11th 12th Science Notes Questions

[Tnpsc Syllabus Portion]

Cell Biology & Genetics

1. Chromosomes

I. Choose and write the correct option for the following questions:

1. The term 'chromosome' was introduced by _____

(a) Bridges **(b) Waldeyer** (c) Balbiani (d) Flemming

Explanation

The term was coined by the German scientist **von Waldeyer-Hartz**, referring to the term chromatin, which was itself introduced by Walther Flemming, who discovered cell division.

2. The unit of heredity are _____

(a) Chromosomes **(b) Genes** (c) Traits (d) Centromeres

Explanation

Chromosomes form the physical basis of heredity. Genes, the chemical basis of heredity, are arranged in linear fashion on the chromosomes.

3. Genes are made up of _____

(a) Aminoacids an sterol (b) Sterol and Steroids

(c) DNA and associated proteins (d) Bases and sugars

Explanation

The genes travel from one generation to the next carrying the traits and since gene is composed of DNA and protein, the DNA part functions as the chemical basis of heredity.

4. Pick out the odd one _____

(a) Polytene (b) Lampbrush (c) Autosome **(d) Ophioglossum**

Explanation

Some common examples of ferns are Nephrolepis, **Ophioglossum**, Osmunda, Pteris, Adiantum, Marsilea, Azolla, Salvinia etc.

5. Polytene chromosomes were observed by _____

(a) Bridges (b) Waldeyer **(c) C.G. Balbiani** (d) Flemming

Explanation

Polytene chromosomes were originally **observed** in the larval salivary glands of Chironomus midges by Édouard-Gérard Balbiani in 1881.

6. Kinetochore plays an important role in _____

(a) Mitosis (b) Meiosis **(c) Mitosis and meiosis** (d) Amitosis

Explanation

Kinetochore plays an important role in **Mitosis and meiosis**

7. Chromatin is a _____

(a) Fluid (b) Granular form (c) Jelly **(d) Viscous, gelatinous substance**

Explanation

Chromatin is a Viscous, gelatinous substance, Chromosomes appear as chromatin network**.**

8. Genes are arranged in a _____ shape.

(a) Linear (b) Elliptical (c) Orbitatory (d) Straight line

Explanation

Genes are arranged on the chromosomes in a linear order like beads on a string. A single gene may have more than one functional state or form. These functional states are refered to as alleles

9. The repeating units of chromatin is _____

(a) Gene **(b) Nucleosome** (c) Ribosome (d) Polysome

Explanation

The basic **repeating** structural (and functional) **unit of chromatin** is the nucleosome, which contains eight histone proteins

10. Centromere is the _____

(a) Primary constriction (b) Arms of the chromosome

(c) Secondary constriction (d) Units of chromosome

Explanation

A lighter staining region appears as a **constriction** or thinner segment of the chromosome and is usually called **centromere** or **primary constriction** or kinetochore.

11. Metacentric chromosomes are _____

(a) Rod shaped (b) L-shaped **(c) V-shaped** (d) Ball shaped

Explanation

As the chromosomes move toward opposite poles they assume V or J or I shaped configuration and metacentric chromosomes are **V-shaped**

12. The number of autosomal chromosomes in human diploid cell is _____ chromosomes.

(a) 44 (b) 46 (c) 36 (d) 48

Explanation

Humans have 46 chromosomes in each diploid cell. Among those, there are two sex-determining chromosomes, and 22 pairs of autosomal, or non-sex,chromosomes.

13. Giant chromosomes are _____ chromosomes.

(a) Polytene and sat (b) Lampbrush and sat

(c)Polytene and lampbrush (d) 'Sat' and Balbiani

Explanation

There are two types of giant chromosomes – polytene chromosome and lamp brush chromosome.

14. Lampbrush chromosomes were first observed by _____

(a) Waldeyer (b) Balbiani **(c) Flemming** (d) Bridges

Explanation

Lamp brush chromosomes were first observed by Flemming in 1882. It looked like brushes. They occur at the diplotene stage of meiotic prophase in oocytes of an animal Salamandor and in giant nucleus of the unicellular alga Acetabularia.

15. C.G. Balbiani in 1881 observed polytene chromosomes in _____

(a) Salivary glands of drosophila (b) Eukaryotic organisms

(c) Prokaryotic organisms (d) All living organisms

Explanation

Polytene chromosomes were observed by C.G. Balbiani in 1881 in the salivary glands of Drosophila. The characteristic feature of polytene chromosome is that along the length of the chromosome there is a series of dark bands alternate with clear zones called inter bands.

16. Balbiani ring is also called _____

(a) Lampbrush chromosome (b) B-chromosome

(c) Chromosomal puff (d) Balbiani band

Explanation

The polytene chromosome has extremely large puff called Balbiani ring. It is also known as chromosomal puff. As this chromosome occurs in the salivary gland it is known as salivary gland chromosomes.

17. Lampbrush chromosomes occur at the _____ stage of meiotic prophase in oocyte of all animal species.

(a) Pachytene **(b) Diplotene** (c) Leptotene (d) Diakineis

Explanation

Lamp brush chromosomes were first observed by Flemming in 1882. It looked like brushes. They occur at the **diplotene stage of meiotic prophase** in oocytes of an animal Salamandor and in giant nucleus of the unicellular alga Acetabularia.

18. The lampbrush chromosomes found in the giant nucleus of unicellular algae _____

(a) Chlamydomonas (b) Volvox **(c) Acetabularia** (d) Eudorina

Explanation

Lamp brush chromosomes were first observed by Flemming in 1882. It looked like brushes. They occur at the **diplotene stage of meiotic prophase** in oocytes of an animal Salamandor and in giant nucleus of the unicellular alga Acetabularia.

19. The basis proteins found in chromatin are _____

(a) Albumin and globulin (b) Flavo protein and kinetochore

(c) Histones **(d) Histones and non-histone proteins**

Explanation

Chromatin is a viscous gelatinous substance that contains DNA, RNA, histone and non–histone proteins. H1, H2A, H2B, H3 and H4 are the five types of histones found in the chromatin.

20. Telomere is seen in _____ part of chromosome.

(a) Apical **(b) Terminal** (c) Middle (d) Axial

Explanation

Telomere is the terminal part of chromosome. It offers stability to the chromosome. DNA of the telomere has specific sequence of nucleotides.

21. The stability of the terminal part of chromosome is maintained by _____

(a) Satellite (b) Centromere (c) Histone **(d) Telomere**

Explanation

Telomere is the terminal part of chromosome. It offers stability to the chromosome. DNA of the telomere has specific sequence of nucleotides.

22. The number of sex chromosomes found in human diploid cells is _____

(a) 2 (b) 44 (c) 46 (d) 47

Explanation

These chromosomes are involved in the determination of sex. They are called sex chromosomes. In human being, male has XY and female XX chromosomes. Totally **two**

23. Lamp brush chromosome is observed in _____

(a) Drosophila (b) Maize **(c) Acetabularia** (d) Yeast

Explanation

They occur at the **diplotene stage of meiotic prophase** in oocytes of an animal Salamandor and in giant nucleus of the unicellular alga Acetabularia.

24. The four main histones present in DNA are _____

(a) H_2A, H_2B, H_3 and H_4 (b) HA, H_2B, HBC and H_4

(c) H_2A, H_2B, H_3C and H_4D (d) H_2, H_5 H_3 and H_4

Explanation

Chromatin is a viscous gelatinous substance that contains DNA, RNA, histone and non–histone proteins. H1, H2A, H2B, H3 and H4 are the five types of histones found in the chromatin.

2. Gene And Genome

I. Choose and write the correct option for the following questions.

25. The word gene was coined by _____

(a) W. Johannsen (b) Flemming (c) Balbiani (d) Waldeyer

Explanation

The word gene was coined by W. Johannsen in 1909. A gene is a physical and functional unit of heredity.

26. The physical and functional unit of heredity is _____

(a) Chromosome **(b) Gene** (c) DNA (d) RNA

Explanation

A gene is a physical and functional unit of heredity. It carries information from one generation to the next.

27. When a gene undergoes mutation it results _____

(a) Physical variation (b) Chemical variation

(c) Biological variation (d) Anatomical variations

Explanation

When a gene undergoes changes due to mutation, it results in biological variations. These variations are important for evolution. Such variations also arise due to recombination of genes on chromosomes**.**

28. Variation in genes brings out _____

(a) Hybridization (b) Genetic engineering **(c) Evolution** (d) Cytotaxonomy

Explanation

When a gene undergoes changes due to mutation, it results in biological variations. These variations are important for evolution. Such variations also arise due to recombination of genes on chromosomes.

29. The relationship between genes and enzymes was discovered by _____

(a) T.H. Morgonand Tatum (b) Waldeyer and T.H. Morgan

(c) Tatum and Waldeyer **(d) Beadle and Tatum**

Explanation

The relationship between genes and enzymes was discovered by Beadle and Tatum.

30. The bio-chemical research on Neurospora was conducted by _____

(a) Charles Darwin **(b) Beadle and Tatum**

(c) Reginald Punnett (d) Bateson and Punnett

Explanation

The relationship between genes and enzymes was discovered by Beadle and Tatum. They conducted bio-chemical research on the fungus Neurospora and concluded that the major role of genes was to carry information for the production of enzymes.

31. The product of gene action is always _____

(a) An aminoacid (b) A benzene **(c) A polypeptide** (d) A sugar

Explanation

The hypothesis has been modified to 'one gene one polypeptide hypothesis' because the product of gene action is always a polypeptide.

32. Genome is a _____

(a) Number of chromosome (b) Totality of RNA sequences

(c) Totality of the DNA sequences (d) Totality of polypeptide sequences

Explanation

Genome may be defined as the totality of the DNA sequences of an organism including DNAs present in mitochondria and chloroplasts

33. The genome of virus is made up of _____

(a) DNA (b) RNA **(c) Either DNA or RNA** (d) Neither DNA nor RNA

Explanation

In all organisms genome is made up of DNA but in viruses, it is made up of either DNA or RNA.

34. The genome of garden pea is _____

(a) 7 (b) 12 (c) 21 (d) 24

Explanation

Table showing the organisms and their haploid set of chromosom

Sl.No.	Name of organism	Haploid set of chromosome
1.	*Arabidopsis thaliana*	5
2.	Garden pea	7
3.	Paddy	12
4.	*Triticum aestivum*	21
5.	*Homo sapiens*	23
6.	Chimpanzee	24
7.	Sugarcane	40
8.	*Ophioglossum*	631

35. The size of the genome can be expressed in terms of number of base pairs either in _____

(a) Kilobases (b) Megabases

(c) Megabites **(d) Kilobases and megabases**

Explanation

The genome size of an individual is expressed in terms of number of base pairs either in kilobases (1000 bp) or in megabases (one million bp).

36. The approximate number of genes in Man is _____

(a) 30, 000 (b) 20, 000 **(c) 30, 000 – 40, 000** (d) 50, 000

Explanation

Table showing the genome and approximate number of genes

S. No	Name of the organism	Size of the genome in megabase pairs	Approximate number of genes
1.	*Escherichia coli*	4.64	4,400
2.	Yeast	12.10	5,800
3.	*Arabidopsis thaliana*	130.00	26,000
4.	*Drosophila*	180.00	13,600
5.	*Homo sapiens*	3,300.00	30,000 - 40,000

37. In human genome about _____ of genome involved in biochemical activities like immunological and structural proteins.

(a) 23.2% **(b) 38.2%** (c) 17.5% (d) 21.6%

Explanation

In human genome, 38.2% of genome is involved in biochemical activities like synthesis of immunological and structural proteins

38. The percentage of genome of human being involved in general functions of the cell is _____

(a) 38.2% (b) 23.2% **(c) 17.5%** (d) 37.2%

Explanation

In human genome, 38.2% of genome is involved in biochemical activities like synthesis of immunological and structural proteins, 23.2% in the maintenance of genome, 21.1% in receiving and giving signals related to cellular activities and remaining 17.5% in the general functions of the cell.

39. Arabidopsis thaliana is called _____

(a) An annual plant (b) Weed (c) Crucifer **(d) Thale cress**

Explanation

Arabidopsis thaliana is an annual crucifer weed called ‘thale cress’.

40. The number of genome in Chimpanzee is _____

(a) 7 (b) 12 **(c) 24** (d) 23

Explanation

Table showing the organisms and their haploid set of chromosome

Sl.No.	Name of organism	Haploid set of chromosome
1.	*Arabidopsis thaliana*	5
2.	Garden pea	7
3.	Paddy	12
4.	*Triticum aestivum*	21
5.	*Homo sapiens*	23
6.	Chimpanzee	24
7.	Sugarcane	40
8.	*Ophioglossum*	631

3. Linkage And Crossing Over

I. Choose and write the correct option for the following questions:

41. The coupling test cross ratio is _____

(a) 1 : 7 : 7 : 1 **(b) 7 : 1 : 1 : 7** (c) 1 : 1 : 1 : 1 (d) 9 : 3 : 3 : 1

Explanation

The dihybrid test cross ratio obtained is 1:7:7:1

42. The tendency of genes to be inherited together is _____

(a) Linkage (b) Coupling (c) Repulsion (d) Union

Explanation

The tendency of genes or characters to be inherited together because of their location on the same chromosome is called linkage.

43. Bateson and Punnett conducted experiments in _____

(a) Paddy (b) Ground nut **(c) Sweet pea** (d) Maize

Explanation

In 1906, William Bateson and Reginald Punnett conducted experiments in sweet pea, Lathyrus odoratus to confirm Mendel's dihybrid testcross.

44. The tendency of two different dominant or recessive genes to remain separate in the heredity transmission is called _____

(a) Coupling **(b) Repulsion** (c) Crossing over (d) Interaction of genes

Explanation

If dominant alleles or recessive alleles are present in the different plants, they tend to remain separate resulting in increased parental forms. This aspect is called repulsion.

45. Coupling and repulsion are the two aspects of _____

(a) Crossing over **(b) Linkage** (c) Gene interaction (d) Complementary genes

Explanation

Coupling and repulsion offered explanation for higher frequency of parental forms. They are two aspects of a single phenomenon called linkage

46. The genes that are carried on the same chromosome _____

(a) Will not assort independently (b) Will not remain together in inheritance

(c) Will assort independently (d) Will not take part in crossing over

Explanation

The genes that are carried on the same chromosome will not assort independently because of their tendency to remain linked together. This is called linkage.

47. Crossing over takes place between the chromosomes of _____

(a) Homologous (b) Sister (c) Non – sister **(d) Non sister homologous**

Explanation

Crossing over occurs between the nonsister chromatids of paired chromosomes in the region of chiasma. At each chiasma, the two nonsister chromatids break, exchange their segments and rejoin resulting the crossing over.

48. A cross over between linked genes allows their recombination during _____

(a) Mitosis (b) Amitosis **(c) Meiosis** (d) Homologous

Explanation

A crossing over between linked genes allows their recombination during meiosis.

49. The process, in which recombination of genes takes place between homologous non – sister chromatids is called _____

(a) Coupling (b) Repulsion (c) Linkage **(d) Crossing over**

Explanation

The process, which produces recombination of genes by interchanging the corresponding segments between nonsister chromatids of homologous chromosomes, is called crossing over.

50. Crossing over takes place in _____ of prophase I of meiosis.

(a) Leptotene (b) Diplotene **(c) Pachytene** (d) Diakinesis

Explanation

Crossing over takes place in pachytene stage of prophase I of meiosis.

51. In Pachytene stage of meiosis I _____ chromosomes become tetrad.

(a) Bivalent (b) Two (c) Bivalent with four chromatids (d) Diplotene

Explanation

In pachytene stage, the bivalent chromosome becomes tetrad i.e. with four chromatids.

52. The adjacent non – sister chromatids are joined in _____

(a) Kinetochore (b) Secondary constriction

(c) Primary constriction **(d) Chiasmata**

Explanation

The adjacent nonsister chromatids are joined together at certain points called chiasmata.

53. Crossing over occurs in the _____ region.

(a) Chiasma (b) Chiasmata (c) Constriction (d) Secondary constriction

Explanation

Crossing over occurs between the nonsister chromatids of paired chromosomes in the region of chiasma.

54. Crossing over plays an important role in _____

(a) A sexual reproduction **(b) Evolution**

(c) Mutation (d) Ploidy

Explanation

Crossing over plays an important role in the process of evolution.

55. The frequency of crossing over helps to construct _____

(a) DNA sequence (b) Nucleotide sequence

(c) Chromosomal map **(d) Genetic map**

Explanation

The crossing over frequency helps in the construction of genetic maps of the chromosomes.

56. Genes are arranged _____ in a chromosome.

(a) Orbitary (b) Elliptically (c) Obliquely **(d) Linearly**

Explanation

Genes are arranged linearly in a chromosome. The point in a chromosome where the gene is located is called locus.

57. The unit of genetic map is _____

(a) Picogram (b) Angstrom (c) Bridges **(d) Morgan or centimorgan**

Explanation

The unit of genetic map is Morgan or centimorgan. When the percentage of crossing over between two linked genes is 1 per cent, then the map distance between the linked genes is one morgan

58. When the two genes are farther apart in a chromatid then the probability of crossing over is _____

(a) Equal (b) Lesser (c) Directly proportional **(d) Greater**

Explanation

There is a greater probability of occurrence of crossing over, when the two genes are farther apart in a chromatid.

59. The limited crossing over occurs between the genes which are _____

(a) Nearer (b) Farther apart (c) Distant (d) Away

Explanation

When two genes are nearer, the probability of occurrence of crossing over between them is limited.

60. When the percentage of crossing over between two linked genes is 1% then the map distance between linked genes is _____

(a) One morgan (b) Two morgan (c) Five morgan (d) 8 morgan

Explanation

When the percentage of crossing over between two linked genes is 1 per cent, then the map distance between the linked genes is one morgan.

61. Gene map is used to determine _____

(a) The location and linkage of genes (b) Arrangement and crossingover of genes

(c) Linkage crossing over of genes (d) Locations and crossing over

Explanation

Gene mapping is useful to determine the location, arrangement and linkage of genes in a chromosome.

62. Gene mapping is useful to predict the results of _____

(a) Monohybrid and di-hybrid cross (b) Any hybrid cross

(c) Tri-hybrid and monohybrid cross **(d) Di-hybrid and tri-hybrid cross**

Explanation

Gene mapping is useful to predict the results of dihybrid and trihybrid crosses.

63. The point in a chromosome where the gene is located is called _____

(a) Chiasma (b) Synapse (c) Chiasmata **(d) Locus**

Explanation

Genes are arranged linearly in a chromosome. The point in a chromosome where the gene is located is called locus.

4. Recombination Of Chromosome

I. Choose and write the correct option for the following questions:

64. Recombination of chromosome takes place in _____ stage of prophase I of meiosis.

(a) Leptotene (b) Zygotene **(c) Pachytene** (d) Diplotene

Explanation

Recombination of chromosome takes place in Pachytene stage of prophase I of meiosis.

65. Crossing over between linked genes results in _____

(a) Synapsis **(b) Recombination** (c) Linkage (d) Repulsion

Explanation

Crossing between the linked genes results in genetic recombination.

66. Recombination of chromosomes takes place in _____ stage of meiosis.

(a) Prophase I (b) Metaphase I (c) Araphase (d) Telophase

Explanation

Recombination takes place in pachytene stage of prophase I of meiosis.

67. In Lathyrusodoratus _____ percent of test cross progeny were recombinants.

(a) 8 **(b) 12** (c) 15 (d) 20

Explanation

According to Bateson and Punnet, in Lathyrus odoratus 12 per cent of the test cross progeny were recombinants.

68. Tightly linked genes shows the gene pairs with recombination with _____

(a) Low percentage (b) Equal percentage

(c) High percentage (d) Lesser than 10%

Explanation

Gene pairs that had very low percentage of recombination are known as tightly linked genes.

69. The gene pairs with higher percentage are termed as _____

(a) Tightly linked genes (b) Closed genes

(c) Coupled genes **(d) Loosely linked genes**

Explanation

The gene pairs with higher percentage are termed as loosely linked genes.

70. The percentage of recombination can be determined by _____

(a) $\frac{\text{Crossing over frequency}}{\text{linkage frequency}}$ (b) $\frac{\text{Linkage frequency}}{\text{total offsprings}}$

(c) $\frac{No.of\ total\ offspring}{\text{No.of recombinant offspring}}$ **(d)** $\frac{\boldsymbol{No.\ of\ recombinant\ offspring}}{\textbf{Total number of offsprings}}$

Explanation

The percentage recombination is determined by dividing the number of recombinant offspring by the total number of offspring.

71. Recombinants shows _____

(a) Same allele (b) Different linkage of allele

(c) Different linkage allele than the parents **(d) Different linkage allele than offspring**

Explanation

Recombinant shows a different linkage of alleles than their parents.

5. Mutation

I. Choose and write the correct option for the following questions:

72. Hugo de Vries first used the term mutation based on his observation on _____

(a) Sorghum (b) Neurospora **(c) Oenothera lamarckiana** (d) Cicergigas

Explanation

Hugo de Vries first used the term mutation based on his observation on Oenothera lamarckiana.

73. Biochemical mutants of _____ failed to synthesize certain amino acids.

(a) Sorghum **(b) Neurospora** (c) Cicerarietinum (d) Cicergigas

Explanation

Biochemical mutants of Neurospora failed to synthesize certain amino acids. Some mutations drastically influence the genes and cause death to the individual.

74. The term mutation refers to _____

(a) Slow change (b) Rapid change **(c) Sudden change** (d) Variations

Explanation

Sudden change in the genetical set up of an organism is defined as mutation.

75. The term mutation was first used by _____

(a) T.H. Morgan (b) Edge Altenburg

(c) Muller and Correns **(d) Hugo de Vries**

Explanation

In 1901, Hugo de Vries first used the term mutation based on his observation on Oenothera lamarckiana.

76. Charles Darwin termed the sudden mutational changes as _____

(a) Gametes **(b) Sports** (c) Discontinuous change (d) Continuous change

Explanation

Charles Darwin termed these sudden change as ‘sports’.

77. According to Bateson, mutation is a _____

(a) Continuous change **(b) Discontinuous change**

(c) Frequent change (d) No change

Explanation

According to Bateson, mutation is a discontinuous change. Based on molecular basis of heredity, mutation is defined as sudden change in the sequence of nucleotides of gene.

78. Lethal mutation is observed in _____

(a) Pea (b) Paddy **(c) Sorghum** (d) Bengal gram

Explanation

Some mutations drastically influence the genes and cause death to the individual. Such mutation is described as lethal mutation. For example, in the plant Sorghum, recessive mutant fails to produce chlorophyll and therefore they die in the seedling stage.

79. Mutant variety with large seeded Bengal gram is _____

(a) Cicerarietinum (b) Vignamungo

(c) Cicergigas (d) Cicer vulgaris

Explanation

Small seeded Cicer arietinum (bengal gram) suddenly get mutated to large seeded Cicer gigas is the case of gene mutation.

80. Lethal mutation causes the _____

(a) Phenotypic effect (b) Biochemical changes

(c) Genotypic effect **(d) Death of the organism**

Explanation

Some mutations drastically influence the genes and cause death to the individual. Such mutation is described as lethal mutation.

81. If an organism cannot synthesis certain amino acids, it may be due to _____ mutation.

(a) Somatic (b) Phenotypic (c) Lethal **(d) Biochemical**

Explanation

Mutations that affect the biochemical reactions are called biochemical mutations. For example, biochemical mutants of Neurospora failed to synthesize certain amino acids.

82. Gene mutation is caused by the _____ of nucleotide pair.

(a) Addition (b) Substitution **(c) Deletion** (d) Transition

Explanation

The gene mutation may be caused by loss or deletion of a nucleotide pair. This is called deletion mutation and reported in some bacteriophages.

83. Deletion mutation is reported in _____

(a) Virus (b) Neurospora **(c) Bacteriophage** (d) Bacteria

Explanation

The gene mutation may be caused by loss or deletion of a nucleotide pair. This is called deletion mutation and reported in some bacteriophages.

84. Point mutations brings changes in the _____

(a) Loci **(b) DNA segment** (c) RNA segment (d) Entire chromosome

Explanation

Point mutation is sudden change in small segment of DNA either a single nucleotide or a nucleotide pair. Gross mutation is a change involving more than one or a few nucleotides of a DNA.

85. Presence of extra nucleotide in gene results in _____

(a) Substitution **(b) Addition** (c) Deletion (d) Subtraction

Explanation

Addition of one or more nucleotides into a gene results in addition mutation.

86. When a purine is replaced by another purine, it is said to be a _____

(a) Addition **(b) Transition** (c) Transversion (d) Substitution

Explanation

When a purine or a pyrimidine is replaced by another purine or pyrimidine respectively this kind of substitution is called transition.

87. When a mutation involves the replacement of a purine for pyrimidine or vice versa, it is called _____

(a) Addition (b) Deletion (c) Transition **(d) Transversion**

Explanation

When a mutation involves the replacement of a purine for pyrimidine or viceversa this is called transversion.

88. Ultraviolet rays and electromagnetic radiation are the _____ mutagenic agents.

(a) Physical (b) Chemical (c) Environmental (d) All the above

Explanation

Electromagnetic radiation, radiations like α β and γ, ultraviolet rays, temperature, etc. are some of the examples for physical mutagens.

89. Chemical mutagens are _____

(a) α and β rays (b) Cosmic rays

(c) Ultraviolet rays **(d) Methyl methane sulphonate**

Explanation

Chemicals can also be used for inducing mutations in the organisms. Such chemicals are called chemical mutagenic agents. eg. Nitrous acid, Methyl methane sulphonate (MMS) and ethyl methane sulphonate (EMS).

90. Mutant variety which is an early maturing, disease resistant and enriched with protein is _____

(a) Paddy (b) Barely **(c) Wheat** (d) Oats

Explanation

Mutant varieties of wheat are early maturing, disease resistance and they are enriched with protein. Mutant varieties of paddy produce many tillers with long grains.

91. Mutant varieties of paddy produce _____

(a) Grains with tillers **(b) Tillers with long grains**

(c) Tillers with small grains (d) No tillers

Explanation

Mutant varieties of wheat are early maturing, disease resistance and they are enriched with protein. Mutant varieties of paddy produce many tillers with long grains.

92. The unit of genes which are responsible for mutation and recombination respectively are _____

(a) Muton and recon (b) Cistron and recon

(c) Muton and cistron (d) Cistron and mason

Explanation

The study of mutant strains of viruses helps us to know the fine structure of gene. The genes are made up of small functional units such as cistron, recon and muton. Cistron is an unit of function, recon is the unit of recombination and muton is the unit of mutation.

93. Functional units of genes are _____

(a) Recon (b) Muton **(c) Ciston** (d) Mason

Explanation

The study of mutant strains of viruses helps us to know the fine structure of gene. The genes are made up of small functional units such as cistron, recon and muton. Cistron is an unit of function, recon is the unit of recombination and muton is the unit of mutation.

6. Chromosomal Aberrations

I. Choose and write the correct option for the following questions:

94. The gametes of Drosophila melanogaster carry ……..

(a) Three chromosomes **(b) Four chromosomes**

(c) Seven chromosomes (d) Eight chromosomes

Explanation

The gametes of Drosophila melanogaster carry **Four chromosomes**

95. Nullisomy is represented by ……

(a) 2n – 1 (b) 2n + 1 (c) 2n + 2 **(d) 2n – 2**

Explanation

Nullisomy is the condition in which a pair of homologous chromosomes is lost from the diploid set i.e. 2n – 2.

96. Deletion of a large part of a chromosome will lead to …….

(a) Genomic mutation **(b) Death of an organism**

(c) Euploidy (d) All the above

Explanation

When the deletion occurs in the middle of the chromosome then, it is called intercalary deletion. Most of the deletions lead to **death** of an organism.

97. When the deletion occurs in the middle of the chromosomes it is called ……..

(a) Terminal **(b) Intercalary** (c) Recessive (d) Dominant

Explanation

When the deletion occurs in the middle of the chromosome then, it is called intercalary deletion. Most of the deletions lead to death of an organism.

98. Deletion occurs near the end of the chromosomes is seen in ……..

(a) Drosophila and Maize (b) Maize and Sorghum

(c) Drosophila and Sorghum (d) Sorghum and Triticum

Explanation

When the deletion occurs near the end of the chromosome, then it is called terminal deletion. Eg. Drosophila and Maize.

99. A number of duplications reported in …….

(a) Corn and peas **(b) Drosophila** (c) Neurospora (d) Aspergillus

Explanation

In Drosophila, corn and peas a number of duplications are reported. Some duplications are useful in the evolution of the organism.

100. What type of mutation is shown in a,b,c,d,e,f,c,d,e,f,g,h?

(a) Deficiency **(b) Duplication** (c) Translocation (d) Inversion

Explanation

When a segment of a chromosome is present more than once in a chromosome then, it is called duplication. For example, the order of genes in a chromosome is a, b, c, d, e, f, g and h. Due to aberration, the genes 'g' and 'h' are duplicated and the sequence of genes becomes a, b, c, d, e, f, g, h, g and h.

101. In pericentric inversion the inverted segment of the chromosomes contain ……..

(a) Centreola (b) Centrosome **(c) Centromere** (d) Meta centre

Explanation

In pericentric inversion, the inverted segment of the chromosome contains centromere.

102. In inversion the order of genes in a chromosomal segment is reversed by angle of …….

(a) 150^o (b) 170^o **(c) 180^o** (d) 190^o

Explanation

Inversion is another chromosomal abnormality in which, the order of genes in a chromosomal segment is reversed by an angle of 180°.

103. The 17th human chromosome is ……_____

(a) Acrocentric (b) Metacentric (c) Submetacentric (d) Telocentric

Explanation

For example the 17th human chromosome is acrocentric, while in Chimpanzee the corresponding chromosome is metacentric.

104. In Chimpanzee the 17th chromosome is ……

(a) Acrocentric **(b) Metacentric** (c) Submetacentric (d) Telocentric

Explanation

For example the 17th human chromosome is acrocentric, while in Chimpanzee the corresponding chromosome is metacentric.

105. The inerted segment of the chromosome has to centrosome in ……

(a) Acrocentric **(b) Paracentric** (c) Pericentric (d) Metacentric

Explanation

In paracentric inversion, the inverted segment of the chromosome has no centromere.

106. Which of the following is said to be the illegitimate crossing over ……

(a) Synapsis and chiasmata

(b) Intrachromosomal aberration

(c) Translocation between homologous chromosomes

(d) Translocation between non – homologous chromosomes

Explanation

When translocation occurs between two non-homologous chromosomes, then it is called reciprocal translocation or illegitimate crossingover.

107. Translocation in which one member of each pair of chromosomes is normal and the other is interchanged is ……..

(a) Heterozygous translocation (b) Homozygous translocation

(c) Reciprocal translocation (d) Both b and c

Explanation

In heterozygous translocation, one member of each pair of chromosomes is normal and the other member is with interchanged segment.

108. Translocation causes ……. Disorders.

(a) Fertility (b) Genetic **(c) Hereditary** (d) Phenotypic

Explanation

Translocation plays an important role in species differentiation. Translocations causes hereditary disorders.

109. Alterations in the number of chromosome from the diploid set is called _____.

(a) Translocation (b) Substitution

(c) Numerical chromosomal aberration (d) Duplication

Explanation

Alterations in the number of chromosomes from the diploid set is called numerical chromosomal aberration**.**

110. Diploidy condition is seen in ……

(a) Cleavage **(b) Fertilization** (c) Gametogenesis (d) Oogenesis

Explanation

In most of the plants and animals, the somatic cells contain two sets of chromosome. Diploidy is formed by the union of two gametes during fertilization.

111. Addition of one or more haploid set of its own genome in an organism results …….

(a) Euploidy (b) Aneuploidy **(c) Autopolyploidy** (d) Allopolyploidy

Explanation

Addition of one or more haploid set of its own genome in an organism results in autopolyploidy. Watermelon, grapes and banana are autotriploids, whereas apple is an autotetraploid.

112. This is the first man made cereal ……..

(a) Paddy (b) Maize **(c) Triricale** (d) Wheat

Explanation

Triticale is the first man made cereal. It is obtained by crossing a wheat Triticum durum (2n = 4x = 28) and a rye Secale cereale (2n = 2x = 14). The F1 hybrid (2n = 3x = 21) is sterile.

113. These are autotriploids ……..

(a) Grapes and apple (b) Apples and banana

(c) Watermelons and banana (d) Apple and brinjal

Explanation

Addition of one or more haploid set of its own genome in an organism results in autopolyploidy. Watermelon, grapes and banana are autotriploids, whereas apple is an autotetraploid.

114. Increase in one or more haploid set of chromosomes from two different species resulting in ……..

(a) Autopolyploidy **(b) Allopolyploidy**

(c) Euploidy (d) Aneuploidy

Explanation

Increase in one or more haploid set of chromosomes from two different species result in allopolyploidy.

115. The diploid set of chromosomes in Triticum durum is ……

(a) 2n = 28 (b) 2n = 24 (c) 2n = 42 (d) 2n = 48

Explanation

Triticale is the first man made cereal. It is obtained by crossing a wheat Triticum durum (2n = 4x = 28) and a rye Secale cereale (2n = 2x = 14). The F1 hybrid (2n = 3x = 21) is sterile.

116. The F_1 hybrid of the cross between Triticum durum and Secale cereal is …….

(a) Fertile, 2n = 21 (b) Sterile 2n = 14 **(c) Sterile 2n = 21** (d) Fertile 2n = 48

Explanation

Triticale is the first man made cereal. It is obtained by crossing a wheat Triticum durum (2n = 4x = 28) and a rye Secale cereale (2n = 2x = 14). The F1 hybrid (2n = 3x = 21) is sterile.

117. Monosomy is due to loss of …… from the diploid set.

(a) A chromosome (b) A pair of chromosome

(c) 3 chromosome (d) Number of chromosome

Explanation

Monosomy is due to loss of a chromosome from the diploid set i.e. 2n – 1. Nullisomy is the condition in which a pair of homologous chromosomes is lost from the diploid set i.e. 2n – 2.

118. When a pair of homologous chromosomes is lost from the diploid set is called ……

(a) Autosomy (b) Allosomy (c) Monosomy **(d) Nullisomy**

Explanation

Nullisomy is the condition in which a pair of homologous chromosomes is lost from the diploid set i.e. 2n – 2.

119. Trisomy can be written as ……

(a) 2n – n (b) 2n – 2 (c) 2n + 2 **(d) 2n + 1**

Explanation

Trisomy results due to the addition of one chromosome to diploid set of chromosomes. It is represented by 2n + 1.

120. Trisomies are observed in ……

(a) Datura metal (b) TridaxProcumbens

(c) Oryza sativa **(d) Daturastramonium**

Explanation

Trisomy results due to the addition of one chromosome to diploid set of chromosomes. It is represented by 2n + 1. Trisomics are observed in Datura stramonium.

121. The addition of two chromosomes to diploid set of chromosomes results in …….

(a) Monosomy (b) Disomy (c) Trisomy **(d) Tetrasomy**

Explanation

Tetrasomy results due to the addition of two chromosomes to diploid set of chromosome. It is represented by 2n+2.

122. Polyploid plays an important role in …….

(a) Agriculture (b) Hybrid culture **(c) Horticulture** (d) Tissue culture

Explanation

Polyploidy plays an important role in plant breeding and horticulture.

123. Tetraploid plays an important role in ……..

(a) Ascorbic acid (b) Vitamin A (c) Vitamin B1 (d) Vitamin D

Explanation

Tetraploid cabbages and tomatoes contain more ascorbic acid whereas tetraploid corn contains more vitamin A.

124. Tetraploid corn contains more ……

(a) Vitamin C **(b) Vitamin A** (c) Vitamin D (d) Vitamin E

Explanation

Tetraploid cabbages and tomatoes contain more ascorbic acid whereas tetraploid corn contains more vitamin A.

125. The type of chromosomal aberrations found in pea is ……..

(a) Deletion **(b) Duplication** (c) Inversion (d) Translocation

Explanation

In Drosophila, corn and peas a number of duplications are reported. Some duplications are useful in the evolution of the organism.

7. Dna As A Genetic Material

I. Choose and write the correct option for the following questions:

126. Double helix DNA model was proposed by _____

(a) Watson and Crick (b) O.T. Avery et al

(c) Griffith (d) Stinberg

Explanation

In 1953, James Watson and Francis Crick proposed double helix DNA model on the basis of x-ray diffraction studies with photographs of DNA taken by Wilkins and Franklin.

127. The width of DNA molecule is _____

(a) 18 **(b) 20 Å** (c) 34Å (d) 35Å

Explanation

The two strands are interwined in clockwise direction. The width of DNA molecule is 20 Å. The strand completes a turn every 34 Å along its length.

128. The genetic material in most of the organisms and higher organisms is _____

(a) Proteins **(b) DNA** (c) RNA (d) Generic material

Explanation

It is universally accepted that DNA is the genetic material in most of the organisms and higher organisms.

129. RNA is a genetic material in _____

(a) Bacteria **(b) Plant virus** (c) Fungi (d) Bacteriophage

Explanation

In most of the plant viruses, RNA is the genetic material.

130. The biologist Frederick Griffith conducted experiments in _____

(a) Diplococcus pneumonia **(b) Diplococcus pneumonia**

(c) Mycobacterium tuberculosis (d) Mycobacterium leperae

Explanation

In 1928, the bacteriologist Frederick Griffith conducted an experiment using Diplococcus pneumoniae. He studied two strains of virulent Diplococcus causing pneumonia.

131. The virulent strain synthesized a smooth polysaccharide coast produces smooth colonies is a _____

(a) Strain – R **(b) Strain – S** (c) Gram strain (d) Strain Blue

Explanation

The virulent strain synthesized a smooth polysaccharide coat and produces smooth colonies. This strain was called strain-S. Another strain which lacked the proper polysaccharide coat is harmless and produces rough colonies. This strain was called strain-R.

132. The evidence for DNA being the genetic material first illustrated by _____

(a) Watson and Crick (b) O.T. Avery et al

(c) Griffith (d) Stinberg

Explanation

In 1928, the bacteriologist Frederick Griffith conducted an experiment using Diplococcus pneumoniae.

133. Each nucleic acid is made up of _____

(a) Genes (b) Chromosomes (c) DNA **(d) Nucleotides**

Explanation

DNA and RNA are identified in the nucleus. They are complex macro molecules and made up of millions of smaller units called nucleotides.

134. Each nucleotide of DNA contains the sugar called _____

(a) Pentose (b) A phosphate (c) Ribose (d) Purine

Explanation

Each nucleotide is made up of pentose sugar, a phosphate group and a nitrogenous base.

135. Purine and pyrimidine are the _____

(a) Nitrogenous bases (b) Ribose sugar

(c) Aminoacids (d) Polysaccharide

Explanation

The nitrogenous bases are of two kinds – purines and pyrimidines. Adenine and guanine are the purines and thymine and cytosine are pyrimidines.

136. In RNA the thymine is replaced by _____

(a) Adenine (b) Cytosine **(c) Uracil** (d) Guanine

Explanation

The nitrogenous bases found in DNA are adenine, guanine, cytosine and thymine, whereas in RNA thymine is replaced by uracil.

137. The sub – unit containing only sugar and nitrogenous base is called _____

(a) Nucleoside (b) Nucleotide (c) Aminoacid (d) Polypeptide

Explanation

The sub-unit containing only sugar and nitrogenous base is known as nucleoside.

138. _____ is the building blocks of DNA.

(a) Nucleotides (b) Aminoacids

(c) Nitrogenous bases (d) Ribose sugar

Explanation

Four kinds of nucleotides are seen in DNA molecule. They are adenine nucleotide, guanine nucleotide, thymine nucleotide and cytosine nucleotide. Hence, nucleotides are building blocks of DNA.

139. _____ is the "coil of life".

(a) DNA (b) RNA (c) RNA duplex **(d) DNA duplex**

Explanation

DNA is a double stranded structure in which the two strands are coiled around each other forming a double helix. The DNA duplex is "coil of life"

140. The backbone of DNA helix is formed of _____

(a) Sugar **(b) Sugar and phosphate**

(c) Nitrogenous base (d) Sugar and nitrogenous base

Explanation

The backbone of the helix is formed of sugar and phosphate molecule. The nitrogenous bases are attached to sugar molecules.

141. In base pair rule adenine is always paired with ……..

(a) Thymine (b) Uracil (c) Guanine (d) Cytosine

Explanation

The bases pair in specific manner. Adenine always pairs with thymine and guanine pairs with cytosine.

142. There are _____ hydrogen bonds between G and C.

(a) One (b) Two **(c) Three** (d) None

Explanation

The two nucleotide strands are held together by unstable hydrogen bonds. Erwin Chargaff in 1949 showed that

143. The two strands are interwined in _____

(a) Clockwise direction (b) Anticlockwise

(c) Opposite direction (d) Same direction

Explanation

The two strands are interwined in clockwise direction. The width of DNA molecule is 20 Å. The strand completes a turn every 34 Å along its length.

144. In replication process DNA produces _____

(a) RNA **(b) Exact copies of itself** (c) Polynucleotide (d) Aminoacids

Explanation

Replication is the process by which DNA makes exact copies of itself. Replication is the basis of life and takes place during the interphase stage.

145. _____ proposed semiconservative method of replication of DNA.

(a) Holley (b) Messelson and Stahl

(c) Watson and Crick (d) Erwin Chargafrf

Explanation

Watson and Crick suggested the semiconservative method of replication of DNA. This has been proved by Messelson and Stahl's in their experiments on Escherichia coli using radioactive isotopes.

146. This need not necessarily be equal to [G] + [C] _____

(a) [A] + [T] (b) [G] + [T] (c) [A] + [C] (d) [G] + [C]

Explanation

The proportion of adenine is equal to thymine and so also of guanine is equal to cytosine. But the [A] + [T] need not necessarily be equal to [G] + [C].

147. The Guanine and cytosine can be joined by _____ bonds

(a) Two hydrogen bonds (b) One hydrogen bond

(c) Weak hydrogen bonds **(d) Three hydrogen**

Explanation

There are two hydrogen bonds between adenine and thymine (A= T) and there are three hydrogen bonds between guanine and cytosine (G≡C) pairing.

148. Watson and Crick model of DNA is called _____

(a) A – form DNA **(b) B – form DNA** (c) C – form DNA (d) D – form DNA

Explanation

Watson and Crick model of DNA is called B-form DNA. The chains in B-form DNA are in right handed orientation.

149. Replication of DNA takes place during the _____

(a) Prophase (b) Metaphase **(c) Interphase** (d) Anaphase

Explanation

Replication is the process by which DNA makes exact copies of itself. Replication is the basis of life and takes place during the interphase stage.

150. Messelson and Stahl made experiments on _____

(a) Bacteriophage (b) Neurospora **(c) Escherichia coli** (d) Higher organisms

Explanation

Watson and Crick suggested the semiconservative method of replication of DNA. This has been proved by Messelson and Stahl's in their experiments on **Escherichia coli** using radioactive isotopes. The replication of chromosome in E. coli is completed in 40 minutes.

151. During replication of DNA, the two complementary strand of DNA uncoils and separate in a _____

(a) Zipper like fashion (b) Straight line

(c) Circular motion (d) Wave like motion

Explanation

During replication of DNA, the two complementary strand of DNA uncoil and separate from one end in a zipper like fashion. The enzyme helicase unwinds the two strands and as a result replication fork is formed.

152. The enzyme which is used to unwinds DNA is _____

(a) RNA polymerase **(b) Helicase**

(c) DNA polymerase (d) Ligase

Explanation

The enzyme helicase unwinds the two strands and as a result replication fork is formed. As the DNA unwinds, the part of the DNA that is found above the replication fork becomes supercoils.

153. _____ is the enzymereleases the super coils.

(a) Topoisomerase (b) Helicase (c) RNA polymerase (d) RNA synthetase

Explanation

An enzyme called topoisomerase releases these supercoils. Based on separated DNA strands, new strands grow by the addition of nucleotides.

154. These are involved in the synthesis of new DNA _____

(a) DNA polymerase (b) RNA primers and RNA synthetase

(c) RNA primer and primase (d) DNA primer and primase

Explanation

For the synthesis of new DNA, two things are required. One is RNA primer and the enzyme primase. The DNA polymerase moves along the newly formed RNA primer nucleotides, which leads to the elongation of DNA.

155. The newly synthesized small fragments of DNA are called _____

(a) Chrosomal segment (b) Gene segment

(c)Okazaki fragment (d) Complementary fragment

Explanation

In the other strand, DNA is synthesized in small fragments called Okazaki fragments. These fragments are linked by the enzyme called ligase

156. Okazaki fragments are linked by the enzyme called _____

(a) Restriction nuclease (b) Endonucleases

(c) Ligase (d) DNA synthetase

Explanation

In the other strand, DNA is synthesized in small fragments called Okazaki fragments. These fragments are linked by the enzyme called

157. In semi discontinuous replication one of the strands is parental and the _____ strand.

(a) Other is new (b) Other is also parental

(c)Other is zipper (d) Entirely different

Explanation

In the resulting DNA, one of the strand is parental and the other is the newer strand which is formed discontinuously. Hence, it is called semidiscontinuous replication.

158. In DNA, the internucleotide distance is _____

(a) 34Å (b) 20Å **(c) 3.4 Å** (d) 20.4Å

Explanation

The width of DNA molecule is 20 Å. The strand completes a turn every 34 Å along its length. There are ten nucleotides per turn. The internucleotide distance is 3.4 Å.

159. Nitrogen base pair rules are proposed by _____

(a) Watson (b) Griffith (c) Mendel **(d) Chargaff**

Explanation

The nitrogenous bases are attached to sugar molecules. The two nucleotide strands are held together by unstable hydrogen bonds. Erwin Chargaff in 1949 showed that

8. Structure Of Rna And Its Types

I. Choose and write the correct option for the following questions:

160. RNA is universally present in all organisms except in _____

(a) TMV (b) Bacteria (c) Algae **(d)** Explanation

Explanation

The Ribonucleic acid is otherwise known as RNA. This is universally present in all organisms except in DNA viruses.

161. mRNA is about _____ of the RNA content of the cell

(a) 10 – 20% **(**b) 5 – 10% **(c) 3 – 5%** (d) 20 – 30%

Explanation

mRNA is about 3 to 5 per cent of the RNA content of the cell.

162. In bacteria cell, there are more than _____ tRNAs.

(a) 200 **(b) 70** (c) 300 (d) 400

Explanation

In bacterial cell, there are more than 70 tRNAs and in eukaryotic cells the number is even greater.

163. The important function of RNA is synthesis of _____

(a) Starch **(b) Nucleotids** (c) Pentose sugar (d) Vitamins

Explanation

The mRNA is produced as a complementary copy of the DNA, which is involved in protein synthesis.

164. Genetic information on the DNA are transcribed into the mRNA by a process called _

(a) Transcription (b) Tranduction (c) Translation (d) Transvversion

Explanation

Genetic informations on the DNA are transcribed into the mRNA by a process called transcription.

165. The type of gene that is involved in protein synthesis depends upon their _____

(a) Length nucleotides (b) Width of the nucleotide

(c) Sequence of nucleotides (d) Nature of nucleotide

Explanation

The type of gene that is involved in protein synthesis depends upon their length, kinds and sequence of nucleotides.

166. The mRNA is always _____

(a) Double stranded **(b) Single stranded**

(c) Twisted double stranded (d) Circular

Explanation

The mRNA is always single stranded. The mRNA is produced as a complementary copy of the DNA, which is involved in protein synthesis.

167. In protein synthesis mRNA produced as a _____ of DNA

(a) Extra copy (b) New copy **(c) Complementary copy** (d) Separate copy

Explanation

The mRNA is produced as a complementary copy of the DNA, which is involved in protein synthesis.

168. The other name of tRNA is _____

(a) Transfer RNA **(b) Soluble RNA** (c) mRNA (d) rRNA

Explanation

Transfer RNA is also known as soluble RNA (sRNA). The tRNA is a small molecule compared with other types of RNAs.

169. The amount of tRNA in the cell is about _____

(a) 15% (b) 20% (c) 25% (d) All the above

Explanation

tRNA amounts to about 15 per cent of total RNA of the cell. The tRNA molecule performs a number of functions.

170. This acts as a carrier of aminoacid to the site of protein synthesis _____

(a) mRNA **(b) tRNA** (c) rRNA (d) sRNA

Explanation

The most important function of tRNA one is to act as a carrier of aminoacid to the site of protein synthesis.

171. There are about _____ types of tRNA.

(a) 20 **(b) More than 20** (c) 30 (d) 10

Explanation

There are about more than 20 types of tRNAs. Each tRNA is specific for a particular amino acid.

172. There 1965, _____ suggested the clover leaf model of tRNA.

(a) Clover **(b) R.W. Holley** (c) Miller (d) Watson

Explanation

In 1965, R.W. Holley suggested the cloverleaf model of tRNA. Though tRNA molecule consists of a single strand, it assumes clover leaf like structure through folding.

173. The anticodon arm of tRNA has _____

(a) Two nucleotides **(b) Three nucleotides**

(c) Four nucleotides (d) One nucleotide

Explanation

The anticodon arm has three anticodon nucleotides, which will join with the complementary codon in mRNA during protein synthesis i.e. three nucleotides in the tRNA pairs with three nucleotides of mRNA.

174. Extra arm is also called _____

(a) sRNA arm (b) Amino acid pool **(c) Variable arm** (d) Curved arm

Explanation

In certain tRNAs in addition to these four arms an extra arm called variable arm occurs

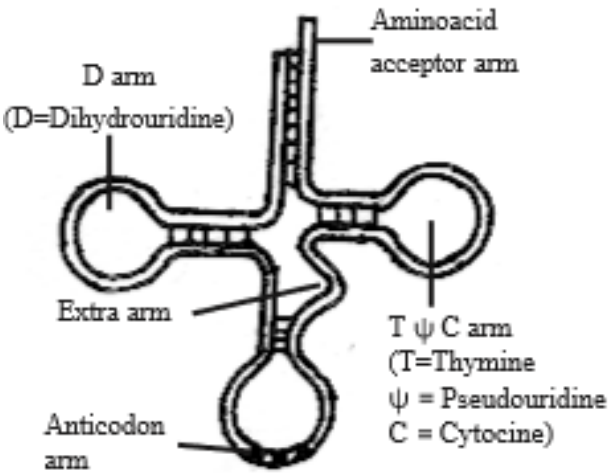

Fig. 3.10 Structure of tRNA

175. Each tRNA is made up of _____ ribo nucleotides.

(a) 50 (b) 60 **(c) 73 to 93** (d) 90

Explanation

The tRNA molecules are made up of 73 to 93 ribonucleotides.

176. rRNA are produced in the _____

(a) Nucleus (b) Ribosome (c) Mitochondria (d) Cytoplasm

Explanation

rRNA are produced in the nucleus. They are the most stable forms of RNA

177. rRNA is found in _____

(a) Nucleus **(b) Ribosome** (c) Mitochondria (d) Cytoplasm

Explanation

This is found in the ribosomes. The rRNA represents about 40 to 60 per cent of the total weight of the ribosomes.

178. DNA contains _____ sugar

(a) 5C deoxy ribose (b) 4C oleoxy ribose (c) Ribose sugar (d) Pentosa sugar

Explanation

DNA contains a 5C deoxyribose.

179. RNA contains _____ sugar

(a) 4C ribosxe sugar **(b) 5C ribose sugar**

(c) 5C deoxy ribose sugar (d) 5C sugar

Explanation

RNA contains five carbon sugar ribose

180. mRNA carries the genetic information from DNA to the _____

(a) Chloroplasts **(b) Ribosomes** (c) Mitochondria (d) Lysosomes

Explanation

As the name suggests mRNA carries the genetic information from DNA to the ribosomes.

181. Clover leaf model of tRNa was suggested by _____

(a) Johannsen (b) Waldeyer **(c) R.W. Holley** (d) Watson

Explanation

In 1965, R.W. Holley suggested the cloverleaf model of tRNA. Though tRNA molecule consists of a single strand, it assumes clover leaf like structure through folding.