Two daughter nuclei

D. Two different bivalents

Answer:



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109. In somatic cell cycle:

A. In G_1 phase, DNA content is double the amount of DNA of original cell

B. DNA replication occurs in S-phase

C. A short interphase is followed by a long

M-phase

D. G_2 -phase follows mitotic phase

Answer:



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110. If you are provided with root tips of onion in your class and are asked to count the chromosomes, which of the following stages can you most conveniently look into?

A. Metaphase

B. Telophase

C. Anaphase

D. Prophase

Answer:



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111. The process in which mature differentiated cells reverse to meristematic activity to form callus is called:

A. G_1

B. G_2

C. G_0

D. M

Answer:



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112. Centromere is required for :

A. Transcription

B. Crossing over

C. Cytoplasmic cleavage

D. Movement of chromosomes towards poles

Answer:



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113. The number of mitotic cell divisions required to produce 256 cells from single cell would be

A. 10

B. 12

C. 6

D. 8

Answer:



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114. In meiosis, chromosome number becomes

A. Half of its parent chromosome number

B. Same as that of parent chromosome
number

C. One fourth of its parent chromosome
number

D. None of the above

Answer:



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115. A cell plate is laid during

A. Cytokinesis

B. Karyokinesis

C. Interphase

D. None of the above

Answer:



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116. Sudden and abnormal mitosis in an organ will frequently lead to

A. Zygote

B. Cancer

C. New organ

D. Gastrula

Answer:



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117. Mitotic spindle has main protein

A. Tubulin

B. Myosin

C. Tropomyosin

D. Dynein

Answer:



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118. DNA replication includes:

A. Prophase

B. S-phase

C. G_1 -phase

D. G_2 -phase

Answer:



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119. In mitosis, the number of chromosome sets in daughter cells will be

A. Different from parent cells

B. Half of the parents cells

C. Double of the parent cells

D. Same as in parent cells

Answer:



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120. In meiosis, synapsis occurs during

A. Interphase

B. Prophase

C. S-phase

D. Leptotene

Answer:



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121. Which one of the following organelles is not surrounded by any membrane?

A. Mitochondria

B. Chloroplast

C. ER

D. Ribosome

Answer:



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122. Cell division of bacteria is of

A. Mitotic

B. Meiotic

C. Amitotic

D. None of the above

Answer:



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123. Which one of the following organelles is not surrounded by any membrane?

- A. Centriole
- B. Chloroplast
- C. Mitochondria
- D. Cell wall

Answer:



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124. When synapsis is complete all along the chromosome, the cell is said to have entered a stage called

- A. Zygotene
- B. Pachytene
- C. Diplotene
- D. Diakinesis

Answer:



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125. Spindle fibres are made up of :

A. Tubulin

B. Humulin

C. Intermediate filament

D. Flagellin

Answer:



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126. Mitosis is characterised by

- A. Reduction in chromosome number
- B. Karyokinesis
- C. Formation of four daughter nuclei
- D. Cytokinesis

Answer:



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127. Variation appear during meiosis due to

A. Independent assortment

B. Crossing over

C. Linkage

D. Glycolysis

Answer:



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128. Which of the following protein forms spindle fibres?

A. Tubulin

B. Myosin

C. Tropomyosin

D. Dynein

Answer:



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129. Crossing over occurs in

A. Zygotene

B. Leptotene

C. Pachytene

D. Diplotene

Answer:



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130. In meiosis, the chromosomes replicate during

A. Prophase

B. Metaphse

C. Anaphase

D. Interphase

Answer:



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131. Chromosomes are visible with chromatids at one of the following phases of mitosis

A. Interphase

B. Prophase

C. Metaphase

D. Anaphase

Answer:



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132. Chromosomes replicate in which stage of meiosis?

A. Prophase-I

B. Prophase-II

C. Teleophase

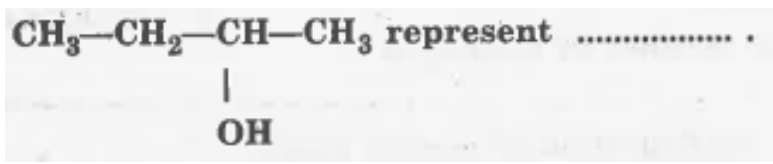
D. Interphase

Answer:



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133. Fill in the blanks:



- A. B-Metaphse
- B. C-Karyokinesis
- C. D-Synthetic phase
- D. A-Cytokinesis

Answer:

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134. Synapsis occurs between

- A. A male and a female gamete
- B. mRNA and ribosomes
- C. Spindle fibres and centromere
- D. Two homologous chromosomes

Answer:



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135. G_1 , G_2 and S phases are seen in which phase of the cell cycle?

A. Metaphase

B. Prophase

C. Interphase

D. Anaphase

Answer:



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136. During the G_1 -phase of cell division

- A. RNA and proteins are synthesized
- B. Pre-mitotic DNA is synthesized
- C. Post-mitotic DNA is synthesized
- D. Cell undergoes duplication

Answer:



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137. Crossing over occurs in

A. Leptotene

B. Zygotene

C. Pachytene

D. Diplotene

Answer:



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138. Best material for the study of mitosis in laboratory is

A. Anther

B. Root tip

C. Leaf tip

D. Ovary

Answer:



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139. Polyploidy can be induced artificialy by

A. Colchicine

B. Inbreeding

C. Line breeding

D. Self pollination

Answer:



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140. Recombination is involved in the process of

A. Cytokinesis

B. Spindle formation

C. Crossing over

D. Chromosome duplication

Answer:



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141. Which of the following is unique to mitosis and not a part of meiosis?

A. Homologous chromosomes behave

independently

B. chromatids separate during anaphase

C. Homologous chromosomes pair and

form bivalents

D. Homologous chromosomes crossover

Answer:



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142. Which of the following characters is related with telophase?

- A. Formation of nuclear membrane
- B. Formation of nucleolus
- C. Elongation of chromosomes
- D. Formation of two daughter nuclei

Answer:



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143. Chromosomes are arranged along the equator during

- A. Prophase
- B. Metaphase
- C. Anaphase
- D. Telophase

Answer:



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144. DNA replication occurs during which part of cell cycle?

A. G_1 – phase

B. S-phase

C. G_2 -phase

D. Dividing phase

Answer:



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145. Amitosis is shown by

A. Bacteria

B. Euglena

C. Syllis

D. Hydra

Answer:



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146. During which stage of meiosis, synaptonemal complex is formed?

A. Pachytene

B. Diplotene

C. Diakinesis

D. Zygotene

Answer:



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147. Which of the following events takes place during diplotene of Prophase-I of meiosis?

- A. Compaction of chromosomes
- B. Formation of synaptonemal complex
- C. Formation of recombinational nodules
- D. Dissolution of synaptonemal complex

Answer:



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148. The exchange of segment of non-sister chromatids between chromosomes of a homologous pair is called

- A. Transformation
- B. Translocation
- C. Crossing over
- D. Chromosome aberration

Answer:



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149. Crossing over may result in

- A. Addition of genetic material
- B. Deletion of genetic material
- C. Exchange of genetic material
- D. All of these

Answer:



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150. In mitosis, the chromosomes can be seen most distinctly during

A. Interphase

B. Prophase

C. Metaphase

D. Telophase

Answer:



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151. Chromosomes appear as long thin threads during:

A. Diakinesia

B. Diplotene

C. Leptotene

D. Zygotene

Answer:



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152. Which phase comes in between

G_1 and G_2 phases of cell cycle?

A. M-phase

B. G_0 -phase

C. S-phase

D. Interphase

Answer:



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153. Cell division cannot be stopped in which phase of the cell cycle?

A. G_1 – phase

B. G_2 phase

C. S-phase

D. Prophase

Answer:



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154. Chiasmata formation takes place during

- A. Prophase-I
- B. Metaphase-I
- C. Anaphase-I
- D. Telophase-I

Answer:



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155. During meiosis, the alleles of the parental pair separate or segregate from each other. How many alleles(s) are then transmitted to a gamete?

A. Four

B. Two

C. Six

D. One

Answer:



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156. Time period between meiosis I and meiosis II is called:

- A. Interphase
- B. Cytokinesis
- C. Interkinesis
- D. Diakinesis

Answer:



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157. During gamete formation, the enzyme recombinase participates during

A. Metaphase-I

B. Anaphase II

C. Prophase-I

D. Prophase-II

Answer:



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158. The highest boiling point is expected for

A. Inhibit spindle formation during mitosis

B. Inhibit cytokinesis

C. Allow mitosis beyond metaphase

D. Induce formation of multiple contractile
rings

Answer:



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159. Colchicine is obtained from which of the following families?

A. Poaceae

B. Brassicaceae

C. Malvaceae

D. Liliaceae

Answer:



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160. A stage in mitosis that starts towards the middle of anaphase and is completed with the telophase is

- A. Cytokinesis
- B. Karyokinesis
- C. Crossing over
- D. Interkinesis

Answer:



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161. If the number of chromosomes in root cell is 14, then what will be the chromosome number in synergids?

A. 14

B. 21

C. 7

D. 28

Answer:



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162. The term synaptonemal complex refers to the site of

A. Chromatid separation

B. Spindle attachment

C. Replication

D. Chromosome alignment and recombination

Answer:



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163. The number of autosomes in a normal human cell is

A. 44

B. 45

C. 466

D. 48

Answer:



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164. The chromosomes become gradually visible with compaction of chromatin during the meiotic stage

A. Diplotene

B. Leptotene

C. Zygotene

D. Pachytene

Answer:



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165. The complex formed by a pair of synapsed homologous chromosomes is called

A. Equatorial plate

B. Kinetochore

C. Bivalent

D. Axoneme

Answer:



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166. Meiosis takes place in

A. Meioscyte

B. Conidia

C. Gemmule

D. Megaspore

Answer:



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167. Onion root tip during metaphase stage of mitosis, the number of kinetochores will be

A. 4

B. 8

C. 16

D. 32

Answer:



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168. During which phase (s) of cell cycle, amount of DNA in a cell remains at $4C$ level if the initial amount is denoted as $2C$?

A. Only G_2

B. G_2 and M

C. G_0 and G_1

D. G_1 and S

Answer:



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169. In S-phase of the cell cycle

- A. Chromosome number is increased
- B. Amount of DNA is reduced to half
- C. Amount of Dna is doubled
- D. Amount of DNA is kept same

Answer:



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170. The enzyme recombinase is required at which stage of meiosis?

A. Diplotene

B. Diakinesis

C. Pachytene

D. Zygotene

Answer:



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171. Nuclear envelope is a derivative of:

A. SER

B. Membrane of Golgi complex

C. Microtubules

D. RER

Answer:



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172. The number of chromosomes in meiocyte (2N) of apple is

A. 24

B. 380

C. 34

D. 20

Answer:



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173. Some cells in adult animals do not divide. They exit no G_1 phase and enter in an in active stage called

A. G_1 phase

B. G_0 phase

C. S-phase

D. M-phase

Answer:



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174. in a typical eukaryotic cell cycle, Gap-1 synthesis and Gap-2 are those phases included in the

- A. Prophase
- B. Metaphase
- C. Anaphase
- D. Interphase

Answer:



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175. During cell growth, DNA synthesis occurs in

A. M-phase

B. S-phase

C. G_2 phase

D. g_1 phase

Answer:



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176. The mechanism that causes a gene to move from one linkage group to another is called:

A. Crossing over

B. Inversion

C. Duplication

D. Translocation

Answer:



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177. Crossing over occurs in

A. Diplotene

B. Pachytene

C. Leptotene

D. Zygotene

Answer:



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178. Spindle fibres attach on to

A. Kinetosome of the chromosome

B. Telomere of the chromosome

C. Kinetochore of the chromosome

D. Centromere of the chromosome

Answer:



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179. wheat root cells have 42 chromosomes.
the number of chromosomes in a cell of pollen
grain is

A. Polyteny

B. Aneuploidy

C. Polyploidy

D. Somaclonal variations

Answer:



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180. These questions consist of two statements each, printed as Assertion and Reason. While answering these questions, you are required

to choose any one of the following four responses. A. If both Assertion and Reason are true and Reason is a correct explanation of the Assertion. B. If both Assertion and Reason are true but Reason is not a correct explanation of the Assertion. C. If Assertion is true but Reason is false. D. If both Assertion and Reason are false.

Assertion: Vascular cambium is considered as lateral. Reason. It gives rise to lateral shoots.

A. A

B. B

C. C

D. D

Answer:



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181. These questions consist of two statement each, printed as Assertion and Reason. While answering these questions, you are required to choose any one of the following four responses. A. If both Assertion and Reason are

true and Reason is a correct explanation of the Assertion. B. If both Assertion and Reason are true but Reason is not a correct explanation of the Assertion. C. If Assertion is true but Reason is false. D. If both Assertion and Reason are false.

Assertion: Vascular cambium is considered as lateral. Reason. It gives rise to lateral shoots.

A. A

B. B

C. C

D. D

Answer:



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182. These questions consist of two statements each, printed as Assertion and Reason. While answering these questions, you are required to choose any one of the following four responses. A. If both Assertion and Reason are true and Reason is a correct explanation of

the Assertion. B. If both Assertion and Reason are true but Reason is not a correct explanation of the Assertion. C. If Assertion is true but Reason is false. D. If both Assertion and Reason are false.

Assertion. karyotypic analysis is scientific study of complete chromosome complement of an individual. Reason. Karyotypic analysis can be used to diagnose the pre-natal chromosomal disorders.

A. A

B. B

C. C

D. D

Answer:



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183. Centromere is required for :

A. Transcription

B. Crossing over

C. Cytoplasmic cleavage

D. Movement of chromosomes towards poles

Answer:



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184. In meiosis, the daughter cells are not similar to that of parent because of

A. Crossing over

B. Synapsis

C. Both (a) and (b)

D. None of the above

Answer:



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185. When synapsis is complete all along the chromosome, the cell is said to have entered a stage called

A. Zygotene

B. Pachytene

C. Diplotene

D. Diakinesis

Answer:



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186. Meiotic crossing over involves

A. Non-sister chromatids of a pair of homologous chromosomes

B. Sister chromatids

C. Chromatids of non-homologous
chromosomes

D. None of the above

Answer:



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187. During the meiotic division, the

A. Homologous chromosomes behave
independently

B. Homologous chromosomes do not segregate

C. The linkage is disturbed

D. All of the above

Answer:



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188. If a cell has twice as much DNA as in a normal functional cell, it means that the cell

- A. Is preparing to divide
- B. Has completed division
- C. Has reached the end of life span
- D. Has ceased to function

Answer:



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189. During cell division, spindle fibres are attached to which part of chromosome?

A. Kinetochores

B. Centromere

C. Centriole

D. Secondary constrictions

Answer:



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190. When does synapsis occur in meiosis?

A. Zygotene

B. Leptotene

C. Diplotene

D. Pachytene

Answer:



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191. Synaptonemal complex is observed during cell division in

A. Meiotic prophase

B. Mitotic prophase

C. Meiotic metaphase

D. Mitotic telophase

Answer:



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192. Chromosomes are arranged along the equator during

A. Metaphase

B. Anaphase

C. Telophase

D. Prophase

Answer:



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193. Spindle fibres are made up of :

A. Tubulin

B. Humulin

C. Intermediate filament

D. Flagellin

Answer:



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194. Number of mitotic division required for the formation of 128 cells

A. 127

B. 32

C. 12

D. 7

Answer:



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195. DNA replication includes:

A. G_1 phase

B. G_2 phase

C. Metaphase

D. Anaphase

Answer:



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196. Replication of centriole occurs during

- A. Interphase
- B. Prophase
- C. Early telophase
- D. Late telophase

Answer:



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197. L-shaped chromosomes are also called

- A. Acrocentric
- B. Telocentric
- C. Sub-metacentric
- D. None of the above

Answer:



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198. A gymnospermic leaf contains 16 chromosomes. The number of chromosomes in its endosperm is

A. 24

B. 16

C. 12

D. 8

Answer:



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199. What is peculiar about G_0 phase?



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200. Define crossing over. What is the significance of crossing over ?



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201. What is kinetochore? Give its significance.



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202. List any two events which occur during G_2 -phase.



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203. Define

synaptonemal complex.



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204. State two benefits of mitosis.



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205. What is mitotic apparatus?



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206. Distinguish between metaphase of mitosis and metaphase I of meiosis.



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207. List the event which occurs during following stages: Zygotene



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208. List the event which occurs during following stages: Pachytene



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209. List the most important feature of the following stages: Anaphase-I



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210. What is the significance of meiosis?



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211. Give the sequence of the events occurring during prophase of mitosis.



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212. Name the stage of cycle at which one of the following events occur:

Chromosomes are moved to spindle equator.



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213. List the stages during which following events occur Disappearance of synaptonemal complex.



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214. Write notes on Metaphase plate



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215. During anaphase-I of meiosis



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Example

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



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2. Distinguish cytokinesis from karyokinesis.



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3. Describe the events taking place during interphase.



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4. What is G_0 (quiescent phase) of cell cycle?



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5. Why is mitosis called equational division?



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6. Name the stage of cycle at which one of the following events occur:

Chromosomes are moved to spindle equator.



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7. Name the stage of cell cycle at which one of the following events occur: Centromere splits and chromatids separate.



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8. Name the stage of cell cycle at which one of the following events occur: Pairing between homologous chromosomes takes place.



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9. Name the stage of cell cycle at which one of the following events occur: Crossing over between homologous chromosomes takes place.



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10. Describe the following briefly

bivalent

Draw a diagram to illustrate your answer.



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11. Describe the following briefly

chiasmata

Draw a diagram to illustrate your answer.



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12. Describe the following : Draw a diagram to illustrate your answer: synopsis



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13. How does cytokinesis in plant cells differ from that in animal cells?



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14. Find examples where the four daughter cells from meiosis are equal in size and where they are found unequal in size.



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15. Distinguish anaphase of mitosis from anaphase I of meiosis.



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16. List the main differences between mitosis and meiosis.



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17. What is the significance of meiosis?



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18. Discuss with your teacher about: haploid insects and lower plants where cell-division occurs.



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19. Discuss with your teacher about: some haploid cells in higher plants where cell-division does not occur.





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20. Can there be mitosis without DNA replication in 'S' phase?



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21. Can there be DNA replication without cell division?



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22. Analyse the events during every stage of cell cycle and notice how the following two parameters change: number of chromosomes (N) per cell



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23. Analyse the events during every stage of cell cycle and notice how the following two parameters change: amount of DNA content (C) per cell



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24. Between a prokaryote and a eukaryote, which cell has a shorter cell division time?



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25. Which of the phases of cell cycle is of longest duration?



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26. Name a stain commonly used to colour chromosomes.



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27. Which tissue of animals and plants exhibits meiosis?



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28. Given that the average duplication time of E.coli is 20 minutes. How much time will two E.coli cells take to become 32 cells?



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29. Which part of the human body should one use to demonstrate stages in mitosis?



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30. What attributes does a chromatid require to be classified as a chromosome?



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31. The diagram shows a bivalent at prophase I of meiosis. Which of the four chromatids can cross over?



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32. If a tissue has at a given time 1024 cells, how many cycles of mitosis had the original parental single cell undergone?



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33. An anther has 1200 pollen grains. How many pollen mother cells must have been there to produce them?



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34. At what stage of cell cycle does DNA synthesis take place?



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35. It is said that the one cycle of cell division in human cells (eukaryotic cells) takes 24 hours. Which phase of the cycle, do you think occupies the maximum part of cell cycle?



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36. It is observed that heart cells do not exhibit cell division. Such cells do not divide further and exitphase to enter an inactive stage calledof cell cycle. Fill in the blanks.



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37. In which phase of meiosis are the following formed? Choose the answers from hint points given:

interkinesis



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38. In which phase of meiosis are the following formed? Choose the answers from hint points given:

Recombination nodules.....



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39. In which phase of meiosis are the following formed? Choose the answers from hint points given:

Appearance/ activation of enzyme
recombinase.....



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40. In which phase of meiosis are the following formed? Choose the answers from hint points given:

Termination of chiasmata



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41. In which phase of meiosis are the following formed? Choose the answers from hint points given:

interkinesis



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42. In which phase of meiosis are the following formed? Choose the answers from hint points given:

Formation of dyad of cells





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43. State the role of centriole other than spindle formation.



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44. Mitochondria and plastids have their own DNA (genetic material). What is known about their fate during nuclear division like mitosis?



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45. A cell has 32 chromosomes. It undergoes mitotic division. What will be the chromosome number (N) during metaphase? What would be the DNA content (C) during anaphase?



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46. While examining the mitotic stage in a tissue, one finds some cells with 16 chromosomes and some with 32 chromosomes. What possible reasons could

you assign to this difference in chromosome number. Do you think cells with 16 chromosomes could have arisen from cells with 32 chromosomes or vice versa?



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47. The following events occur during the various phases of the cell cycle. Name the phase against each of the events.

Disintegration of nuclear membrane.....



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48. The following events occur during the various phases of the cell cycle. Name the phase against each of the events.

Apperance of nucleolus



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49. The following events occur during the various phases of the cell cycle. Name the phase against each of the events.

Division of centromere



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50. The following events occur during the various phases of the cell cycle. Name the phase against each of the events.

Replication of DNA



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51. Mitosis results in producing two cells which are similar to each other . What would be the

consequence if each of the following irregularities occur during mitosis?

Nuclear membrane fails to disintegrate



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52. Mitosis results in producing two cells which are similar to each other . What would be the consequence if each of the following irregularities occur during mitosis?

Duplication of DNA does not occur



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53. Mitosis results in producing two cells which are similar to each other . What would be the consequence if each of the following irregularities occur during mitosis?

Centromeres do not divide



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54. Mitosis results in producing two cells which are similar to each other . What would be the consequence if each of the following

irregularities occur during mitosis?

Cytokinesis does not occur.



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55. Both unicellular and multicellular organisms undergo mitosis. What are the differences, if any, observed in the process between the two?



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56. Name the pathological condition when uncontrolled cell division occurs.



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57. Two events take place, During S-phase in animal cells. DNA replication and duplication of centriole. In which parts of the cell do events occurs?



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58. Comment of the statement Meiosis enables the conservation of specific chromosome number of each species even though the process per se, results in reduction of chromosome number.



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59. Name a cell that is found arrested in diplotene stage for months and years. Comment in 2-3 lines how it complete cell cycle?



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60. How does cytokinesis in plant cells differ from that in animal cells?



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61. Comment on the statement 'Telophase is reverse of prophase'.



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62. What are the various stages of meiotic prophase-I? Enumerate the chromosomal events during each stage?



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63. Differentiate between events of mitosis and meiosis.



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64. Define

synaptonemal complex.



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65. Write brief note on the following:

Metaphase plate.



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66. Write briefly the significance of mitosis and meiosis in multicellular organism.



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67. presence of an additional copy of the chromosome number 21 is



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68. Which events occur during S-phase of interphase?



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69. What happens to a cell lying in G_0 phase?



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70. Explain:

Importance and drawback of amniocentesis.



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71. What are kinetochores? State their function



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72. At which stage of Meiosis , reduction of chromosome number occurs?



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73. What is mitotic apparatus?



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74. What are phragmoplasts?



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75. Name the stage of cell cycle of which synapsis takes place.



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76. Define disjunction.



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77. Give the term for the network of interconnected food chains.



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78. What is trigger for initiation of cell division?





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79. In which respects, interkinesis differs from interphase?



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80. State the differences between Anaphase-I and Anaphase-II.



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81. Differentiate mitosis in plant cell and animal cell.



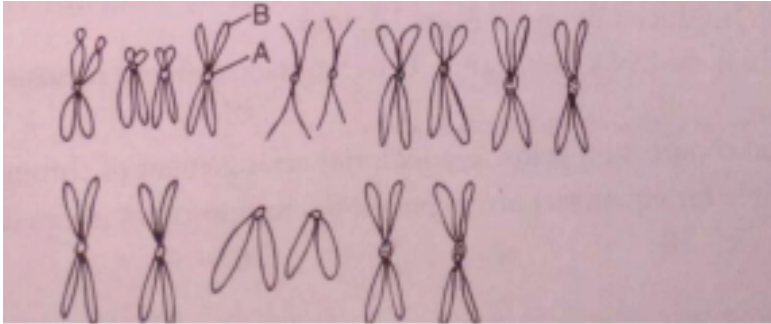
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82. Which type of cell division is required for growth and repair of body and which type is involved in formation of gametes?



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83. What is A and B?



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84. Fill in the blank:

The centriole forms spindle during cell division
in Cells.



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85. At metaphase, chromosomes are attached to the spindle fibres by their

- A. Kinetochores
- B. Satellites
- C. Centromeres
- D. Secondary constrictions

Answer:



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86. Identify the meiotic stage in which the homologous chromosomes separate while the sister chromatids remain associated at the centromeres

A. Metaphase-I

B. Metaphase-II

C. Anaphase-I

D. Anaphase-II

Answer:



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