

Subject: Zoology

Paper Name: Molecular Biology and Genetics

Paper No: ZL-IX

Section – A [Multiple choice questions]

1. Which one of the following DNA molecule exists in a unique left handed double helical form?
 - a) A DNA
 - b) B DNA
 - c) X DNA
 - d) Z DNA
2. The 3'-OH end of tRNA always ends with;
 - a) GGG
 - b) CCA
 - c) UCG
 - d) CCU
3. Somatic pairing is observed in :
 - a) Polytene chromosomes
 - b) Lampbrush chromosomes
 - c) X- chromosomes
 - d) Y- chromosomes
4. The nucleosome core contains two molecules each of:
 - a) Histones-H2a, H2b, H3 and H4
 - b) Histones- H1a, H1b, H3 and H4
 - c) Histones- H1, H2, H3, and H4
 - d) Histones- H1, H2a, H2b, and H3
5. The regions of chromosomes that remains condensed during interphase are called;
 - a) Euchromatin
 - b) Heterochromatin

- c) Chromatin puff
 - d) Nucleosomes
6. DNA replication is always;
- a) Unidirectional and conservative
 - b) Bidirectional and semiconservative
 - c) Unidirectional and semiconservative
 - d) Bidirectional and conservative
7. Primers on both strands of newly synthesized strands of DNA are removed by;
- a) 3'→5' exonuclease activity of DNA polymerase I
 - b) 5'→3' exonuclease activity of DNA polymerase I
 - c) 3'→5' endonuclease activity of DNA polymerase I
 - d) 5'→3' endonuclease activity of DNA polymerase I
8. DNA glycosylases enzymes are involved in;
- a) Base excision repair
 - b) Nucleotide excision repair
 - c) Mismatch repair
 - d) Double-stand break repair
9. The process of strand discrimination during mismatch repair is based on:
- a) DNA methylation
 - b) Apurinic site
 - c) Apymidinic site
 - d) Thymine dimerization
10. DNA polymerase III synthesis new strand of DNA in :
- a) 3'→5' direction only
 - b) 5'→3' direction only
 - c) Both directions
 - d) None of the above
11. Which one of the following amino acid has only one codon :
- a) Tyrosine
 - b) Phenylalanine

- c) Threonine
- d) Tryptophan

12. Which one of the following sub units of RNA polymerase recognizes promoter sequences:

- a) ω
- b) β
- c) β'
- d) σ

13. In prokaryotes, the initiation codon of mRNA in translation is always;

- a) UAC
- b) GUA
- c) AUG
- d) UAG

14. In lac operon, allolactose acts as:

- a) Inducer
- b) Repressor
- c) Co-repressor
- d) Catabolite repressor

15. During translation, formation of a peptide bond between two amino acids is accomplished by:

- a) Aminoacyl transferase
- b) Aminoacyl synthetase
- c) Peptidyl transferase
- d) Peptidyl synthetase

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16. When both alleles of a pair are fully expressed in a heterozygotes, they are called;

- a) Semidominant alleles
- b) Incomplete dominant alleles
- c) Codominant alleles
- d) Multiple alleles

17. A gene having many phenotypic effects is called

- a) Multiple alleles
- b) Pleiotropic gene
- c) Hypostatic gene
- d) Epistatic gene

18. The gene that inhibits the expression another gene is called

- a) Hypostatic gene
- b) Pleiotropic gene
- c) Epistatic gene
- d) Codominant gene

19. The genotypic ratio of monohybrid cross is

- a) 1:2:1
- b) 3:1
- c) 9:3:3:1
- d) 13:3

20. ABO blood group is an example of:

- a) Sex-linked inheritance

- b) Cytoplasmic inheritance
- c) Multiple allelism
- d) Incomplete dominance

21. Turners syndrome occurs due to:

- a) Trisomy of chromosome no 21
- b) Monosomy of X- chromosome
- c) Trisomy of X – chromosome
- d) Monosomy of Y- chromosome

22. Change that involves entire sets of chromosomes is called

- a) Trisomy
- b) Aneuploidy
- c) Euploidy
- d) Monosomy

23. Which one of the following is sex linked trait?

- a) Haemophilia
- b) Down syndrome
- c) Turners syndrome
- d) Klinefelters syndrome

24. The coexistence of two or more genes in the same chromosomes is called:

- a) Multiple allelism
- b) Linkage
- c) Pleiotropism

d) Epistasis

25. The type of sex determination in human being is

a) Heterogametic males

b) Homogametic males

c) Heterogametic females

d) None of the above

SECTION—B

Fill in the blanks:

1. A molecule composed of a purine or pyrimidine base and a ribose or deoxyribose sugar is called _____
2. A nucleosome core particle consists of _____ base pairs long DNA molecules.
3. Balbiani ring is found in _____ chromosomes.
4. The unwinding enzymes which promotes separation of the two strands of DNA are called _____
5. _____ are short DNA fragments that are synthesized on the lagging strand during DNA replication.
6. The enzymes that cut the glycosidic bond between the base and the sugar in DNA molecules, creating AP site are called _____
7. The flow of genetic information from DNA to RNA to Proteins is called _____ in molecular biology.
8. A short nucleotide sequences that is recognized by an RNA polymerase to bind to DNA in order to begin transcription is called _____

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9. There are _____ termination or stop codons in the genetic code
10. When F1 heterozygotes is intermediate between either parents, the process of inheritance is called _____
11. The different form of a gene are called _____
12. The interaction between different genes in which one gene effects the expression of another gene is called _____
13. Interchanging of segments between non-sister chromatids of homologous chromosomes are called _____
14. Mutations that occur without a known cause are called _____
15. The transfer or shifting of a part of a chromosome to a non-homologous chromosome is called _____

KEY ANSWERS: SECTION A

- 1(d) 2(b) 3(a) 4(a) 5(b) 6(b) 7(b) 8(a) 9(a) 10(b)
11(d) 12(d) 13© 14(a) 15(c) 16(c) 17(b) 18(c) 19(a) 20(c)
21(b) 22(c) 23(a) 24(b) 25(a).

SECTION ;B (FILL IN THE BLANKS)

1. Nucleoside
2. 147
3. Polytene
4. Helicases
5. Okazaki fragments
6. DNA glycosylases
7. Central dogma
8. Promoter
9. 3(three)
- 10 .Incomplete dominance
11. Alleles
12. Epistasis
13. Crossing over
14. Spontaneous mutations
15. Translocation.

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