



BIOLOGY

BOOKS - GR BATHLA & SONS BIOLOGY (HINGLISH)

CHROMOSOMAL BASIS OF INHERITANCE

Multiple Choice Questions

1. Who postulated the "Chromosomes" Theory of Inheritance

Or

The behaviour of the chromosomes was parallel to the behavior of genes during meiosis was noted by

A. De vries

B. Henking

C. Correns

D. Sotton and boveri

Answer: D



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2. The relationship between the behaviour of chromosomes and the behaviour of Mendelian factors was first recognized By W.s Sutton and T.

Boveri in:

A. 1902

B. 1890

C. 1869

D. 1938

Answer: A



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3. Chromosomal theory of inheritance was based on :

- A. Sex linkage
- B. Segregation of genes
- C. Diploidy and haploidy
- D. presence of sex chromosomes

Answer: B



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4. what is the correct sequence of the following events ?

1. Formulation of the chromosome theory of inheritance
2. Experiments which proved that DNA is the genetic material
3. Mendel's law of inheritance

A. 1,3 and 2

B. 1,2and3

C. 3,1 and2

D. 2,1 and3

Answer: A



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5. when closely placed genes on the same chromosome are inherited together the phenmenon is known as :

A. Linkage

B. Crossing over

C. gene interaction

D. Multiple allslism

Answer: A



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6. the genes of different traits located on different loci on the same chromosome are:

- A. alleles
- B. linked
- C. mutated
- D. pleiomorphic

Answer: A



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7. the term 'linkage' was coined by :

- A. T.H . Morgan
- B. W.sutton
- C. T.,Boveri
- D. G. Mendel

Answer: A



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8. Mendel found that some traits do not assort independently . Later workers found it due to:

- A. Linkage
- B. amitosis
- C. crossing over
- D. dominace of one trait over another

Answer: A



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9. Lack of indepenent assortment of two genes A and B in Fruit fly Drosophile is due to :

- A. Linkage
- B. repulsion
- C. crossing over
- D. recombination

Answer: A

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10. Linage was discovered by :

- A. mendel in pisum sativam
- B. Beadle in Neurospora crassa
- C. Bateson in Lathyrus odoratus
- D. Morgan in Drosophila melanogaster

Answer: C

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11. Bateson used the terms coupling and repulsion for linkage and crossing over. Name the correct parental or coupling type along with its cross over or repulsion :

A. Coupling aaBB,Aabb

Repulsion AABB ,aabb

B. Coupling AABB,Aabb

Repulsion AABB,Aabb

C. Coupling Aabb,aaBB

Repulsion AaBb,Aabb

D. Coupling AABB,aabb

Repulsion Aabb,aaBB

Answer: D



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12. Which of the following is suitable for experiments on linkage ?

A. $AABB \times aa$

B. $AaBb \times AaBb$

C. $aaBB \times aaBB$

D. $AA \times AaBB$

Answer: B



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13. Linkage reduces the frequency of:

A. hybrids

B. All parental types

C. Homozygous recessive parents

D. heterozygous recessive parents

Answer: A



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14. Two linked genes *a* and *b* show 20% recombination. The individuals of a hybrid cross between $++/++ \times ab/ab$ should show gametes:

A. $++ : ab$ 50

B. $++ : ab$ 80

C. $++ : ab$ 40 : a 10 : $+ b$ 10

D. $++ : ab$ 30 : $+ a$ 20 : $+ b$ 10

Answer: C



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15. A and B genes are linked. What shall be the genotype of progeny in a cross between AB/ab and ab/ab ?

A. Aabb and aabb

B. AaBb and aabb

C. AABB and aabb

D. None of these

Answer: B



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16. When two genes are situated very closed to each other in a chromosome

A. no crossing over

B. high crossing over

C. hardly any crossing over

D. Only subtle crossing over

Answer: C

17. Given are the statements regarding linkages of genes:

(i) the strength of the linkage is determined by the distance between the 2 genes in question ,

(2) The strength of the linkage is directly proportional to the distance between the two genes.

(3) The two genes are said to be linked when they fail to show independent assortment.

out of these statements:

A. all are correct

B. (i) and (ii) are correct

C. (i) and (iii) are correct

D. (ii) and (iii) are correct

Answer: C

18. The number in linkage group in E.coil is /are

A. 1

B. 2

C. 4

D. 5

Answer: A



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19. the number of linkage group correspond to :

A. tetraploid structure

B. general structure of organism

C. diploid number of chromosomes

D. haploid number of chromosomes

Answer: D



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20. *Drosophila melanogaster* possesses eight chromosomes in somatic cells .how many linkage group will be there?

A. 1

B. 2

C. 4

D. 8

Answer: C



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21. Number of linkage group in *Pisum sativum* is :

A. 2

B. 5

C. 7

D. 9

Answer: C



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22. maize with 10 pairs of chromosomes has linkage group:

A. 5

B. 10

C. 20

D. 40

Answer: B



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Crossing Over

1. Alleles of different genes found on same chromosome may be separated

by:

- A. epistasis
- B. pleiotrophy
- C. crossing over
- D. continuous variation

Answer: C



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2. the phenomenon permitting exchange of chromosome segments is called :

- A. Linkage
- B. mutation
- C. segregation
- D. crossing over

Answer: D

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3. phenomemon of crossing over in diploid organisiiums is responsible for :

- A. recombination of linked genes
- B. segregataion between genes
- C. linkages between genes
- D. dominance of gene

Answer: A

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4. Crossing over produces:

- A. synapsis of linked genes
- B. linkages of dominant genes
- C. expression of recessive genes
- D. recombination of linked genes

Answer: D

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5. crossing over involves :

- A. Duplication of chromosomes
- B. exchange of genetic material
- C. addition of chromosomes

D. deletion of chromosomes

Answer: B



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6. the term 'crossing over' was introduced by:

A. Beadle and tatum

B. sutton and boveri

C. Morgan and Cattell

D. Bateson and punett

Answer: C



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7. Crossing over takes place between :

A. two non homologous chromosomes

B. two homologous chromosomes

C. two chromosomes

D. None of the above

Answer: B



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8. Crossing over occurs between :

A. two nonsister chromatids of same bivalent

B. two sister chromatids of same chromosome

C. two nonsister chromatids of different bivalents

D. None of the above

Answer: A



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9. which one of the following is wrong ?

- A. Bivalents are formed in zygotene
- B. chiasmata are formed in diplotene
- C. Crossing over takes place in Pachtene
- D. Crossing over takes place between sister chromatids

Answer: D



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

- A. two daughter nuclei
- B. two different bivalents
- C. sister chromatids of a bivalent

D. nonsister chromatids of a bivalent

Answer: D



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11. Which is the most common mechanism of genetic variation in the population of a sexually-reproducing organism

A. Genetic drift

B. Transduction

C. Chromosome aberrations

D. Recombination

Answer: D



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12. Genetic recombination is due to :

- A. fertilization and meiosis
- B. mitosis and meiosis
- C. fertilization and mitosis
- D. None of these

Answer: A



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13. Crossing over in diploid organisms is responsible for

- A. Dominance of genes
- B. segregation of alleles
- C. linkages of alleles genes
- D. recombination of linked alleles

Answer: D



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14. Crossing over occurs in:

- A. mitotic cells
- B. meiotic cells
- C. amitotic cells
- D. mutaing cells

Answer: B



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15. In which stage of meiosis crossing over takes place

- A. prophase I

B. Metaphase I

C. Prophase II

D. Anaphase II

Answer: A



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16. During meiosis crossing over occurs at :

A. zygotene

B. pachytene

C. leptotene

D. diakinesis

Answer: B



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17. If we ignore the effect of crossing over, how many different haploid cells arise by meiosis in a diploid cell having $2n=12$

A. 8

B. 16

C. 32

D. 64

Answer: A



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18. Crossing over takes place during :

A. one -strand stage

B. two-strand stage

C. four -strand stage

D. three -strand stage

Answer: C



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19. Visible expression of the genetic phenomenon of crossing over is called :

- A. recombination
- B. Condensation
- C. chiasmata
- D. spiralization

Answer: C



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20. Cis- trans expression of genes is an example of :

- A. mutation

- B. intergenic crossing over
- C. cytoplasmic inheritance
- D. intragenic crossing over

Answer: B



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21. Crossing over is advantageous because it brings about

- A. linkage
- B. stability
- C. variations
- D. inbreeding

Answer: C



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22. the probability of a cross over occurring between two gene loci is proportional to :

- A. Activity of two loci
- B. distance between two loci
- C. how far the loci are from the centromere
- D. how tightly the chromosomes are packed in the nucleus

Answer: B



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23. the crossing over frequency is proportional to:

- A. recombinant phenotypic frequency
- B. haploid number of chromosomes
- C. diploid number of chromosomes
- D. genotypic frequency

Answer: A



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24. the maximum frequency of a recombination of genes at two loci is :

A. 0.25

B. 0.5

C. 0.75

D. 1

Answer: B



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1. Genes are located on :

- A. ribosomes
- B. lysosomes
- C. Centrosomes
- D. chromosomes

Answer: D

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2. the genes are locted on chromosomes it was proposed by :

- A. Jacob and monod
- B. Watson and Crik
- C. Morgan and Brigas
- D. Avery , macLecod and Mc Carty

Answer: C

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3. In heredity ,the genes are obtained from :

- A. Father
- B. Mother
- C. Both of these
- D. none of these

Answer: C



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4. Name the scientist who was awarded the Nobel Prize for his genetic studies on the linear arrangement of genes on chromosomes in the fruit fly ,*Drosophila melanogaster*

- A. C.F Wolff
- B. T.A .Knight

C. R.C .punnett

D. T.H ,Moran

Answer: D



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5. A gene is made up is :

A. DNA

B. RNA

C. Eiither DNA or RNA

D. Amino acids

Answer: B



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6. Genes are in the form of :

- A. Amount of base-pairs
- B. sequence of nucleotides
- C. Proportion of base -pairs
- D. none of these

Answer: A



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7. Genes are compound of :

- A. Polynucleotides
- B. peptidoglycan
- C. lipoprotein
- D. none of these

Answer: B



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8. The modern concept of gene is

- A. Segment of DNA
- B. Funcional unit ofDNA
- C. Segment of chromosome
- D. segment of DNA capable of crossing over

Answer: A



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9. the terms unit of gene is

- A. Benzer

B. Ingram

C. Bateson

D. Lederberg

Answer: C



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10. The functional unit of gene is :

A. Codon

B. Recon

C. cistron

D. muton

Answer: C



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11. A genetic unit that codes for the amino acid sequence of a complete polypeptide chain is most closely related to a :

- A. muton
- B. recon
- C. cistron
- D. replicaon

Answer: C



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12. The terms gene cistron are sometimes used synonymously because one gene contains:

- A. No cistron
- B. one cistron
- C. many genes

D. replicon

Answer: C



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13. Smallest part of DNA which takes part in crossing over is:

A. gene

B. allele

C. recon

D. none of these

Answer: B



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14. which of the following is the correct sequence of units of genetics arranged in descending order of size?

- A. gene → cistron → Muton → recon
- B. gene → Muton → muton → recon
- C. gene → recon → Cistron → Muton
- D. Gene → Cistron → Recon → Muton

Answer: C



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15. Gene frequency of a population will continue to remain stable unless it is not influenced by :

- A. mutation
- B. selection
- C. random drift

D. random mating

Answer: B



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16. The genes concerned with the production of cancer are called

A. Oncogenes

B. carcinomes

C. carcinnogens

D. cancar genes

Answer: A



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17. the gene not expressing any protein is knows as:

- A. Pseudogene
- B. epistatic gene
- C. hypostatic gene
- D. none of these

Answer: C

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18. the first gene expressing to be synthesized by khorana and other in 1970 was:

- A. an oncogene
- B. β -globin gene
- C. alanyl-tRNA gene
- D. Lactose operon gene

Answer: A

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19. Transfer of genes from one gene pool to another is called :

- A. Gene flow
- B. mutation
- C. speciation
- D. genetic drift

Answer: D

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20. Gene flow is described as the :

- A. transfer of genes from the sperms to eggs
- B. transfer of gene from the male and female organisms
- C. Exchange of genes between male and female organsims

D. trasfer of genes between populations which differ genetically from one another but can interbreed

Answer: C



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21. the chance of elimination of genes from a small populaton is an example of:

A. Speciation

B. adaptation

C. Genetic drift

D. selection pressure

Answer: C



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1. Mobile genetic elements are:

- A. Pili
- B. plasmids
- C. Barr body
- D. Transposon

Answer: D



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2. the term ' transposon ' was introduced by:

- A. Henges and jacob
- B. Beadle and tatum
- C. Morgan and Brigas

D. Nirenberg and Khorana

Answer: A



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3. Transposons are:

- A. jumping genes
- B. stationary genes
- C. transporting genes
- D. house -keeping genes

Answer: A



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4. DNA parts which can change their positions are:

- A. introns
- B. cistrons
- C. exons
- D. transposons

Answer: D

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5. Transposons are sequences of :

- A. mRNA
- B. DNA
- C. rRNA
- D. tRNA

Answer: B

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6. Certain genetic that regularly "jump" to new locations, often inactivating the gene into which become inserted, are called:

- A. episomes
- B. transposons
- C. heterochromatin
- D. overlapping genes

Answer: B



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7. The jumping genes in maize were discovered by :

- A. H.G Khorana
- B. T.H Morgan
- C. Beadle and tatum

D. Barbara Mc Clintock

Answer: D



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8. Transposons discovered by Barbara Mc Clintock are better known as:

A. jumping genes

B. Protein model

C. Both of these

D. none of these

Answer: A



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9. Transposons discovered by :

A. Jacobson

B. Fleming

C. McClintock

D. Sharp and Roberts

Answer: C



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10. Barbara Mc Cintock is famtion for her work on:

A. pea

B. rice

C. maize

D. wheat

Answer: C



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11. Mobile genetic elements in maize were discovered by :

- A. D.Baltimore
- B. N.E Borlaug
- C. H.G Khorana
- D. B.Mc Clintock

Answer: D



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12. jumping genes 'are found in :

- A. Bacteria only
- B. eukaryotes only
- C. bacteriophages only

D. Both eularyotes andprokaryotes

Answer: D



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13. Which of the is not a synonym of the 'jumping gene'?

A. Transposon

B. Intervening sequence

C. Insertion sequence element

D. Transposable genetic element

Answer: B



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1. Sudden and heritable change in a character of an organism is called:

- A. mutation
- B. selection
- C. heterosis
- D. inbreeding

Answer: A



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2. The process by which new alleles of a gene is produced is termed:

- A. Gene manipulation
- B. mutation
- C. genemanipulation
- D. none of these

Answer: B



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3. A phenomenon which include all those heritable changes . Which after phenotype of an individual is called:

- A. mutation
- B. lethality
- C. both (a) and (b) correct
- D. none of these

Answer: A



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4. chromosomal aberrations refer to :

- A. aneuploidy
- B. polyploidy
- C. numerical changes
- D. morphological changes

Answer: D

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5. which pairs is a chromosomal aberration ?

- A. deletion and transition
- B. duplication and transition
- C. duplication and transversion
- D. diplication and transversion

Answer: D

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6. Pseudodominance may be observed in heterozygotes for the a:

- A. deletion
- B. duplication
- C. Paracentric inversion
- D. reciprocal translocation

Answer: A



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7. the mutation of the type in which a part or the complete gene is removed from the genome is called :

- A. Deletion
- B. inversion
- C. Duplication

D. translocation

Answer: A



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8. If during synapsis a certain kind of abnormal chromosomes is always forced to bulge out away from its normal homologue, the abnormality is classified as a/an :

A. Deficiency

B. inversion

C. Duplication

D. isochromosome

Answer: C



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9. Attachment of a chromosomal fragment resulting in addition of one or more genes to a chromosome is called :

- A. inversion
- B. deletion
- C. translocation
- D. duplication

Answer: C

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10. chromosomes with genes abcdefg becoming abedcfg is :

- A. Inversion and deletion
- B. inversion
- C. duplication
- D. translocation

Answer: C



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11. which of the following chromosomal matation are most likely t take palce when homologous chromosomes are undergoing synapsis?

- A. Inversion and deletion
- B. deletion and duplication
- C. Inversion and translocation
- D. Translocation and duplication

Answer: B



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12. the type of speciation which results due to chromosomal aberration (like inversion and translocation) change in chromosome number

*polyplooidy ,autopolyploidy ,etc.) is known as :

- A. phyleticv speciation
- B. quantum sseciation
- C. Gradual speciation
- D. none of these

Answer: B



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13. when chromosome breaks and the the two fragment joion together after rotating by 180° is called :

- A. Inversion
- B. transversion
- C. translocation
- D. Duplication

Answer: A



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14. Rearrangement of a group of genes in a chromosome in such a way that their order in the chromosome is reversed is referred to as :

- A. inversion
- B. deficiency
- C. interchange
- D. translocation

Answer: A



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15. Chromosomes with genes abcdefg becoming abedcfg is :

A. deletion

B. inversion

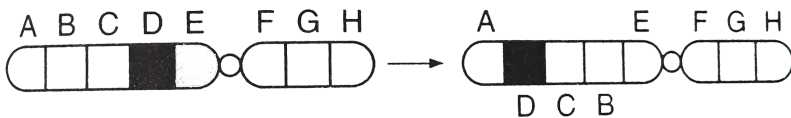
C. duplication

D. translocation

Answer: B

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16. Given below is the representation of kind of chromosomal mutation what is the kind of mutation represented ?



A. Deletion

B. duplication

C. inversion

D. Reciprocal translocation

Answer: C



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17. The exchange of one part of a chromosome to the other part of some or another chromosome is called

Or

The movement of gene from one linkage group to another is called

- A. Transfer
- B. Deletion
- C. Frameshift
- D. translocation

Answer: D



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18. The exchange of one part of a chromosome to the other part of some or another chromosome is called

Or

The movement of gene from one linkage group to another is called

- A. Inversion
- B. Translocation
- C. Crossing over
- D. dosage compensation

Answer: B



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19. the exchange of chromosome segments between nonhomo- logous chromosome is called:

- A. transfer

B. deletion

C. Frameshift

D. translocation

Answer: D



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20. The formation of multivalents at meiosis in diploid organism is due to

A. deletion

B. inversion

C. monosomy

D. reciprocal translocation

Answer: D



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21. if four chromosomes synapse into a cross-shaped configuration during meiotic prophase, the organism is heterozygous for a:

- A. deletion
- B. Translocation
- C. pericentric inversion
- D. paracentric inversion

Answer: B



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22. exact multiple of haploid number is :

- A. euploid
- B. hexaploid
- C. aneuploid
- D. heteroploid

Answer: A



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23. Loss or gain of one or more complete set of chromosomes along with the diploid complement is known as:

- A. reverse tandem duplication
- B. substitution mutation
- C. aneuploidy
- D. euploidy

Answer: D



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24. Haploids are able to express both recessive and dominant alleles /mutations because there are :

- A. Only one allele in gene
- B. two alleles for each gene
- C. dominant express immediatately
- D. Only one alleles for each gene in the individual

Answer: D

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25. Haploids are preferred over diploids for mutaion studies because in haploids:

- A. tissue culture is easy
- B. mutations are readily induced
- C. dominant mutation express immediatly
- D. recessive mutations express immediatly

Answer: D

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26. Haoloid organisms have :

- A. no enzymes
- B. no genotype
- C. no phenotype in gamete will be :
- D. only one allele of gene

Answer: D

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27. If the diploid number of chromosomes is 40, then number of chromosome in gamete will be :

- A. 40
- B. 30

C. 20

D. 10

Answer: C



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28. if root of a flowering plant has 24 chromosome ,then its gamete has many chromosomes ?

A. 4

B. 8

C. 24

D. 12

Answer: D



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29. the technique that was employed to produce haploids of dature was :

- A. Callus culture
- B. anther culture
- C. embryo culture
- D. meristem culture

Answer: B



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30. in crop improvement programme , haploids are of grest importance because they :

- A. are useful in studies of meiosis
- B. grow better under adverse condidtions
- C. give homozyous lines following diplodization

D. require only about half of the amount of chemical fertilizers as compared to diploids

Answer: C



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31. Most animals are

A. diploid

B. haploid

C. heterotrophic

D. both (a) and (b) correct

Answer: D



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32. The terms 'ploidy' was introduced by :

- A. C.C. Correns
- B. T.H. Morgan
- C. E. Strasburger
- D. A.F. Blakeslee

Answer: C



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33. Reason of fast speciation in present day crop plant is :

- A. isolation
- B. polyploidy
- C. mutation
- D. sexual reproduction

Answer: B



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34. polyploidy means :

- A. occurrence of diploid set of chromosomes
- B. occurrence of haploid set of chromosomes
- C. occurrence of three or more sets of chromosome
- D. all of the above

Answer: C



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35. polyploid with genomes derived from same original species is :

- A. amphidiphoid

B. allopolyploid

C. autopolyploid

D. autoallopolyploid

Answer: C



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36. Find out the correct statement :

A. $2n-1$ condition results in trisomy

B. polyploidy is more common in animals than in plants

C. monosomy and nullisomy are the two types of euploidy

D. polyploids occur due to the failure in complete separation of sets of chromosomes

Answer: D



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37. An autotetraploid plant bearing a genotype AAAa is called as:

- A. triplex
- B. triploid
- C. trisomic
- D. monosomic

Answer: A



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38. A cell in the body of a man with 92 chromomes willl be termed :

- A. haploid
- B. triploid
- C. diploid

D. tetraploid

Answer: D



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39. A polyploid derived from F_1 hybrid between two species is :

A. autoodiploid

B. hexaploid

C. autopolyploid

D. amphidoid

Answer: D



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40. Desired improved variety of economically useful crops are raised by

- A. mutaion
- B. biofertilizer
- C. hybrization
- D. natural selection

Answer: C

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41. what is correct ?

- A. Tetraploid plants may have wider and extensive distribution
- B. Aneuploidy occurs due to chromosome doubling
- C. Multivalent foramtion occurs in allopoloid
- D. Raphanbrassica is an autoploid

Answer: A

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42. Endosperm nucleus is :

A. n

B. $3n$

C. $2n$

D. $4n$

Answer: B



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43. Endosperm of angiospermic plant is :

A. Triploid

B. diploid

C. haploid

D. tetraploid

Answer: A



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44. Aleuone layer is ,

A. haploid

B. diploid

C. triploid

D. tetraploid

Answer: C



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45. What would be the number of chromosomes in the cell of the aleurone layer in a plant species with 8 chromosomes in its synergids

- A. 8
- B. 16
- C. 24
- D. 32

Answer: C



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46. What is the number of chromosomes in aleurone layer if 10 number of chromosomes are found in megaspore mother cell?

- A. 10
- B. 15
- C. 20

D. none of these

Answer: B



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47. When a diploid female plant is crossed with a tetraploid male, the ploidy level of endosperm cells in the resulting seed is:

A. diploidy

B. triploidy

C. tetraploidy

D. pentaploidy

Answer: C



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48. Seedless Watermelon plants are obtained by :

- A. rising triploids
- B. colchicine application
- C. inducing parthenogenesis
- D. applying organic manure to the soil

Answer: A



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49. Seedless watermelons are produced by crossing between :

- A. triploid female plant with diploid male plant
- B. diploid female planta with tetraploid male plant
- C. Tetraploid female plant with tertraloid male plant
- D. tetraploid female plant with tetraploid male plant

Answer: A



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50. When a diploid female plant is crossed with a tetraploid male, the ploidy level of endosperm cells in the resulting seed is:

- A. diploidy
- B. triploidy
- C. tetraploidy
- D. pentaploidy

Answer: C



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51. the major role formation of new species from old species is played by :

- A. autoploidy
- B. allopolyploidy
- C. both (a) and (b) correct
- D. none of these

Answer: C

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52. Triticum monococcum is :

- A. diploid
- B. triploid
- C. Tetraploid
- D. Hexaploid

Answer: A

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53. *Triticum durum durum* is :

- A. diploid
- B. triploid
- C. tetraploid
- D. Hexaploid

Answer: C



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54. which is a ployplloid?

- A. Mango
- B. Guava
- C. Tobacco

D. *Triticum aestivum*

Answer: D



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55. *Triticum aestivum*, the common bread wheat, is :

- A. diploid with 14 chromosomes
- B. triloid with 24 chromosomes
- C. hexaploid with 42 chromosomes
- D. tetraploid with 28 chromosomes

Answer: C



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56. In the hexaploid wheat, the haploid (n) and basic (x) numbers of chromosomes are

- A. $n=21$ and $x=14$
- B. $n=21$ and $x=7$
- C. $n=7$ and $x=21$
- D. $n=21$ and $x=21$

Answer: B



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57. which of the following is man -made?

- A. Secale
- B. Triticum
- C. Triticale
- D. Cicer arietinum

Answer: C



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58. the plant triticale is an /are

- A. diploid
- B. haploid
- C. tetraploid
- D. allopolyploid

Answer: D



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59. Triticale is the hybrid between wheat and

- A. rye

B. Barley

C. Sugarcane

D. pearl millet

Answer: A



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60. The haploid chromosomes number of a sexually reproducing angiosperm is 12 the chromosome number of the embryo and endosperm of plant are respectively:

A. 12 and 36

B. 24 and 24

C. 36 and 24

D. 24 and 36

Answer: D



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61. Chromosomal imbalance is most frequent during which of the following stages of human development ?

- A. Foetal
- B. embryonic
- C. adult
- D. childhood

Answer: B



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62. the chromosomal doubling in making polyploid plants is carried out by using :

- A. Colchicine treatment

B. PEG (phospho ethylene glycol)

C. EMS (ethyl-sulphonate)

D. NAA (nictinamide acetic acid)

Answer: A



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63. Colchicine brings about :

A. cell division

B. polyploidy

C. cell elongation

D. cell differentiation

Answer: B



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64. Colchicine interferes with :

- A. organization of spindle
- B. chromosomes replication
- C. chromosome condensation
- D. incorporation of nitrogenous bases

Answer: A



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65. If a diploid cell is treated with colchicine, then it becomes

- A. diploid
- B. triploid
- C. tetraploid
- D. monploid

Answer: C



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66. which one of following correctly explains the term 'chimeaera' ?

- A. spontaneously induced deletion
- B. Breaking a part of chromosomes segment during mutation
- C. Development of genetically diverse tissues in the same organism
- D. During mutation cell division that result in loss or gain of one or more chromosomes is known as:

Answer: C



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67. Any change during cell division that result is loss or gain of one or more chromoesomes is known as :

- A. euploidy
- B. aneuploidy
- C. monoploidy
- D. hypoploidy

Answer: B

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68. A condition characterized by not having an exact number of chromosomes in a multiple of haploid set is called:

- A. polyploidy
- B. synploidy
- C. aneuploidy
- D. all of these

Answer: C

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69. Aneuploidy is :

A. $n-1$

B. $3n$

C. $2n-1$

D. $n+1$

Answer: C

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70. mutation at the chromosomal level with an addition of individual chromosomes is referred to as:

A. Polysomy

B. polyploidy

C. point mutation

D. structural mutation

Answer: C



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71. The chromosome constitution $2n-2$ of an organism represents :

A. haploid

B. Trisomic

C. Nullisomic

D. monosomic

Answer: C



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72. The loss of one single chromosome creates a condition called:

- A. Trisomy
- B. nullisomy
- C. monosomy
- D. haploid

Answer: C



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73. When chromosomes is lacking is lacking in a diploid set , it is called :

- A. Trisomic
- B. nullisomic
- C. Pentasomic
- D. monosomic

Answer: C



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74. Monosomics are:

A. $2n-1$

B. n

C. $2n+1$

D. $2n-2$

Answer: A



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75. Haploid chromosome number of onion is 8 , what will be its monosomic number ?

A. 15

B. 16

C. 17

D. 32

Answer: A



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76. A duple monosomic is correctly represented as:

A. $2n-2$

B. $2n-1-1$

C. $2n+2$

D. $2n+1+1$

Answer: B



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77. The formula of triple monosomics is :

A. $2n-3$

B. $2n+3$

C. $2n-1-1-1$

D. $2n+1+1+1$

Answer: C



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78. An organism or cell having a chromosome number that is higher than the exact multiple of the basic number is known as:

A. polyploid

B. hyperploid

C. allopolyploid

D. autopolyploid

Answer: B



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79. Trisomy has chromosome complement of :

A. $2n-1$

B. $2n-1-1$

C. $2n+1$

D. $2n+1+1$

Answer: C



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80. A trisomic individual possesses extra -chromosomes :

A. One

B. Two

C. three

D. Four

Answer: A



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81. Dature is a classical example of :

A. Trisomy

B. triploisy

C. monosomy

D. monoploidy

Answer: A



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82. How many trisomics are possible in Dature ?

A. 10

B. 24

C. 12

D. 30

Answer: C



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83. Trisomy of which chromosomes is involved in Down syndrome ?

A. 15th

B. 21 st

C. 20th

D. 19 th

Answer: B



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84. When the chromosomes number of a given organism has one additional chromosome in one of the homologous pairs ,the condition is known as:

A. trisomy

B. nullisomy

C. polyploidy

D. monosomy

Answer: A



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85. A ring of three chromosomes and six bivalents are observed in pea plant, what type of cytological abnormality is present in this plant? It is :

- A. triploid
- B. primary trisomic
- C. secondary trisomic
- D. inversion homozygote

Answer: B

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86. Monosomy and trisomy can be represented as:

- A. $2n+1, 2n+3$
- B. $2n-1, 2n-2$
- C. $2n, 2n+1$
- D. $2n-1, 2n+1$

Answer: D



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87. Monosic trisomy is represented by

A. $2n-1$

B. $2n+1$

C. $2n-1-1$

D. $2n-1+1$

Answer: C



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88. Haploid chromosomes number of rice (oryza) is 12 what will be its tetrasomoc number ?

A. 14

B. 28

C. 26

D. 48

Answer: C



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89. Whest plants is $6n=42$,what will be the number of chromosomes in its monosomic ,haploid and monoploid?

A. 15,7,7

B. 41,21,7

C. 13,7,7

D. 43,21,7

Answer: B

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90. in which one of the following combinations (1-4) of the number of chromosomes is the present day hexaploid wheat correctly represented ?

combination	Monosomic	Haploid	Nullisomic	Trisomic
(a)	21	28	42	43
(b)	7	28	40	42
(c)	21	7	42	43
(d)	41	21	40	43

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Gene Mutation

1. Change in sequence of nucleotide in DNA is called as:

- A. Mutagen
- B. Mutation
- C. Translation

D. recombination

Answer: B



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2. Gene mutation is due to :

A. Random segregation

B. change in base sequence

C. linkage and crossing over

D. change in sequence of cistrons in DNA

Answer: B and D



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3. A sudden change in the structure and actions of a particular gene is called :

- A. linkage
- B. variation
- C. mutation
- D. allelomorph

Answer: C



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4. Sudden inheritable genetic change is :

- A. mutation
- B. natural selection
- C. inheritance of acquired
- D. indepenent assortment

Answer: A



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5. Mutation can not change :

A. DNA

B. RNA

C. Enzyme

D. Environment

Answer: D



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6. After a mutation at a genetic locus the character of an organism changes due to the change in :

- A. DNA replication
- B. Protein structure
- C. Protein synthesis pattern
- D. RNA transcription pattern

Answer: B



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7. When two mutations located in the same functional unit or in different functional units, then it is confirmed by :

- A. test cross
- B. back cross
- C. reciprocal cross
- D. complementation test

Answer: D

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8. the major source of variations are ,

- A. mutations
- B. segregation
- C. polyploidy
- D. chromosomes aberrations

Answer: A

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9. Variation of a character is brought about by :

- A. mutations
- B. crossing over during meiosis
- C. duplication of chromosomes during mitosis

D. both (a) and (b) correct

Answer: D



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10. Hugo de veries attributed evolution to :

A. polyhenes

B. slow differentiation

C. continuous variation

D. discontinuous variation

Answer: D



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11. mutations are mainly responsible for controlling :

- A. Variation in organisms
- B. extinction of organisms
- C. increasing population rate
- D. maintaining genetic continuity trait

Answer: A

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12. Muatation theory was proposed by :

- A. hugo de Varies
- B. Charles Darwin
- C. Gregor mendel
- D. baptiste lamarck

Answer: A

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13. the plant on which de vries worked in preparation of mutation theory was:

- A. pansy
- B. sweet pea
- C. garden pea
- D. evening primrose

Answer: D



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14. The plant on which Hugo de vries based his evolution theory is

- A. *Pisum sativum*
- B. *antirrhinum majus*
- C. *lathyrus odoratus*

D. *Oenothera lamarckiana*

Answer: D



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15. Most of the mutations are:

A. harmful

B. dominant

C. beneficial

D. harmful and recessive

Answer: D



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16. Recessive mutations are expressed in:

- A. Next generation
- B. same generation
- C. homozygous condition
- D. Heterozygous condition

Answer: C

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17. Assertion (a) :- An organism with lethal mutation may not even develop beyond the zygote stage.

Reason (R) :- All types of gene mutations are lethal .

- A. Both (a) and (R) are true (r) is the correct explanation of (A)
- B. both (A) and(R) are true but (R) is not the correct explanations of (A)
- C. (A) is true statement but (R) is false
- D. Both (a) and (R) are false

Answer: C



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18. the mutation in germ cells can be detected in :

- A. Next generation
- B. same generation
- C. both generation
- D. none of the generations

Answer: A



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19. If a mutation occurs in a gamete it would influence :

- A. Sterility in the progeny

B. only a single individual

C. all successive generations of the parents

D. only the particular sex of the progeny ,whose gamete had undergone mutation

Answer: C



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20. which of the following mutations which are not hereditary do not inherit?

A. Genetic

B. somatic

C. Gemetic

D. Germinal

Answer: B

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21. The reason why some mutations which are harmful do not get eliminated from gene pool is that :

- A. they have future survival value
- B. genetic drift occurs because of small population
- C. they are dominant and show up more frequently
- D. they are recessive and carried by heterozygous individuals

Answer: D

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22. in pea seed colour change from gray to white .this is an example of :

- A. transformation
- B. induced mutation

C. pleiotropic mutation

D. spontaneous mutation

Answer: D



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23. A single gene mutation affecting more than one phenotype is called

A. deletion

B. segregation

C. dominant mutation express immediatly

D. recessive mutation

Answer: B



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24. if a mutation is not visible in successive generation it is called :

- A. Deletion
- B. segregation
- C. dominant mutation
- D. recessive mutation

Answer: D



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25. Gene mutations are also called :

- A. chromosomal aberrations
- B. lethal mutations
- C. point mutations
- D. all of the above

Answer: C



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26. Abrupt and distinct change in the structure of a gene is called :

- A. point mutation
- B. forward mutation
- C. backward mutation
- D. chromosomal aberration

Answer: A



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27. point mutations is a change which involves :

- A. loss of a gene

- B. addition of a gene
- C. change in a segment of gene
- D. deletion of a segment of gene

Answer: C



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28. Mutations are induced mostly by :

- A. β -rays
- B. γ -rays
- C. α -rays
- D. UV radiations

Answer: B



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29. Identify the one which causes mutation :

- A. colchicine
- B. cosmic rays
- C. gamma rays
- D. crossing over

Answer: C



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30. Which of the following is generally used for induced mutagenesis in crop plants

- A. X-rays
- B. UV (260nm)
- C. Alpha particles
- D. Gamma rays (from Cobalt⁶⁰)

Answer: D



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31. which of the following is a point mutation ?

- A. Intersex
- B. Free -Martin
- C. Gynandromorph
- D. Sickle -cell anemia

Answer: D



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32. mutation by radiation was first experimentally demonstrated by :

- A. H.J muller

B. Hugo de vries

C. James Watson

D. Har Govind Khorana

Answer: A



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33. H.J. Muller had received the Nobel prize for :

A. discovering the linkage of genes

B. proving that DNA is the genetic material

C. discovering the induced mutation by X-rays

D. His studies on *Drosophila* for genetic study

Answer: C



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34. Which of the following discoveries resulted in a Nobel Prize

- A. Genetic engineering
- B. Cytoplasmic inheritances
- C. Recombination of linked genes
- D. X-rays induce sex-linked recessive lethal mutations

Answer: D



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35. the mutation can be induced in bacteria by :

- A. Exposure to high energy radiations
- B. Adding all required substance
- C. Growing different strains
- D. Starving bacteria

Answer: A



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36. the site in the gene at which the mutations occur with unusually high frequency are:

- A. recons
- B. mutons
- C. hot spots
- D. palindromes

Answer: C



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37. Hereditary variations in plants have been produced by the use of

A. DDT

B. Ausins

C. X-rays

D. Gibberllic acid

Answer: C



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38. Who has introducedd X-rays mutaions in barley and mize ?

A. stadler

B. Mullar

C. Morgan

D. All the them

Answer: A



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39. Mutations can be brought about that promotes the occurrence of mutation is called:

- A. DDT
- B. X-rays
- C. Auxins
- D. Aniline dyes

Answer: B



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40. Any physical or chemical agent that promotes the occurrence

- A. Mutagen
- B. carcinogen
- C. both (a) and (b) corect

D. none of these

Answer: A



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41. A strong mutagenis :

A. Cold

B. Heat

C. Water

D. X-rays

Answer: D



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42. Which one of the following is not a mutagen

A. γ -rays

B. Acetic acid

C. Nitrous acid

D. Hydroxylamine

Answer: B



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43. Which one of the following radiations is non-ionising and has more specific biological effects than others?

A. β -rays

B. X-rays

C. γ -rays

D. UV rays

Answer: D

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44. Ultraviolet radiation is injurious to plants because it L:

- A. Cause dehydration
- B. increases respiration
- C. causes genetic changes
- D. breaks phosphate bonds

Answer: C

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45. The action of ultraviolet radiation in DNA to induce mutation is the :

- A. deletion of base pairs
- B. addition of base pairs
- C. methylation of base pairs

D. formation of thymine dimers

Answer: D



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46. The molecular action of ultraviolet light is mainly reflected through:

A. Destruction of hydrogen bonds between DNA strands

B. formation of sticky metaphases

C. formation of pririmidine

D. photodynamic action

Answer: A



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47. Mutations induced by mutagenic agents are:

- A. point mutations
- B. chemical mutation
- C. spontaneous mutations
- D. none of these

Answer: A

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48. the creation of mutations is called :

- A. Radiation
- B. Evolution
- C. Mutagenesis
- D. Saltatory changes

Answer: C

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49. Cell/ organism carrying mutated gene is :

- A. reson
- B. muton
- C. cistron
- D. mutant

Answer: D



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50. which of the following is a base analogue ?

- A. Caffeine
- B. Nitrous acid
- C. Colchicine

D. 5- Bromonuracil

Answer: D



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51. what base is responsible for hot spots for spontaneous point mutations ?

A. Adenine

B. Guanine

C. 5-Bromouracil

D. 5- methylcyosine

Answer: D



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52. Name the mutagen:

A. NH_3

B. CO

C. NHO_2

D. SO_2

Answer: C



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53. Nitrous acid causes mutation by :

A. addition of base analogue

B. acting as base analogue

C. hydrolysing base sugar linkage

D. removing amino group from bases

Answer: D



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54. Nitrous acid deaminates cytosine to produce :

- A. uracil
- B. thymine
- C. guanine
- D. adenine

Answer: A



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55. Dithyl sulphate (DES) is used as:

- A. mutagen

B. antibiotic

C. fusogen

D. insecticide

Answer: A



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56. If the DNA condons are ATG ATG ATG and a cytosine base is inserted at the beginning , which of the following will result

A. CA TGA TGA TG

B. C ATG ATG ATG

C. CAT GAT Gat G

D. A nonsense mutation

Answer: C



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57. Replacement of purine base by another purine base is called :

- A. somatic mutation
- B. addition mutation
- C. Deletion mutation
- D. substitution mutation

Answer: D



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58. In transversion :

- A. pyrimidine is replaced by pyrimidine
- B. purine is replaced by pyrimidine
- C. purine is replaced by purine
- D. None of the above

Answer: B



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59. which of the following will causes a more effective muta -tion ?

- A. One codon
- B. one base delation
- C. Base subsitution
- D. Base seamintion

Answer: B



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60. Frameshift mutation occurs when :

- A. base is added

- B. base is deleted
- C. base is added or deleted
- D. anticodons are not present

Answer: C



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61. A segment of DNA has a base sequence AAG GAG GAC CAA CCA, which of the following sequenous AAG GAG sends a frameshift mutation ?

- A. AGG AGG ACC AAC CA
- B. AAG GCG GAC CCA AC
- C. ACG GAC GAC CAG CCA
- D. AAG GAG GAC CAA CCA

Answer: A



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62. A mutation that change a codon specifying one amino acid to a termination that changes a codon is called:

- A. reverse mutation
- B. mis-sence mutation
- C. nonsense mutation
- D. frameshift mutation

Answer: B



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63. A nonsense mutation result in :

- A. stoppage of transcription
- B. change in protein structure
- C. stoppage of protein synthesis

D. termination of polypeptide chain

Answer: D



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64. which of the following mutagens increases distance between the neighbouring N_2 base-pairs (from 3.4 Å to 6.8 Å) and causes frameshift mutation ?

A. proflavinon

B. 5- Bromourcil

C. 2- A minopurine

D. Methane sulfonate

Answer: A



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65. In a mutational event ,when adenine is replaced by guanine , it is a case of?

- A. transition
- B. transversion
- C. transcription
- D. frameshift mutation

Answer: A



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66. trananstion type of mutation is cused when :

- A. GC is replaced by TA
- B. AT is replaced by CG
- C. CG is repleced by GC
- D. AT is replaced by GC

Answer: D



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67. a point mutation comprising the substitution of a purine by pyrimidine is called :

- A. Deletion
- B. Translocation
- C. transversion
- D. translocation

Answer: C



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68. type of gene mutation which involves replacement of purine with pyrimidine vice versa or the substitution of one type of base with another

type of base is :

- A. transition
- B. Transduction
- C. translation
- D. transversion

Answer: D



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69. Change from purine to pyrimidedine or pyrimidine to purine is called :

- A. framesift
- B. reversion
- C. transition
- D. transversion

Answer: D



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70. Not all base-pair substitutions in DNA alter the activity of the product enzyme's activity. Those that do alter the enzyme's:

- A. total size
- B. tertiary structure
- C. secondary structure
- D. ratio of sulphur to nitrogen

Answer: B



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71. Minor changes at a gene level are described as:

- A. point mutations
- B. reverse mutations

C. forward mutations

D. chromosomal mutations

Answer: A



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72. Mutation is the change in :

A. genetic drift

B. Gene frequency

C. base -pairs in DNA molecule

D. environmental mechanism of evolution

Answer: C



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73. The gene that controls the rate of mutation of another gene is :

- A. inducer gene
- B. mutator gene
- C. muttable gene
- D. regulator gene

Answer: B



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74. The gene which increases the frequency of mutation in other gene is referred to as :

- A. mutagen
- B. mutator gene
- C. hypostatic gene
- D. complementary gene

Answer: B

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75. Out of A-T,G-C pairing bases of DNA may exist in alternate valency state owing to arrangement called

- A. point mutation
- B. frameshift mutation
- C. analogue substitution
- D. tautomerisational mutation

Answer: D

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76. Errors during DNA replication , repair or recombination can lead to base -pair substitutions ,Such changes are called :

- A. mutagens
- B. saltatory change
- C. spontaneous mutations
- D. conditional mutations

Answer: C

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77. A mutation that change a codon spcifying one amino acid to a terination that changes a codon is called:

- A. Mis-sence mutation
- B. transition mutation
- C. nonsense mutations
- D. framesshift mutation

Answer: C

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78. mutations which does not cause any change in the protein is :

- A. silent mutation
- B. mis-sence mutation
- C. frameshift mutations
- D. nonesence mutation

Answer: A

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79. The change in single base pair

- A. results in new species
- B. always alter protein funcation
- C. always cause amino acid replacement

D. does not necessarily change the phenotype

Answer: D



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80. The frequency of a mutant gene in a population is expected to increase, if the gene is

A. Recessive

B. dominant

C. suitably selected

D. none of these

Answer: C



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81. A mutation in bacteria results in nonformation of mesosomes .the expected results will be :

- A. only replications of DNA will occur
- B. Only cell division will occur
- C. only karyokinesis will occur
- D. all of the above

Answer: A



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82. Phenotype of an organism is result of

- A. mutaions and likages
- B. Cytoplasmic effects and nutrition
- C. Genotype and environment interaction
- D. Enviromental change and sexual dimorphism

Answer: C

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83. The effect of today's radioactive fallout will probably be more harmful to children of future generation than to present day children because

- A. mutated genes are frequently recessive
- B. Infants are more susceptible to radiations
- C. susceptibility to radiation increase with age
- D. contaminations of milk supply is not cumulative

Answer: A

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1. Genes not located within the nucleus are almost always found in :

A. cytosol

B. ribosome

C. cytoskeleton

D. cell membrane

Answer: A



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2. The sum total of extrachromosomal hereditary determinants in a cell forms :

A. plastid

B. plasmid

C. plasmon

D. phasmid

Answer: C



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3. the term 'plasmon' was introduced by :

A. jenkins

B. Wettstein

C. Lederberg

D. Strasburger

Answer: B



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4. In cytoplasmic inheritance ,charactrers are transmitted :

A. paternally

B. maternally

C. Morphologically

D. none of the above

Answer: B



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5. When a certain character is inherited only through female parent, it probably represents :

A. Incomplete dominance

B. Cytoplasmic inheritance

C. Multiple plastid inheritance

D. Mendelian nuclear inheritance

Answer: B



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6. Genes present in the cytoplasm of eukaryotic cells are found in,

- A. Lysosomes and peroxisomes
- B. plastids and inherited via male gamete
- C. Mitochondria and inherited via egg cytoplasm
- D. Golgi bodies and smooth endoplasmic reticulum

Answer: C



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7. the cytoplasmic inheritance is also called:

- A. maternal inheritance
- B. clonal inheritance
- C. cytoplasmic association
- D. none of these

Answer: A



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8. In limnaea shell coiling is due to :

- A. cytoplasmic inheritance
- B. nuclear inheritance
- C. recessive inheritance
- D. none of these

Answer: A



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9. Cytoplasmic genes were first observed in :

- A. pisum sativum

B. *Mirabilis jalapa*

C. *Lathyrus odoratus*

D. *Neurospora crassa*

Answer: B



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10. Which of the following carries extranuclear genetic material ?

A. Ribosomes

B. Mitochondria

C. chromosomes

D. Golgi apparatus

Answer:



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11. The organelles responsible for cytoplasmic inheritance among eukaryotes are:

- A. chloroplasts and lysosomes
- B. lysosomes and mitochondria
- C. chloroplasts and mitochondria
- D. mitochondria and golgi complex

Answer: C



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12. Extra-nuclear inheritance is a consequence of presence of presence of genes in :

- A. Lysosomes and ribosomes
- B. Ribosomes and chloroplast
- C. Mitochondria and chloroplast

D. Endoplasmic reticulum and mitochondria

Answer: C



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13. Maternal inheritance is due to the genes present in :

A. Nucleus

B. lysosomes

C. Nucleoplasm

D. Mitochondria

Answer: D



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14. Genes located on mitochondrial DNA :

- A. Shows biparental inheritance
- B. are not inherited like nuclear genes
- C. generally shows maternal inheritance
- D. always inherited from the male parent

Answer: C

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15. One of the parents of a cross has a mutation in its mitochondria. In that cross, that parent is taken as a male. During segregation of F_2 progenies that mutation is found in

- A. fifty per cent of the progenies
- B. one-third of the progenies
- C. none of the progenies
- D. all the progenies

Answer: C



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16. Mitochondrial inheritance occur :

- A. by mother to her child i.e maternal inheritance
- B. by father to her child i.e paternl inheritance
- C. only in eukaryotes
- D. does not occur

Answer: A



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17. A part from DNA in the bacterial nucleoid ,there is a circular extrachromosomal DNA , called :

- A. Plasmid
- B. mesosome
- C. chromosome
- D. none of these

Answer: A

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18. The extrachromosomal autonomous unit within bacteria is :

- A. Plasmid
- B. Phagemid
- C. Phasmid
- D. nucleosome

Answer: A

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19. Plasmids occur in :

- A. viruses
- B. bacteria
- C. chloroplasts
- D. chromosomes

Answer: B



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20. F factor is present in :

- A. Cosmid
- B. plasmid
- C. Cell wall

D. Golgi body

Answer: B



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21. Cytoplasmic male sterility is passed down :

A. Maternally

B. paternally

C. biparentally

D. though bacteriophage

Answer: A



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22. Genes for cytoplasmic male sterility in plants are generally located in

- A. cytosol
- B. nucleus genome
- C. cytoplasmic inheritance
- D. mitochondosomal inheritance

Answer: D

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23. Episome may be a factor in :

- A. Co dominance
- B. incomplete dominance
- C. cytoplasmic inheritance
- D. chromosomes inheritance

Answer: C

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24. what are episomes ?

- A. Extrachromosomal hereditary material of bacteria associated with nucleoid
- B. Modification of the cell membrane performing respiration
- C. Hereditary DNA of bacterial cell
- D. None of the above

Answer: A



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25. Which one is an example of cytoplasmic inheritance ?

- A. Sterile pollen
- B. Height in pea

C. flower colour in pea

D. eye colour in fruitfly

Answer: A



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26. Paramoecium exhibits cytoplasmic inheritance through

A. DNA

B. Kappa pariticles

C. chromosomes

D. nuclear gene

Answer: B



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27. After crossing two plants, the progenies are found to be male sterile. The phenomenon is found to be maternally inherited and is due to some genes which reside in

- A. nucleus
- B. cytoplasm
- C. chloroplast
- D. mitochondria

Answer: B



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28. Kappa particles are:

- A. endosymbions representing the Gram -positive bacteria species
- B. Submicroscopic granules formed by the folding the naked DNA
- C. viral particles capable of self-perpetuation in the host cytoplasm

D. protozoan parasites whose multiplication is controlled by host metabolites

Answer: A



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29. Extranuclear inheritance occurs in:

- A. phenylketonuria
- B. colour blindness
- C. Tay - Sachs disease
- D. Killer strain in paramecium

Answer: D



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1. which one of the following is used extensively in biochemical and genetic work ?

- A. Claviceps
- B. aspergillus
- C. Neurospora
- D. penicillium

Answer: C



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2. The fungus often studied in experimental genetics and also called "Drosophila of plant kingdom" is

- A. Pisum
- B. Rhizopus

C. penicillum

D. Neurospore

Answer: D



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3. Which has great importance in genetics ?

A. penicillium

B. Claviceps

C. Neurospore

D. none of these

Answer: C



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4. Neurospora is commonly called :

- A. pink mold
- B. black mold
- C. orange bread mold
- D. blue bread mold

Answer: C



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5. Neurospora is a :

- A. parasite
- B. facultative parasite
- C. always saprophyte
- D. facultative saprophyte

Answer: C



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6. which of the following is false ?

- A. The limit of recombination is 50%
- B. Conidia are the sexual spores of Neurospora
- C. In Drosophila, crossing over occurs only in females
- D. A Centi Morgan is a unit distance equivalent to 1% crossing over

Answer: B



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7. At what stage does meiosis take place in Neurospora ?

- A. During gamete formation

- B. During conidial development
- C. During trichogyne development
- D. During ascospore development

Answer: D



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8. An organism suitable for terrad analysis is :

- A. homo
- B. Pisum
- C. Drosophila
- D. Neurospora

Answer: D



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9. The evidence that crossing over occur in 4- strand stage comes from the experiments on :

- A. *Drosophila melanogaster*
- B. *Neurospora crassa*
- C. *Pisum sativum*
- D. *Zea mays*

Answer: B



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10. In *Neurospora*, 8 ascospores are formed instead of 4. This indicates

- A. One meiosis
- B. two mitosis
- C. two meiosis
- D. meiosis followed by mitosis

Answer: D

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11. Which arrangement of ascospores in Neurospora does not represent second-division segregation ?

A. aaaaAAAA

B. AAaaAAaa

C. AAaaaaAA

D. aaAAAAaa

Answer: A

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12. in Neurospora ,8 ascospores are formed ,they are 2A,2a 2A ,2a .It shows :

- A. no crossing over
- B. Some meiosis occurs
- C. first generation division
- D. second generation division

Answer: D

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13. Which organism was used by Beadle and Tatum to proposed one gene one enzyme hypothesis

- A. Escherichia coli
- B. Neurospora crassa
- C. Salmonella typhimurum
- D. Diplococcus pneumoniae

Answer: B

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14. Beadle and tarun did classical experiment on Neursospora crosssa:

- A. One gene producess one enzyme
- B. one gene can correct one gene
- C. both (a) and (b) correct
- D. none of above

Answer: A

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15. In maize, hybrid vigour is exploited by:

- A. Inducing mutations
- B. bombaring the seeds wioth DNA
- C. Crossing of two inbread parental lines

D. harvesting seeds from from the most productive plants

Answer: C



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16. "One gene one enzyme" theory was proposed by

A. Beadle and tatum

B. jacob and monod

C. punnett and Bateson

D. Luria and Dlbruck

Answer: A



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17. one gene one enzyme concept means:

- A. enzyme controls gene
- B. one gene controls one enzyme
- C. all enzyme are controlled by genes
- D. all genes are controlled by enzymes

Answer: B

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18. Work of Beadle and tatum on Neursopora crssa proved that :

- A. every gene is responsible for specific enzymes
- B. replication of DNA is semiconservaative
- C. viruses have genetic material
- D. plant cells are totipotent

Answer: A

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19. Mutational studies on Neurospora were carried out by :

- A. Beadle and tatum
- B. Kedererberg and tatum
- C. Beadle and dodge
- D. Lederberg and Dodge

Answer: A



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20. Neurospora is a haplois fungus ,Every mutataion acts as a :

- A. Lethal character
- B. Dominant character
- C. recessive character

D. beneficial character

Answer: B



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21. A nutritionally wild type organism, which does not require any additional growth supplement is known as :

A. holotype

B. phenotype

C. prototroph

D. Auxotroph

Answer: C



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22. An auxotroph is a (an):

- A. Plant that responds by bending towards the sun
- B. Plant that is able to synthesize its own carbohydrates
- C. Mutant which has lost its ability to synthesize one or more essential compounds
- D. Organism that depends on another organism for meeting its nutritional requirements

Answer: C



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23. A mutant micro-organism unable to synthesize a compound required for its growth but able to grow if the compound is provided, is known as

- A. autotroph
- B. auxotroph

C. prototroph

D. none of these

Answer: B



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24. A Neurospora is an auxotroph for tyrosine, an amino acid. This means:

A. There is no relationship with tyrosine

B. It cannot survive without tyrosine

C. It can survive without tyrosine

D. None of the above

Answer: B



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1. the localization of a genetic locus to a particular chromosomal region using linkage or molecular analysis is known as:

- A. gene cloning
- B. gene isolation
- C. gene mapping
- D. gene splicing

Answer: C

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2. Genetic maps of chromosomes are based on the frequency of

- A. Dominance of genes
- B. translocation

C. nondisjunction

D. genstic recombination

Answer: D



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3. Genetic map is one that :

A. shows the stages during the cell division

B. establishes sites of the genes on a chromosome

C. establishes the various stages in gene evolution

D. shows the distribution of various species in a region

Answer: B



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4. Who used the frequency of recombination between gene pairs on the same chromosome as a measure of distance on the chromosome ?

- A. Alfred sturtevant
- B. Carl correns
- C. Tschermak
- D. Gregor mendel

Answer: A



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5. One centi Morgan is equal to recombination frequency of :

- A. 0.1
- B. 0.01
- C. 0.001
- D. None of these

Answer: B



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6. Percentage of recombination between A and B is 9% and C is 17%. B and C is 26%, then the arrangement of genes is

A. ABC

B. ACB

C. BAC

D. BCA

Answer: C



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7. An individual with cd genes was crossed with type ++ On the crossing F_1 the progeny was +c 105 +d 115, ,cd 880 and ++900, the distance

between cd genes is :

A. 44 map units

B. 11 map units

C. 5.5 map units

D. 88 map unit

Answer: B



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8. if a chiasma forms between the loci of genes A and B in in 20% of the tetrads of gametes expected to be Ab is:

A. 5

B. 10

C. 20

D. 40

Answer: D

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9. in a cross between genotype AB and ++ ,650 out of 1000 individuals were parental type .the distance between A and B is :

- A. 15 map units
- B. 30 map units
- C. 35 map units
- D. 45 map units

Answer: C

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10. Percentage of recombination between A and B is 9% and C is 17%. B and C is 26%, then the arrangement of genes is

A. ABC

B. BAC

C. ACB

D. None of these

Answer: B



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11. the map distance between genes A and B is 3 units ,between B and C 10 units and between C and A 7 units .what is the sequence of the genes on the linkage map ?

A. BAC

B. ABC

C. BCA

D. CBA

Answer: A



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12. the cross over percentage between linked genes J and M is 20 % J and L is 35% J and N is 70% L and K 15% M and N is 50% and M L is 15 % thus ,the sequence of genes on the chromosomes is :

A. J,N,m,L,K

B. J,M,L,N,K

C. J,M,L,K,N

D. M,J,L,K,N

Answer: C



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13. there are three genes A,B and C percentage of crossing over between A and B is 20 ,B and C is 28 and A and C is 8. what is sequence of genes on the chromosomes ?

A. B,A,C

B. A,B,C

C. A,C,B

D. None of these

Answer: A



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14. The linkage map of X-chromosome of fruit fly has 66 units with yellow body gene Y at one end and bobbed hair B gene at the other end. The recombination frequency between these two genes Y and B should be

A. 50%

B. 1

C. 0.66

D. $> 50\%$

Answer: C



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15. chromosomes in a bacterial cell can be 1-3 in number and :

A. are always linear

B. are always circular

C. can be circular as well as linear with in the same cell

D. Can be either circular or linear ,but never both with in the same cell

Answer: B



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16. Chromosome were first seen by

- A. Waldeyer
- B. Flemming
- C. Hoffmeister
- D. Strasburger

Answer: C



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17. The term 'chromosomes were first observed in the plant :

- A. C. Benda
- B. Robert Hooke
- C. T.H. Morgan
- D. W.Waldeyer

Answer: D



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18. the chromosomes were first observed I the plant :

- A. allium
- B. colchicm
- C. Vallisneria
- D. tradescantia

Answer: D



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19. Smallest chromosomes (size $0.0025\mu\text{m}$) are found in algae .

Alsgest eukaryotic normal chromosomes is $30\mu\text{m}$ is size and is gond

in :

A. Maize

B. Trillium

C. Rasiolarans

D. Ophiglossum

Answer: B



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20. The longest chromosome is seen in :

A. allium

B. Lillium

C. Trillium

D. Zea mays

Answer: C



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21. Centromere is a part of:

- A. Ribosomes
- B. Mitochondria
- C. chromosomes
- D. endoplasmic reticulum

Answer: C



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22. The scientific term not related to the primary constriction of a chromosome is :

- A. kinomere
- B. centromere
- C. chromomere

D. Kinetochre

Answer: C



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23. the function of centrosomes

A. Duplicataion of chromosomes

B. Movement of chromosomes

C. Duplication of DNA

D. Formation of RNA

Answer: B



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24. Each chromosome carries a distinct region which plays an important role in the chromosome movement during cell division, this region is :

- A. telomere
- B. chromatid
- C. centriole
- D. Centromere

Answer: D



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25. Each chromosome pair has a distinct morphology with regard to :

- A. The number of genes present
- B. Chromosomes thickness and length
- C. amount of DNA and intensity of staining
- D. Relative length of arms and position and centromere

Answer: D



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26. two sister chromatids are attached with a common :

- A. telomere
- B. centromere
- C. spindle fibres
- D. chromocenter

Answer: B



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27. the structure of the chromosomes to which spindle fibre are attached :

- A. Centromere

B. Chromatid

C. Chromonema

D. Chromomere

Answer: A



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28. Kinetochore is

A. End of chromosome

B. surface of centromere

C. granule within centromere

D. constriction near chromosome end

Answer: C



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29. Shape if the chromosome is determined by :

- A. telomere
- B. centromere
- C. Centrosomes
- D. chromomere

Answer: B



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30. Chromosomes can be classified by the postion of the following sparating the two arms :

- A. gene
- B. spindle
- C. nucleous
- D. centromere

Answer: D



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31. A chromosome segment lacking a centromere is referred as :

- A. acentric
- B. lagging
- C. metacentric
- D. telocentric

Answer: A



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32. Chromosome with a median centromere and equal arms is :

- A. Metacentric

B. acrocentric

C. submetacentric

D. telocentric

Answer: A



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33. L- shaped chromosomes are termed :

A. telocentrics

B. Submetacentrics

C. acrocentrics

D. sex chromosomes

Answer: B



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34. the chromosomes in which centromere is situated close to one end are :

- A. Metacentric
- B. Telocentric
- C. acrocentrics
- D. Submetacentric

Answer: C



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35. In acrocentric chromosome, the centromere is :

- A. Terminal
- B. capped by telomere
- C. medium in position
- D. subterminal in position

Answer: D



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36. A chromosomes carry the centromere at one of the ends is called :

- A. acentric
- B. acrocentric
- C. telocentric
- D. meracentric

Answer: C



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37. Rod- shaped bacteria are called

- A. Metacentric

B. acrocentric

C. submetacentric

D. metacentric

Answer: D



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38. Identify the correct match between types of chromosomes and their descriptions

Chromosomes	Position of centromere
A. Metacentric	1. At the tip
B. Submetacentric	2. Almost near the tip
C. Acrocentric	3. At the middle
D. Telocentric	4. Slightly away from the middle

A. $A=1, B=3, C=2, D=4$

B. $A = 3, B = 4, C = 2, D = 1$

C. $A = 4, B = 3, C = 2, D = 1$

D. $A = 1, B = 2, C = 3, D = 4$

Answer: B



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39. The subunits of chromatids are:

- A. telomeres
- B. chromosomes
- C. chromatids
- D. Secondary constrictions

Answer: C



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40. Number of chromatids per chromosome at metaphase is

- A. one in mitosis and two in meiosis

- B. two in mitosis and four in meiosis
- C. two in mitosis and one in meiosis
- D. two both in mitosis and one meiosis

Answer: B



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41. Number of chromosomes are formed as a result of :

- A. Disjunction of bivalents
- B. Pairing identical chromosomes
- C. Transverse division of centromere
- D. longitudinal splitting of centromere

Answer: C



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42. The terminal end of chromosome is termed :

- A. telomere
- B. centromere
- C. metamere
- D. chromomere

Answer: A



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43. The nucleoprotein structures that occur at the ends of the chromosomes are :

- A. Satellites
- B. telomeres
- C. centromeres
- D. centrosomes

Answer: B



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44. One function of the telomere in a chromosome is to :

- A. start RNA synthesis
- B. seal the ends of chromosomes
- C. help two chromosomes to move toward the poles
- D. identify the correct member of the homologous pair of chromosome

Answer: B



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45. The telomeres of eukaryotic chromosomes consist of short sequences of

A. guanine rich repeats

B. thymine rich repeats

C. cytosine rich repeats

D. adenine rich repeats

Answer: A



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46. Which of the following occurs more than one and less than five in a chromosome?

A. telomere

B. chromomere

C. Centromere

D. None of these

Answer: A

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47. One function of the telomere in a chromosome is to :

- A. Stop transcription
- B. initiate transcription
- C. separate chromosome during cell division
- D. maintain the individuality of chromosomes

Answer: D

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48. telomere repetitive DNA sequence control the function of eukaryote chromosomes because they :

- A. Act as replicons
- B. Help chromosome pairing

C. Prevent chromosomes loss

D. Are RNA transcription initiator

Answer: A



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49. The small part of chromosomes beyond secondary constriction is called :

A. Statellite

B. telomere

C. centromere

D. Kinetochore

Answer: A



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50. In SAT chromosome ,SAT (satellite) is terminal part of chromosome beyond secondary constriction , It contains :

- A. DNA
- B. RNA
- C. Repettiitive DNA
- D. None of these

Answer: C



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51. The chromosome apart from the sex chromoes are ciled as :

- A. Allosomes
- B. Autosomes
- C. heterosomes
- D. lambroush chromosomes

Answer: B



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52. the chromosome associated with sex determination is known as :

- A. Allosomes
- B. Autosomes
- C. Accessory chromosomes
- D. Determinant chromosomes

Answer: A



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53. Sex chromosome are also known as :

- A. Ribosomes

B. Autosomes

C. mesosomes

D. heterosomes

Answer: D



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54. which one can have sex chromosome ?

A. Bisexual flower

B. Unisexual flower

C. Unsexual plant

D. Hemaphrodite plant

Answer: A



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55. chromosomal basis of sex determine was discovered in the plant :

- A. rumex
- B. Coccinia
- C. Melandrium
- D. sphaerocarpus

Answer: C



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56. Chromosomes that determine male sex in Melandrium plant is

- A. Y- chromosomes
- B. X- chromosome
- C. XX-chromosome
- D. None of these

Answer: A



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57. Genetic identity of a human male is determined by

- A. nucleoli
- B. autosomes
- C. cell organells
- D. sex chromosomes

Answer: D



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58. karyotype refers to :

- A. Genetic map of chromosomes

- B. chemical composition of chromosome set
- C. phenotypic appearance of chromosomes set
- D. phenotypic appearance of one chromosome

Answer: C



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59. the digrammatic representation of the chromosomes of an individual is called :

- A. diploidy
- B. idiogram
- C. karyotype
- D. phenotype

Answer: B



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60. the ovum of human female has autosomes :

- A. 22
- B. 22 pairs
- C. 23 pairs
- D. 44 pairs

Answer: A



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61. Autosomes in humans are :

- A. 11 pairs
- B. 23 pairs
- C. 22 pairs
- D. 43 pairs

Answer: C



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62. Genes are packed in bacterial chromosome by

- A. actin
- B. histones
- C. basic proteion
- D. acidic protein

Answer: D



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63. The eukaryotic Chromosomes are made up of

- A. DNA

B. RNA

C. DNA + lipids

D. DNA + protein

Answer: D



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64. chromatin consists of :

A. DNA

B. RNA

C. DNA and histones

D. RNA and histines

Answer: C



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65. DNA is associated with highly basic proteins called :

- A. albumins
- B. histones
- C. nonhistones
- D. both (a) and (b) correct

Answer: B



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66. Histones are:

- A. Mucoproteins
- B. glycoproteins
- C. basic proteins
- D. acidic proteins

Answer: C



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67. which amino acids are present in histones ?

- A. Arginine and lysine
- B. Lysine and histidine
- C. Valine and histidine
- D. Arginine and histidine

Answer: A



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68. Histone ,the chromosomal protein completety lack one of the following amio acids :

- A. lysine
- B. Arginine
- C. Histidine
- D. Tryptophan

Answer: D

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69. Histones are present in :

- A. Lysosomes
- B. Lysosomes
- C. nucleosomes
- D. cell membrane

Answer: C

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70. "Nu body" was shown by

A. Woodcock

B. Johassen

C. darlington

D. Temain and Baltimore

Answer: A



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71. In eukaryotes , basis stru8ural unit made of histone and DNA:

A. nucleolus

B. Piuff ring

C. nucleosome

D. chromosome

Answer: C



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72. I- shaped chromosomes are termed :

A. endosome

B. puff ring

C. nucleotide

D. nucleosome

Answer: D



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73. Number of histone proteins in each nucleosome core is

A. 10

B. 8

C. 12

D. 14

Answer: B



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74. A nucleosome 'was given by :

A. only histones

B. both DNA and histones

C. Only DNA

D. both DNA and RNA

Answer: B



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75. The term 'nucleosome ' was given by :

- A. oudet
- B. Dupraw
- C. flemming
- D. Emil Heitz

Answer: A



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76. The nucleosome :

- A. Surround nuclear pores
- B. has only DNA and nonhistones DNA into chromosome
- C. is fully responsible for packing with DNA into chromosome

D. contains a core of histones was DNA wrapped around it

Answer: D



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77. The term nucleosome was given by Oudet. Oudet and Oudet called these particles as "nu" bodies. Which histone is absent in nucleosome?

A. H_1

B. H_2A

C. H_3

D. H_4

Answer: A



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78. A nucleosome consists of :

- A. only DNA
- B. Only RNA
- C. Histones
- D. histone with DNA wrapped around them

Answer: D



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79. Nucleosome core is made of :

- A. H_1 , H_2 , H_2B and H_3
- B. H_1 , H_2A , H_2B and H_4
- C. H_1 , H_2A , H_2B , H_3 and H_4
- D. H_2A , H_2B , H_3 and H_4

Answer: D



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80. which histones protein is not a part of nucleosome ?

A. H_1

B. H_{2a}

C. H_{2b}

D. H_4

Answer: A



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81. Histone occupies the major grooves of DNA at an angle of

A. 0.3

B. 0.45

C. 0.6

D. 0.9

Answer: A



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82. the major chemical components of chromosome are DNA ,RNA ,histones and nonhistones protein Besides ,there is some very important inorganic chemical,which is :

A. iron

B. calcium

C. chromium

D. magnesium

Answer: B



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83. Solenoid is a structure of :

- A. Condensed chromatin fiber with 30 nm diameter
- B. Nucleosomal organization with 10 nm thickness
- C. Well organized chromatid with 700 nm thickness
- D. Well organized chromosome with 1400 nm thickness

Answer: A



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84. The length of DNA molecule greatly exceeds the dimensions of the nucleus in eukaryotic cell. How is this DNA accommodated

- A. Dnase digestion
- B. super-coiling in nucleosome

C. Deletion of nonessential genes

D. through elimination of repetitive DNA

Answer: B



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85. the basic set of chromosomes in an organism is known as :

A. genome

B. idiogram

C. karyotype

D. plasmosome

Answer: A



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86. the terms 'genome ' refers to set the total number of genes contained in a :

- A. diploid set of chromosomes
- B. nucleus of a megasprocyte
- C. haploid set of chromosome s
- D. nucleus of a cell of stem apex

Answer: C



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87. How many genomes are present in the skin cell of man ?

- A. one
- B. two
- C. four
- D. forty six

Answer: B



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88. Diploid chromosome number in humans is :

A. 42

B. 44

C. 46

D. 48

Answer: C



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89. if the root cell in wheat plant has 42 chromosome ,then the number of chromosome in apore mother cell will be :

A. 14

B. 28

C. 42

D. 21

Answer: D



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90. if here are 16 chromosome in the roots of union ,then the number of chromosomes in the syergid cells will be :

A. 2

B. 8

C. 4

D. 16

Answer: B

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91. the plant with lowest chromosome number is :

- A. *Poa litorosa*
- B. *Cyperus rotundus*
- C. *Salix tetraperma*
- D. *Haplopappus gracilis*

Answer: D

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92. the haploid chromosome number in *Allium cepa* is as many times greater in the following as that of *Haplopappus gracilis* :

- A. 4 fold
- B. 2 fold

C. 6 flod

D. 3 flod

Answer: A



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93. there are 44 chromosomes in the somatic cells of rabbit How many chromosomes does a rabbit receive from its mother ?

A. 22

B. 44

C. 11

D. 42

Answer: A



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94. Diploid number of chromosome in gorilla gorilla may cells .

A. 46

B. 50

C. 48

D. 64

Answer: C



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95. Humans normally have 46 chromosomes in kidney cells . . How many autosomes would be expected in an bain cell ?

A. 46

B. 44

C. 23

D. 47

Answer: B



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96. which of the following is having lowest number of chromosomes ?

A. silkworm

B. Tapeworm

C. Earthworm

D. Ascaris megalocephala

Answer: D



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97. the largest number of chromosomes are found in :

A. Lemna

B. Neurospore

C. Adiantum

D. ophioglossum

Answer: D



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98. the chromosome cannot be stained with :

A. Eosin

B. Feulgen stain

C. Heaematoxylin

D. Acetocarmine

Answer: A



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99. Which of the following is not related to chromosome ?

A. AIDS

B. Euploidy

C. Aneuploidy

D. Klinefalter's syndrome

Answer: A



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100. which of the following isnot characterstic of heterchromosomation ?

A. Lacated in the dark bands of polyphase chromosomes

B. Identifiable inat least some interphase chromosmes

C. Usually found in centromeric regions

D. Associted with active genes

Answer: D



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101. Heterochromatin remains condensed in which part of chromosome

- A. Secondary construction -I
- B. Secondary constrution consteuction -II
- C. Telomeres
- D. both (a) and (b) correct

Answer: A



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102. which of the following is incorrectly paired ?

- (a) $2n-2$ – Nullisomic
- (b) Nucleoid – prokaryote
- (c) polytene chromosome – *Drosophilla*
- (D) SRY-gene – X-chromosome
- (e) Trisomy – Down syndrome



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103. Radioactive thymine when added to the medium surrounding living mammalian cell gets incorporated into a newly synthesized DNA, which of the following type are exposed to radioactive thymidine as soon as they enter the S-phase ?

- A. Euchromatin
- B. Heterochromatin
- C. Both euchromatin and Heterochromatin
- D. Neither euchromatin or heterochromatin

Answer: A



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104. which of the following is the largest chromosome?

- A. Supernumerary chromosome
- B. Lampbrush chromosome
- C. Polytene chromosome
- D. X- chromosome

Answer: B



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105. Assertion (a) : superumerary chromosomes do not usually have nay effect on the phenotype and Hence ,are genetically unneccsery.

Reason(R) : in some plants supernumerary chromosomes result in decraed vigour.

A. Both (a) and (R) are true (r) is the correct explanation of (A)

B. both (A) and(R) are true but (R) is not the correct explanations of

(A)

C. (A) is true statement but (R) is false

D. Both (a) and (R) are false

Answer: B



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106. Lampbrouch chromosomes were discovered by :

A. Rückert

B. Morgan

C. Balbiani

D. Mc Clung

Answer: A



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107. Lampbrush chromosomes are found in:

- A. All germ cells
- B. All somatic cells
- C. Salivary gland cells of fruitfly
- D. oocytes of urodel amphibians

Answer: D



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108. Lampbrush chromosomes are seen in which typical stage?

- A. mitotic prophase
- B. meiotic prophase
- C. mitotic metaphase

D. meiosis metaphase

Answer: B



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109. Lampbrush gland chromosomes are found during :

A. Diplotene

B. leptotene

C. diakinesis

D. pachtyene

Answer: A



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110. Salvery gland chromosomes were discovered by :

A. Heitz

B. Rückert

C. Wilson

D. Balbinai

Answer: D



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111. Which one of the following animals possesses giant chromosome ?

A. mouse

B. Xenopsylla

C. Drosophila

D. Branchiomyces

Answer: C



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112. polytene chromosomes were discovered by Balbiani (1881) from salivary glands of larva of :

- A. Silk worm
- B. Lac insect
- C. Drosophila
- D. Chironomus

Answer: D



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113. Compared to an ordinary chromosome , a polytene chromosome is generally:

- A. smaller
- B. 10 times larger

C. 100 times larger

D. 1000 times larger

Answer: C



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114. Which of the following animals is extant chromosome I generally

:

A. Rabbit

B. Amoeba

C. Drosophila

D. periplanrta

Answer: C



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115. Which one of the following is the most suitable medium for culture of *Drosophila melanogaster*

- A. Agar- agar
- B. Cow dung
- C. moist bread
- D. Ripe banana

Answer: D



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116. Chromosomes found in prolonged prophase stages in salivary glands of *Drosophila* are :

- A. B- chromosomes
- B. Heterochromosomes
- C. polytene chromosome

D. Lampbrush chromosomes

Answer: C



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117. Polytene chromosomes in salivary glands of *Drosophila* are formed as a result of:

- A. Replication of DNA without separation
- B. Duplication without separation
- C. endoreduplication
- D. all of the above

Answer: D



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118. Polytene Chromosomes are formed by

- A. endoreduplication of chromosomes
- B. Somatic pairing of homologous chromosomes
- C. somatic pairing of nonhomologous chromosomes
- D. Geminal pairing of nonhomologous chromosomes

Answer: A



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119. The salivary gland Chromosomes in the dipteran larvae, are useful in gene mapping because

- A. these are fused
- B. these are easy to stain
- C. there are much longer in size
- D. they have endoreduplicated chromosomes

Answer: D



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120. Assertion (A) :- polytene chromosomes have a high amount of DNA .

Reason(R) :- poly chromosomes are formed by repeated chromotids.

- A. Both (a) and (R) are true (r) is the correct explanation of (A)
- B. both (A) and(R) are true but (R) is not the correct explanations of (A)
- C. (A) is true statement but (R) is false
- D. Both (A) and (r) arae false

Answer: A



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121. The point at which the polytene chromosomes appear to be attached together is known as

- A. centriole
- B. centromere
- C. chromomere
- D. chromocentre

Answer: D



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122. Balbiani rings are the structural features of :

- A. Allosomes
- B. Autosomes
- C. Polytene chromosomes
- D. Lampbrush chromosomes

Answer: C



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123. Balbiani rings are the centres for :

- A. RNA synthesis
- B. DNA synthesis
- C. Both DNA and RNA synthesis
- D. None of the above

Answer: A



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124. Balbiani discovered a special type of chromosomes type chromosomes from salivary gland of chironomus larvae which are recognized by the presence of :

- A. loops
- B. bands
- C. Both of these
- D. none of these

Answer: B

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125. In polytene chromosomes dark bands are visible . These bands are formed by the apposition of :

- A. chromosomes on chromonemata
- B. protein particles
- C. nucleosomes
- D. none of the above

Answer: A

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126. Balbiani rings are sites of

- A. Lipid synthesis
- B. nuclotide synthesis
- C. polysaccharide synthesis
- D. RNA and protein sythesis

Answer: D

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127. What is C value paradox?

- A. Diploid DNA constant
- B. Haploid DNA constant
- C. Constant C value not all species

D.

Answer: C



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128. The haploid amount of DNA in a eukaryotic cell is termed :

A. D value

B. C value

C. N value

D. A value

Answer: B



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129. Molecular weight of yeast cell is ,

A. 0.5×10^9

B. 1×10^9

C. 8.5×10^8

D. 2.56×10^9

Answer: C



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130. How many base -pairs (bp) are found in the haploid genome of humans?

A. 7×10^9

B. 3×10^9

C. 4×10^8

D. 2.75×10^9

Answer: B

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131. A point mutation comprising the substitution of a purine by a pyrimidine is called :

- A. Deletion
- B. transition
- C. Transversion
- D. Translocation

Answer: C

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132. Heterchromatin:

1. is the inert segment of the chromosome adjacent to the centromere
2. Contains a highly repetitive sequence of DNA

3. is tightly coiled during the interphase

4. lightly stained regions

A. 1 and 2 are correct

B. 2 and 4 are correct

C. 1 and 3 are correct

D. 1, 2 and 3 are correct

Answer: D



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133. Haploids are more suitable for mutation studies than the diploids.

This is because

A. all mutations, whether dominant or recessive are expressed in haploids

B. mutagens penetrate in haploids more effectively than in diploids

C. haploids are reproductively more stable than diploids

D. haploids are abundant in nature than diploids

Answer: A



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134. Linkage group :

1. have genes, which were linked together in a single chromosome

2. Show independent assortment

3. do not show independent assortment

4. in prokaryotes are more than one

A. 2 and 4 are correct

B. 1 and 3 are correct

C. 1 and 2 are correct

D. 1, 2, and 3 are correct

Answer: B



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135. When a cluster of genes shows linkage behaviour they

- A. induce cell division
- B. do not show a chromosome map
- C. do not show independent assortment
- D. show recombination during meiosis

Answer: C



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136. The distance between the genes a,b,c and d in mapping units are $a-d=3.5$, $b-c=1$, $a-b=6$, $c-d=1.5$, $a-c=5$ Find out the sequence of arrangement of these genes:

- A. acdb

B. abcd

C. acbd

D. adcb

Answer: D



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137. In which mode of inheritance do you expect more maternal influence among the offspring

A. X-linked

B. Y-linked

C. cytoplasmic

D. Autosomal

Answer: C



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138. Cytoplasmic inheritance is due to :
1. cilia

2. cell wall

3. mitochondria

4. cytoplasmic particles

A. 1 and 2 are correct

B. 3 and 4 are correct

C. 2 and 4 correct

D. 1, 2 and 3 are correct

Answer: B



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139. Giant chromosomes are found in :

A. nucleus of man

B. oocytes of frog

C. salivary glands of silkworm

D. salivary glands of *Drosophila*

Answer: D



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140. Change in one base in m-RNA leading to termination of polypeptide is known as which type of mutation ?

A. Sense

B. Non -sense

C. Gibberish

D. Frameshift

Answer: B



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141. Occurance of cell containing multiples of $2n$ genomes in diploid organisms is known as

- A. aneuploidy
- B. alloploidy
- C. amphiploidy
- D. endopolyploidy

Answer: D



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142. the chromosomal rearrangement results in :

- A. Euploidy
- B. Aneuploidy
- C. Duplication

D. Polyploidy

Answer: C



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143. What name has been assigned to the genus produced by a cross between cabbage and radish

A. Secale

B. bursa pastoris

C. Lysogenicophyll

D. Raphanobrassica

Answer: D



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144. Which of the following shows triploid nature in flowering plants ?

- A. Embryo
- B. Megaspore
- C. Endosperm
- D. Micospore

Answer: C



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145. An angiospermic leaf carries 16 chromosomes ,The number of chromosomes in its endosperm will be :

- A. 8
- B. 12
- C. 16
- D. 24

Answer: D



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146. When a mutation is limited to be the substitution of one nucleotide for another, it is called

- A. Frameshift
- B. transversion
- C. point mutation
- D. base inversion

Answer: C



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147. A mutation which substitutes one purine base with another purine base is called :

- A. transition
- B. transversion
- C. transduction
- D. Transfection

Answer: A

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148. Mutations which normally happen randomly are considered one of the materials for evolution because they

- A. Contribute to new variation in organism
- B. cause death of organism
- C. are stable
- D. none of the above

Answer: A

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149. Karyotype is :

- A. Chromosomes complement which is specific for each species of living organism
- B. All organisms possessing same type of chromosomes
- C. Division of nucleus
- D. One of the above

Answer: A

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150. A chromosome, in which the centromere is situated is situated close to its end so that one arm is very short and other vey long is

- A. Metacentric

B. Acrocentric

C. Telecentric

D. Submetacentric

Answer: B



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151. A segment of chromosome breaks and rejoins after 180° rotation .It is

A. deletion

B. inversion

C. duplication

D. interstitial tranocation

Answer: B



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152. Point (Gene mutation) mutation involves

- A. deletion
- B. insertion
- C. duplication
- D. change in single base pair

Answer: D



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153. The segment of *DNA* which acts as the instrumental manual for the synthesis of the protein is:

- A. gene
- B. ribose
- C. nucleoside

D. nucleotide

Answer: A



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154. Recombination is involved in the process of :

A. cytokinesis

B. crossing over

C. spindle formation

D. chromosome duplication

Answer: B



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155. Beadle and Tatum showed that each kind of mutant bread mould they studied lacked a specific enzyme. Their experiments demonstrated that

- A. genes are made of DNA
- B. enzymes are required to repair damage
- C. genes carry information for making protein
- D. cells need specific enzymes in order to function

Answer: C



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156. Non-sister chromatids exchange segments during

- A. Diplotene
- B. diakinesis
- C. leptotene

D. pachytene

Answer: D



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157. Polyploidy can be produced artificially by :

A. Colchine

B. inbreeding

C. Line breeding

D. Self pollination

Answer: A



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158. chromosomes can be stained with one of the following chemicals ?

- A. Eosin
- B. Safranin
- C. Light green
- D. Acetocarmine

Answer: D

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159. Diploid cells have :

- A. Two chromosomes
- B. One set of chromosomes
- C. Two sets of chromosomes
- D. Two pairs of homologous chromosomes

Answer: C

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160. The chemical nature of chromatin is :

- A. nucleic acids
- B. nucleic acids and histone proteins
- C. nucleic acids and non - histone proteins
- D. nucleic acids ,histone and non - histone proteins

Answer: D



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161. Among the following which one is the mutagenic agent ?

- A. Formalin
- B. Penicillin
- C. Visible light

D. water vapour

Answer: A



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162. Match column I with column II and find the correct answer :

column I	Column II
<i>A</i> Monoploidy	1 $2n - 1$
<i>B</i> Monosomy	2 $2n + 1$
<i>C</i> Nullisomy	3 $2n + 2$
<i>D</i> Trisomy	4 $2n - 2$
<i>E</i> Tetrasomy	5 n
	6 $3n$

A. $A = 5, B = 1, C = 4, D = 2, E = 3$

B. $A = 5, B = 2, C = 4, D = 1, E = 3$

C. $A = 6, B = 5, C = 3, D = 4, E = 2$

D. $A = 2, B = 1, C = 3, D = 6, E = 5$

Answer: A



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163. In Morgan 's experiments on linkage , the percentage of white eyed miniature winged recombinants in F_2 generation is

- A. 1.3
- B. 37.2
- C. 62.8
- D. 73.2

Answer: B

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164. The number of linkage group (s) present In Escherichia Coli is :

- A. one
- B. two

C. four

D. seven

Answer: A



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165. Select the correct statements from the ones given below with respect to dihybrid cross

A. Tightly linked genes on the same chromosome show higher recombinations

B. Genes far apart on the same chromosome show few recombinations

C. Genes loosely linked on the chromosome show similar recombinations as the tightly linked ones

D. Tightly linked on the same chromosomes show very few recombinations

Answer: D

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166. which one of the following statement about the particular entry is true ?

- A. Centromere is formed animal cells which produces aster during cell division
- B. The gene for producing insulin is present in every body cell
- C. Nucleosome is formed of nucleotides
- D. DNA consists of core of eight histone

Answer: B

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167. The fruit fly *Drosophila melanogaster* was found to be very suitable for experimental verification of chromosomal theory on inheritance by Morgan and his colleagues because

- A. it reproduces parthenogenetically
- B. a single mating produces two young flies
- C. it completes life cycle in about two weeks
- D. smaller female is easily recognisable from larger male

Answer: C



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168. A typical nucleosome contains :

- A. 400 bp of DNA helix
- B. 100 bp of DNA helix

C. 300 bp of DNA helix

D. 200 bp of DNA helix

Answer: D



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169. the long and short arms of chromosome are designated respectively

as :

A. q and p arms

B. p and q arms

C. m and p arms

D. l and s arms

Answer: A



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170. the name chromatin was coined by :

- A. Robert brown
- B. Flemming
- C. George palade
- D. Camilo Golgi

Answer: B



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171. Plant A is having Chromosomes no $2n=12$ and B having $2n=16$ Both are crossed to form allotetraploid C. What is the Chromosomes number of C

- A. 7
- B. 14
- C. 32
- D. 28

Answer: D



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172. Root cells of wheat has $2n=42$ chromosomes . Which one of the following is the basic chromosome number fo wheat ?

A. 7

B. 14

C. 42

D. 21

Answer: A



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173. The major cause of evolution of genes and protein is

- A. point mutation
- B. sexual reproduction
- C. chromosomal aberration
- D. gene duplication and divergence

Answer: A

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174. Mutation can be induced by :

- A. nitrous acid
- B. Alkylating agents
- C. acridine dye
- D. all of these

Answer: D

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175. A mutation in DNA molecule involving the replacement of one nucleotide base pair with another is called a :

- A. Transposon
- B. Point mutation
- C. Deletion mutation
- D. Frameshift mutation

Answer: B



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176. Mutation can be induced with :

- A. IAA
- B. Ethylene
- C. Gamma radiations

D. Infra red radiations

Answer: C



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177. A collection of plants and seeds having diverse alleles of all the genes of a crop is called :

- A. genome
- B. Herbarium
- C. Gene library
- D. Germplasm

Answer: D



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178. What would be the number of chromosomes of the aleurone cells of a plant with 42 chromosomes in its root tip cells?

- A. 63
- B. 84
- C. 21
- D. 42

Answer: A



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179. Walter sutton is famous for his contribution to :

- A. Totipotency
- B. Genetic engineering
- C. Quantitative genetics
- D. Chromosomal genetics

Answer: D



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180. Chimera is produced due to :

- A. Reverse mutations
- B. Somatic mutations
- C. Lethal mutations
- D. Pleiotropic mutations

Answer: B



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181. Match column I with Column II and select the correct option:

Column I (Name of the organism)	Column II (Haploid chromosome number)
A Ophioglossum	1 23
B Rice	2 24
C Potato	3 12
D Man	4 630

A. $A = 3, B = 4, C = 2, D = 1$

B. $A = 4, B = 3, C = 2, D = 1$

C. $A = 1, B = 2, C = 3, D = 4$

D. $A = 2, B = 3, C = 4, D = 1$

Answer: B



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182. The chromosomal number in the meiocytes of housefly is :

A. 8

B. 12

C. 21

D. 23

Answer: B



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183. Experimental verification of chromosomal theory of inheritance was given by

A. Henking

B. Hugo de vries

C. Langdon Down

D. Thomas Hunt Morgan

Answer: D



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184. The loss of a chromosomal segment is due to :

- A. Polyploidy
- B. Deletions
- C. Duplications
- D. inversions

Answer: B



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185. The haploid content of human DNA is

- A. 3.3×10^6 bp
- B. 3.3×10^9 bp
- C. 4.6×10^6 bp
- D. 6.6×10^9 bp

Answer: B



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186. Polyloid derived from two different species is called :

- A. Autopolyploid
- B. Triploid
- C. allopolyploid
- D. Monoploid

Answer: C



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187. Structural elements of chromatin is

- A. Histone

B. Nucleosomes

C. Nuclear matrix

D. Acid protein and DNA

Answer: B



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188. The structure in chromatin seen as 'beads-on' string' when viewed under electron microscope are called

A. Base pairs

B. Genes

C. nucleotides

D. Nucleosomes

Answer: D



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189. Frequency of crossing over will be relatively more if :

- A. Distance between two genes is less
- B. distance between two genes is more
- C. linked genes are more
- D. both (a) and (C)

Answer: B



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190. The existence within a population of non- beneficial alleles in heterozygous genotype is :

- A. gentic load
- B. genetic drift
- C. genetic flow

D. selection

Answer: A



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191. Presence of recombinants is due to :

A. Crossing over

B. linkage

C. lack of independent assortment

D. all of the above

Answer: A



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192. which of the following is not considered as a mutagen ?

- A. UV radiation
- B. nuclear reaction
- C. 2- aminopurine
- D. lower temperature

Answer: D

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193. The change in single base pair

- A. results in new species
- B. always change the polypeptide chain
- C. may not change the phenotype
- D. always changes the phenotype

Answer: C

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194. Which one of the following is a wrong statement regarding mutations

- A. Deletion and insertion of base pairs cause frame - shift mutations
- B. Cancer cells commonly show chromosomal aberrations
- C. UV and single base are mutagens
- D. change in a single base pair of DNA does not cause mutation

Answer: D



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195. Addition or deletion of a single nucleotide results in which type of mutation

- A. Deficiency
- B. Duplication

C. Frameshift mutation

D. None of these

Answer: C



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196. In cause of incomplete linkage , the parental combinations obtained if F_1 generation are:

A. 0.25

B. 1

C. less than 50%

D. more than 50%

Answer: D



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197. Which of the following corresponds to mutagens

- A. Chemicals and radiations which cause change in the genetic material of cell .
- B. Various archaebacteria that produce methane .
- C. chemicals which react with ozone molecules and destroy them.
- D. RNA molecules that infect plant cells and cause diseases.

Answer: A



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198. if the number of chromosome in root cell is 14 , then what will be the chromosome number in syergids ?

- A. 14
- B. 21
- C. 7

D. 28

Answer: C



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199. Melanin pigment protects from which of the following radiations ?

A. UV rays

B. X- rays

C. Infrared rays

D. Gamma rays

Answer: A



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200. which of the following statements is not true of two genes that show 50 % recombination frequency ?

- A. the genes are tightly linked
- B. the genes show independent assortment
- C. if the genes are present on the same chromosome ,they undergo more than one crossovers in every meiosis
- D. the genes may be on different chromosomes

Answer: A



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

- A. Bivalent
- B. Axoneme

C. Kinetochore

D. Equatorial plate

Answer: A



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202. Exchange of paternal and maternal chromosome material during cell division is

A. synanpsis

B. crossing over

C. dyad formation

D. bivalent foramtion

Answer: B



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203. One type of chromosome has middle centromere whereas the other has a terminal centromere. They are

- A. Metacentric and telocentric
- B. telocentric and acrocentric
- C. acrocentric and acrocentric
- D. sub- metacentric and telocentric

Answer: A



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204. Choose the wrong statement .

- A. Failure of segregation of chromatids during cell division results in aneuploidy.
- B. Additional copy of 'X' chromosome in males results in Klinefelter's syndrome.

C. According to Mendel , recessive character never blend in heterozygous condition .

D. Failure of cytokinesis after DNA replications results assort independently resulting in recombinants

Answer: D

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205. If an inheritable mutation is observed in a population at high frequency it is referred to as

A. Linkage

B. Triplet codon

C. DNA polymorphism

D. sequence annotation

Answer: C

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206. what will be the number of histone molecules in a chromatin fibre having 50 nucleosomes ?

- A. 400
- B. 450
- C. 500
- D. 1000

Answer: B

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207. AN angiospermic male plant with 24 chromosomes in its pollen mother cells is crossed with female plant bearing 24 chromosomes in its root cells . What would be the ploidy of embryo and endosperm respectively formed after this cross ?

A. 24 and 36

B. 48 and 72

C. 24 and 48

D. 24 and 24

Answer: A



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208. The frequency of crossing-over occurring between two genes located on the same chromosome depends on:

A. activity of two genes

B. length of the chromosome

C. position of the centromere

D. distance between two genes

Answer: D

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209. Distance between the genes and percentage of recombination shows

- A. no relationship
- B. a direct relationship
- C. a parallel relationship
- D. an inverse relationship

Answer: B

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210. The exchange of one part of a chromosome to the other part of some or another chromosome is called

Or

The movement of gene from one linkage group to another is called

- A. Iversion
- B. Duplication
- C. Translocation
- D. Crossing over

Answer: C

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211. physical association of genes on a chromosomes is called :

- A. linkage
- B. repulsion
- C. aneuploidy
- D. duplication

Answer: A

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212. A set of genes will be in a complete linkage when the progeny phenotypes for parental (P) and recombinant (R) types are :

A. $P=0\%$, $R=100\%$

B. $P=50\%$, $R=50\%$

C. $P=50\%$, $R=50\%$

D. $P=100\%$, $R=0\%$

Answer: D



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213. Which one of the following information is essential to determine the genetic map distance between two genes located on the same chromosome ?

A. length of the particular chromosome

B. number of nucleotides in the particular chromosome

C. number of genes present in the particular chromosome

D. percentage of crossing over or recombinant frequency between the two genes

Answer: D

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214. Chromosome number of apple meiocytes is

A. 24

B. 380

C. 34

D. 20

Answer: C

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215. Conditions of a karyotype $2n \pm 1$ and $2n \pm 2$ are called

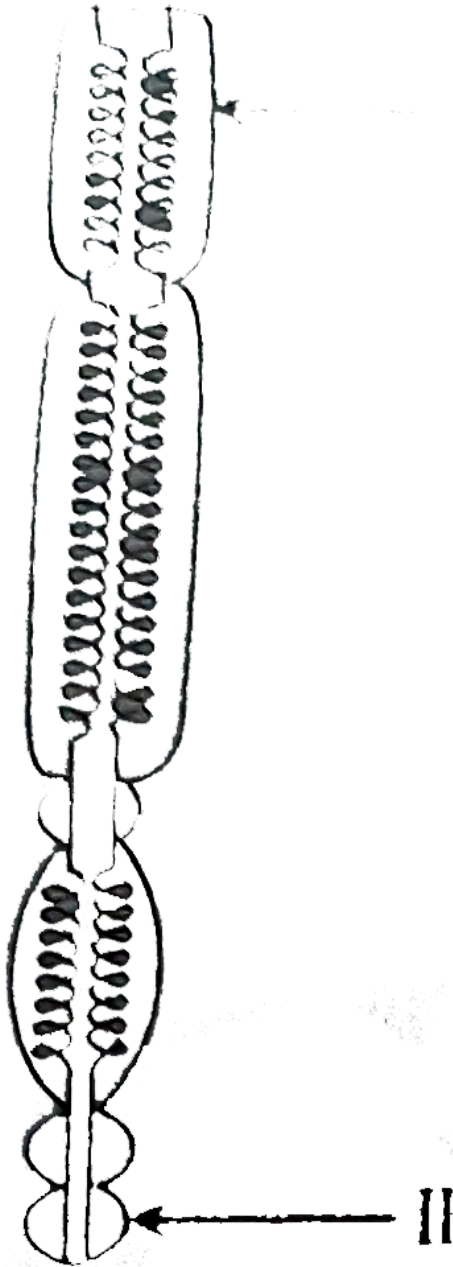
- A. aneuploidy
- B. polyploidy
- C. monosomy
- D. autopolyploidy

Answer: A



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216. In the given diagram I and II indicate



- A. telomere and satellite
- B. chromosomere and chromonemata
- C. secondary constriction and satellite
- D. centromere and secondary constriction

Answer: A

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217. Which of the following animal was selected by morgan for studying linkage

- A. E. coli
- B. Apis indica
- C. Drosophila melanogaster
- D. Agrobacterium tumefaciens

Answer: C

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218. Identify the correct order of organisation of genetic material from largest to smallest :

- A. chromosome ,gene , genome, nucleotide
- B. Genome, chromosome , gene , nucleotide
- C. Genome , chromosome, nucleotide , gene
- D. chromosome , genome , nucleotide , gene

Answer: B

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219. In idiogram , chromosomes of an orianism are arranged according to their :

- A. Increasing size

- B. number of genes
- C. number of chromosomes
- D. position of centromere

Answer: D



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

- A. inversion
- B. Duplication
- C. Translocation
- D. Crossing - over

Answer: C



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221. The equivalent of a structural gene is :

A. Operon

B. Recon

C. Muton

D. Cistron

Answer: D



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