Telangana University
Department of Biotechnology
Question Bank – Internal Assessment - I

Semester-II Paper-I MOLECULAR BIOLOGY

1._____ is the Functional unit of DNA

A).Gene

B)chromosome

C)Genome

D).Nucleiod

Answer: A) Gene

2.What is the primary structure of the genome?

A) DNA double helix
B) Chromatin
C) Nucleosome
D) Chromosome

Answer: A) DNA double helix

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3. In prokaryotic genomes, DNA is mostly found in the form of:

A) Linear chromosomes
B) Circular chromosomes
C) Nucleosomes
D) Histone-bound DNA

Answer: B) Circular chromosomes

4.What is the term for the entire set of an organism's genetic material?

A) Transcriptome
B) Proteome
C) Genome
D) Epigenome

Answer: C) Genome

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5. Eukaryotic DNA is packed into chromatin using:

A) Non-histone proteins
B) Ribosomal RNA
C) Histone proteins
D) Single-stranded binding proteins

Answer: C) Histone proteins

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6. What is the repeating unit of chromatin?

A) Nucleotide
B) Nucleosome
C) Centromere
D) Telomere

Answer: B) Nucleosome

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7. Which of the following is NOT a component of eukaryotic chromosomes?

A) Histones
B) Introns
C) Plasmids
D) Exons

Answer: C) Plasmids

8.What is the role of telomeres in eukaryotic chromosomes?

A) Help in DNA replication
B) Protect chromosome ends from degradation
C) Encode essential genes
D) Facilitate transcription

Answer: B) Protect chromosome ends from degradation

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9. In prokaryotes, additional genetic material apart from the chromosome is found in:

A) Exons
B) Plasmids
C) Introns
D) Centromeres

Answer: B) Plasmids

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10. What is the difference between euchromatin and heterochromatin?

A) Euchromatin is less condensed and actively transcribed, while heterochromatin is highly condensed and transcriptionally inactive.
B) Euchromatin is highly condensed, while heterochromatin is loosely packed.
C) Euchromatin is found only in prokaryotes, while heterochromatin is in eukaryotes.
D) They differ in nucleotide composition.

Answer: A) Euchromatin is less condensed and actively transcribed, while heterochromatin is highly condensed and transcriptionally inactive.

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11. Which of the following statements about bacterial genomes is TRUE?

A) Bacterial genomes are linear like eukaryotic genomes.
B) Bacteria have multiple chromosomes.

C) Most bacterial genomes lack introns.
D) Bacteria store genetic material in the nucleus.

Answer: C) Most bacterial genomes lack introns.

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12. What is the fundamental unit of genetic information?

A) Gene
B) Chromosome
C) Nucleotide
D) Nucleosome

Answer: A) Gene

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13. Which of the following best describes the genome?

A) The complete set of proteins in a cell
B) The complete set of RNA in a cell
C) The complete set of genetic material in an organism
D) The collection of enzymes in a cell

Answer: C) The complete set of genetic material in an organism

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14. In prokaryotic genomes, DNA is usually present in which form?

A) Linear chromosomes
B) Circular chromosomes
C) Single-stranded DNA
D) Double-stranded RNA

Answer: B) Circular chromosomes

15.What is the structure of eukaryotic DNA in its most condensed form?

A) Chromatin
B) Nucleosome
C) Chromosome
D) Nucleotide

Answer: C) Chromosome

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16. The basic repeating unit of chromatin is called:

A) Exon
B) Nucleosome
C) Centromere
D) Operon

Answer: B) Nucleosome

17.Which proteins are responsible for DNA packaging in eukaryotes?

A) Polymerases
B) Histones
C) Ligases
D) Gyrases

Answer: B) Histones

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18. Which of the following is NOT a component of the genome?

A) Genes
B) Exons
C) Ribosomes
D) Introns

Answer: C) Ribosomes

19. What type of chromatin is transcriptionally active?

A) Euchromatin
B) Heterochromatin
C) Centromeric chromatin
D) Telomeric chromatin

Answer: A) Euchromatin

20.Which of these is a characteristic of heterochromatin?

A) Loosely packed DNA
B) Transcriptionally inactive
C) Found only in prokaryotes
D) Composed only of coding DNA

Answer: B) Transcriptionally inactive

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21. What is the function of telomeres?

A) Enhance DNA replication speed
B) Prevent chromosome shortening
C) Initiate transcription
D) Code for ribosomal RNA

Answer: B) Prevent chromosome shortening

22.The process by which genetic information is copied from DNA to RNA is called:

A) Translation
B) Replication
C) Transcription
D) Splicing

Answer: C) Transcription

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23. Prokaryotic genomes are primarily found in:

A) The nucleus
B) The nucleoid region
C) The cytoplasm
D) Ribosomes

Answer: B) The nucleoid region

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24. Which of the following is a mobile genetic element?

A) Histones
B) Transposons
C) Centromeres
D) Telomeres

Answer: B) Transposons

25.What is a plasmid?

A) A chromosomal gene
B) A small circular DNA molecule
C) A protein involved in DNA packaging
D) A segment of heterochromatin

Answer: B) A small circular DNA molecule

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26. Which of the following is NOT found in prokaryotic genomes?

A) Introns
B) Exons
C) Promoters
D) Regulatory regions

Answer: A) Introns

27.What is the function of centromeres?

A) Protect the ends of chromosomes
B) Attach sister chromatids
C) Initiate replication
D) Code for proteins

Answer: B) Attach sister chromatids

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28. The genetic material in viruses can be_____

A) Only DNA
B) Only RNA
C) Either DNA or RNA
D) Only single-stranded

Answer: C) Either DNA or RNA

29.Which of the following sequences is NOT part of a gene?

A) Promoter
B) Exon
C) Operon
D) Intron

Answer: C) Operon

30._____ enzyme is responsible for DNA replication?

A) RNA polymerase
B) DNA polymerase
C) Ligase
D) Helicase

Answer: B) DNA polymerase

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31. What type of genome do mitochondria have?

A) Linear DNA
B) Circular DNA
C) RNA-based genome
D) Protein-based genome

Answer: B) Circular DNA

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32. What type of DNA sequences make up the majority of the human genome?

A) Protein-coding genes
B) Regulatory sequences
C) Non-coding DNA
D) Introns

Answer: C) Non-coding DNA

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33. What is an operon?

A) A segment of DNA coding for a single protein
B) A set of genes transcribed together in prokaryotes
C) A eukaryotic gene regulatory region
D) A non-coding RNA

Answer: B) A set of genes transcribed together in prokaryotes

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34. What is the role of RNA polymerase?

A) Synthesizes RNA from DNA
B) Replicates DNA
C) Translates RNA into protein
D) Packages DNA into chromatin

Answer: A) Synthesizes RNA from DNA

35.The genome of an organism is:

A) Constant across all cells
B) Different in each cell type
C) Made up of only coding genes
D) Exclusive to eukaryotic cells

Answer: A) Constant across all cells

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36. What is junk DNA?

A) DNA that codes for essential proteins
B) DNA with no known function
C) DNA involved in translation
D) Highly expressed DNA

Answer: B) DNA with no known function

37._____ protein is responsible for coiling DNA to form Chromosomes in Eukaryotes
A) Histones
B)HU
C)HNS
D)IHF
Answer: A) Histones

38._____DNA is present in Prokaryotes
A) Double Stranded
B) Single Stranded
C)closed circular
D) Open linear
Answer: C) Closed circular

39._____genes are found in Hepatitis virus
A)Split genes
B)Assembled genes

C)Overlapping genes
D)Polyprotein genes
Answer: C) Overlapping genes

40._____Stop codons
A)AUG
B)UGA
C)AAU
D)UUA
Answers: B)UGA

41.when DNA binds with RNA polynerase are called_____
A)Silencers
B)overlapping genes
C)split genes
D)Promoter
Answer: D) Promoter

42._____Terminates the Translocation Process
A)Exons
B)Silencers
C)Stopcodon
D)Nested genes
Answer:C) Stopcodon

43.The size of an Choloroplast genome is_____
A)100-150kb
B)120-160Kb
C)200-250kb
D)20-200kb
Answer:B) 120-160kb

38.

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