SECTION A: TOPICWISE QUESTIONS

TOPIC 1: The DNA

Structure of Polynucleotide Chain and Packaging of DNA Helix

1. RNA can acts as

a.Genetic material b.Messenger

c.Adapter molecule d.Structual molecule

e.Catalytic molecule

(A)b, c and e (B)a, d and e

(C)a, b and c **(D)**a, b, c, d and e

2. In the DNA double helix, purine always paired with payrimidine base through H-bonds, that lead to

(A)The antiparallel nature

(B)Uniform length in all DNA

(C) Uniform width throughout DNA

(D)The semiconservative nature

3. During analysis of the DNA of an organism having 5386 nucleotides find out A = 29%, G = 17%, C = 32%, T = 17%. Considering the Chargaff's rule it can be concluded that

(A)It is double stranded linear DNA

(B)It is double stranded circular DNA

(C) It is single stranded DNA

(D)Both A and B

4. Histones proteins are rich in

(A)Histidine and arginine

(B)Histidine and lysine

(C)Histidine, arginine and lysine

(D) Arginine and lysine

5. Find out the number of nucleosomes present in a human cell.

(A)16.50 million (B)16.50 billion

(C)33 million (D)200 million

6. The 'beads on string' structure which seen under EM are

(A)Histone octamer **(B)**Nucleosome

(C)Chromatin (D)Chromatin fibres

7. Match the columns I and II, choose the correct combination from the options given.

Column I		**Column II**
a.Bacteriophage	i.	5386 nucleotides
b.Bacteriophage Ø X 174	ii.	48502 bp
c.*Escherichia coli*	iii.	4.6 X 10^6 bp
d.*Homo sapiens*	iv.	6.6 X 10^9 bp

Select the correct matching:

(A)a—i, b—ii, c—iii, d—iv

(B)a—ii, b—i, c—iii, d—iv

(C)a—i, b—ii, c—iv, d—iii

(D)a—ii, b—i, c—iv, d—iii

8. Which is the transcriptionally inactive chromatin?

(A)Euchromatin

(B) Heterochromatin

(C)Loosely packed chromatin

(D)Both B and C

9. The plane of one base pair stacks over the other in double helix. This provides

(A)Antiparallel nature to DNA double helix

(B)Uniform length in all DNA

(C)Uniform width throughout DNA

(D) Additional stability to DNA

10. 5-methyl uracil is

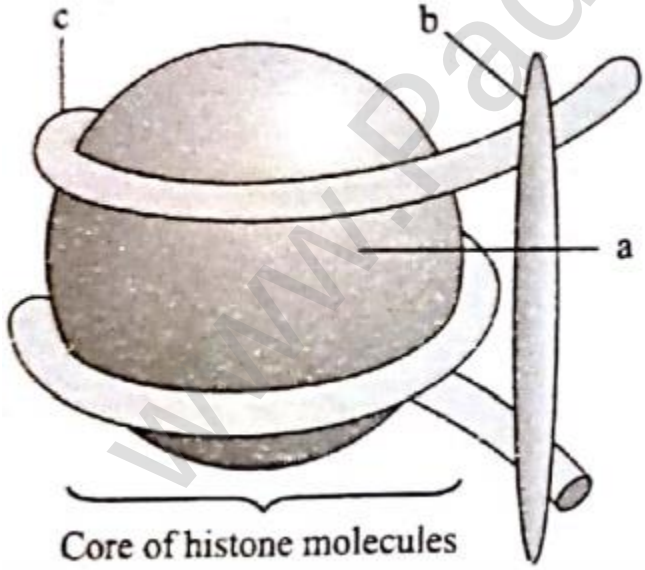
(A) Another name of thymine

(B)A purine base

(C)A double ring structure

(D)Both A and C

11. Refer the given figure of nucleosome and select the option that correctly identifies the part a, b and c.



(A)a—DNA, b—Histone actamer, c—H_1 histone

(B)a—Histone octamer, b—H_1 histone, c—DNA

(C)a—Histone octamer, b—DNA, c—H_1 histone

(D)a—DNA, b—H_1 histone, c—Histone octamer

12. Select the incorrect statement.

(A)Two chains of DNA are coiled in right-handed fashion.

(B)In protein only right handed helices are observed.

(C) Right end of protein chain is reducing end while left end is non-reducing.

(D)Living state is the non-equilibrium steady state to be able to perform work.

13. Read the following statements and find out the incorrect statement.

a.The length of DNA is usually defined as number of nucleotides or base pairs present in it.

b.In DNA, every nucleotide residue has an additional—OH group present at 2′-position in the deoxyribose.

c.Nuclein was discovered and named by Friedrich Meisher in 1969.

d.Adenine pair with Thymine and Guanine with Cytosine through H-bonds. This makes one strand complementary to the other.

e.The proposition of double helical model of DNA was also based on the observation of Erwin Chargaff.

(A)b, c and e

(B)b, c and d

(C)c and e only

(D)b and c only

14. If the length of *E. coli* DNA is 1.36 mm, then how many base pairs are present in E. coli?

(A)3.6 x 10^4

(B)3.6 x 10^6

(C)40. x 10^6

(D)4.6 x 10^6

15. There are 20% adenine among the bases in a DNA fragment measuring 6.8 nm in length. The number of pentose, nitrogen base pairs, phosphate groups and hydrogen bonds in this DNA fragment are respectively

(A)52, 20, 20, 40

(B)40, 52, 40, 20

(C)20, 40, 52, 40 **(D)**40, 20, 40, 52

16. Stability as one of the properties of genetic material was very evident in

(A) Griffith's transforming principle

(B)Hershey and Chase experiment

(C)Messelson and Sthal's centrifugation technique

(D)Taylor's experiment

17. Number of histone molecules in each nuclesome core is

(A)14 (B)12

(C)10 **(D)**8

18. Read (i) to (v) and find the correct option.

(i)Nitrogen base is linked to pentose sugar through N-glycosidic linkage.

(ii)Phosphate group is linked to 5′-OH of a nucleoside through phosphoester linkage.

(iii)Two nucleosides are linked through 3′ - 5′ N-glycosidic linkage.

(iv)Negatively charged DNA is wrapped around positively charged histone octamer to packed and stains dark is called euchromatin.

(A)i and ii are wrong (B)iv along is wrong

(C)iii and v are wrong (D)I alone is wrong

19. Identify the wrong statement about DNA.

(A)Length of DNA is defined as the number of base pairs present in it.

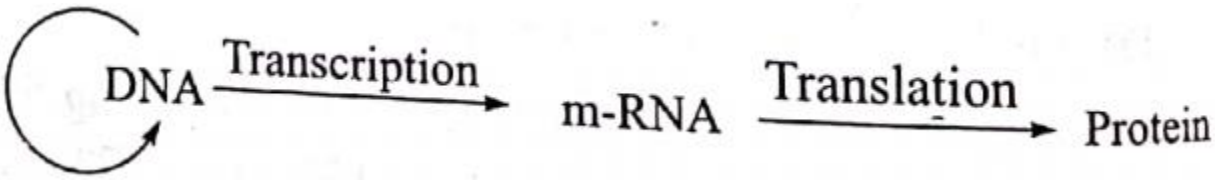
(B)Cytosine is common to both DNA and RNa.

(C) In a nucleotide, the nitrogenous base is linked to a phosphate group.

(D)Thymine is chemically 5-methyl uracil.

20. The following figure represents the

Replication



(A) Central dogma

(B)Lac operon

(C)Sequence Annotation

(D)DNA fingerprinting

21. DNA packaging in eukaryotes is done by formation of

(A)Chromosomes (B)Chromatin

(C)Chromophore **(D)**Nucleosome

22. A + G = C + T is applicable to

(A)rRNA (B)tRNA

(C)mRNA **(D)**DNA

23. 5′ end of a polynucleotide contains

(A)Hydroxyl group (B)Ethyl group

(C)Carboxyl group **(D)**Phosphate group

24. A = T and G = C. The relationship of DNA is

(A) Chargaff's rule

(B)Le-Chatelier's principles

(C)Coulomb's law

(D)van't Hoff rule

25. Genetic RNA is

(A)Genetic material of RNA viruses

(B)RNA that carries genetic message

(C)RNA that helps gene regulation in lac oepron

(D)RNA present in mitochondria

26. Choose the correct statement.

(A)Haploid content of human DNA is 4.6 x 10^6 bp.

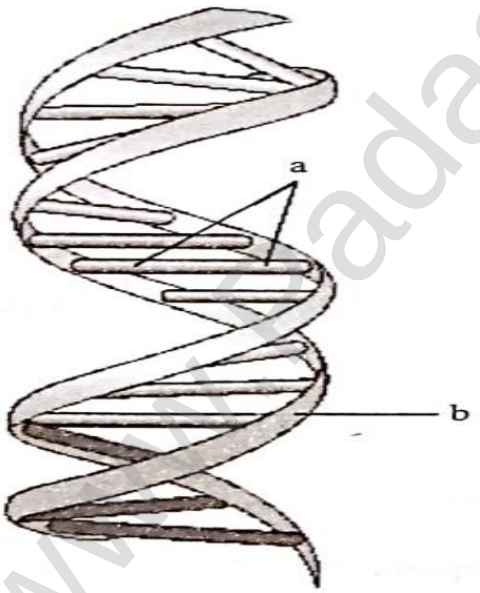
(B)A nitrogenous base is linked to pentose sugar through phosphodiester linkage.

(C)X-ray diffraction data of Maurice Wilkins and Rosalind Franklin was the basis of Waston and Cricks DNA model.

(D)DNA as an acidic substance was first identified by Waston and Crick.

(E)Ratios between adenine, thymine, guanine and cytosine are not constant.

27. Recognise the figure and find out the correct matching.



(A)a—hydrogen bonds, b—bases

(B)a—hydrogen bonds, b—sugar phosphate backbone

(C)a—base pairs, b—sugar base backbone

(D)a—base pairs, b—sugar phosphate backbone

28. The two strands of DNA are held together by

(A)Petptide bonds (B)Phosphodiester bonds

(C) Hydrogen bonds (D)S—S bonds

29. In double helix model of DNA, how far is each base pair from the next base pair?

(A)3.4 nm **(B)**0.34 nm

(C)2 0 nm (D)34 nm

30. A nucleoside is formed through a N-glycosidic linkage by joining

(A)Phosphate group with nitrogen base

(B)Nitrogen base with nitrogen base

(C) Nitrogen base with pentose sugar

(D)Pentose sugar with phosphate group

31. Nucleosome is

(A)Intron interrupted DNA

(B)Double helix DNA

(C) Negatively charged DNA wrapped around positively charged histone octamer

(D)Satellite DNAs

32. Total amount of 'A and T' in DNA is 45%. Amount of guanine will be

(A)22.5% **(B)**27.5%

(C)45% (D)55%

33. Double helix DNA structure was proposed by

(A)Phosphate (B)Sugar

(C) Nitrogen base (D)All the above

34. Variable part of DNA molecule

(A)Phosphate (B)Sugar

(C)Nitrogen Base (D)All of the above

35. Chromatin is chemically made of

(A) Nucleic acid, histone and non-histone proteins

(B)Nucleic acid and histone proteins

(C)Nucleic acid and non-histone proteins

(D)Nucleic acid

36. DNA double helix is

(A)Complementary and parallel

(B) Complementary and antiparallel

(C)Without super coils

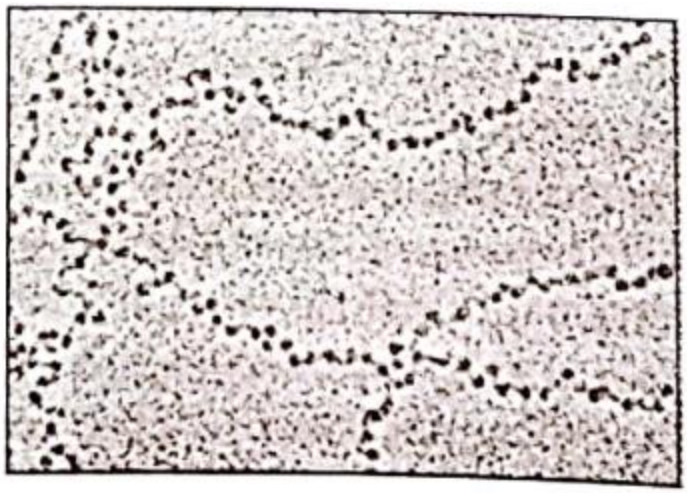
(D)Always circular

37. In DNA segment of six coils, 22 bp are linked by two hydrogen bonds. How many cytosine bases would be present?

(A)22 **(B)**38

(C)44 (D)76

38. The following EM picture shows



(A)Nucleiod regions in the *E. coli*

(B) Beads on string structure in eukaryotes

(C)Semiconservative DNA replication in *E.* coli

(D)Southern blotting hybridization

39. Nucleotide pairs present in one turn of DNA helix

(A)4 (B)8

(C)10 (D)9

40. The result of following experiment carried out by Avery et al on *Streptococcus pneumonia.*

(A)Live 'R' strain + DNA from 'S' + DNAase

(B)Heat killed 'R' strain + DNA from 'S' strain + DNAase

(C) Live 'R' strain + DNA from 'S' strain + RNAase

(D)Live 'R' strain + Denatured DNA of 'S' strain + RNAase

41. What is not relevant to DNA double helix?

(A)One turn every 34 Å

(B)Diameter 20 Å

(C)Distance between adjacent nucleotides 3.4 Å

(D) Back bone has alternate ribose sugar and phosphate

42. Complete turns 45000 bp DNA would be

(A)45 (B)450

(C)4500 (D)45,000

43. In DNA nitrogen bases are joined to each other by

(A)H-bonds

(B)Peptide bonds

(C)Glycosidic bonds

(D)Phosphodiester bonds

44. Year 2003 was celebrated as 50th anniversary of discovery of

(A)Transposons by McClintock

(B)Protoplasm by Dujardin

(C)Nucleus by Robert Brown

(D) Structure of DNA by waston and Crick

45. DNA is acidic due to

(A)Sugar (B)Purine

(C) Phosphoric acid (D)Pyrimidine

46. Nucleic acids were discovered by

(A)Watson and Crick (B)Khorana

(C)Wilkins **(D)**Miescher

47. Number of hydrogen bonds between A and T of DNA is

(A)4 (B)3

(C)2 (D)1

48. Antiparallel strands of DNA molecule means

(A)One strand turns clockwise

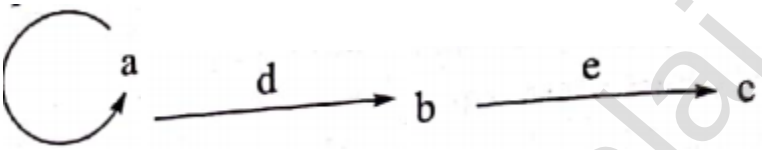
(B)One strand turns anticlockwise

(C)Phosphate groups of the two strands share the same position at their ends

(D) Phosphate groups at the start of two DNA strands are in opposite position.

49. Diagrtam represents "central dogma" of molecular biology. Choose correct combination of labeling.

Replication



(A)a—Protein, b—RNA, c—DNA, d—Translation, e—Transcription

(B)a—DNA, b—RNA, c—Protein, d—Transcription, e—Translation

(C)a—RNA, b—DNA, c—Protein, d—Transcription, e—Translation

(D)a—Transcription, b—Translation, c—Protein, d—DNA, e—RNA

50. Similarity between DNA and RNA is that both have

(A)Similar sugars

(B)Similar mode of replication

(C)Similar pyrimidines

(D) Polymers of nucleotides

51. Length of one coil of B-DNA helix is

(A)0.34 nm **(B)**3.4 nm

(C)10 nm (D)20 nm

52. Condensation product of adenine, ribose and phosphoric acid is

(A) Adenylic acid (B)Adenine phosphate

(C)Adenosine (D)None of the above

53. DNA strands are antiparallel because of

(A)Peptide bonds

(B)Disulphide bonds

(C)H-bonds

(D)Phosphodiester bonds

54. Double helix model of Waston and Crick is

(A)CDNA (B)ZDNA

(C)DDNA **(D)**BDNA

55. DNA and RNA differ by

(A) Nitrogen bases and sugars

(B)Nitrogen bases and phosphate groups

(C)Number of C-atoms in sugars

(D)Sugar and phosphate groups

56. A DNA nucleotide chain has AGCTTCGA sequence. The nucleotide sequence of other chain would be

(A)TCGAAGCT (B)GCTAAGCT

(C)TAGCATAT (D)GATCCTAG

57. Nitrogen base not found in DNA is

(A)Cytosine (B)Guanine

(C) Uracil (D)Adenine

58. Type of coiling in DNA is

(A) Right handed (B)Left handed

(C)Zigzag (D)Opposite

59. Nucleotide constitutents/nitrogen bases of RNA are

(A)AGCU (B)TCGU

(C)AGCT (D)CTAU

60. Circular DNA is found in

(A)Viruses

(B) Bacteria, chloroplasts and mitochondria

(C)Chloroplasts and mitochondria alone

(D)All the above

61. In AGCT of DNA, hydrogen bonds and base pairing occur between

(A)A—G, C—T (B)A—C, G—T

(C)A—T, C—G (D)All the above

62. In which of the following will DNA melt at the lowest temperature?

(A)5′ —AATAAAGC —3′ 3′ —TTATTTCG —5′

(B)5′ —AATGCTGC —3′ 3′ —TTACGACG —5′

(C)5′ —ATGCTGAT —3′ 3′ —TACGACTA —5′

(D)5′ —GCATAGCT —3′ 3′ —CGTATCGA —5′

63. Which is true according to Chargaffs rule?

(A)A + G = T + C (B)A = C

(C)G = T (D)G/T = 1

TOPIC 2: The Search for Genetic Material

64. RNA is less stable genetic material as compared to DNA. The reason for this is

(A)In RNA, 2′ position has —OH group while DNA does not

(B)RNA is also known to be catalytic

(C)RNA have uracil while DNA have thymine

(D) All of the above

65. Which is incorrect with reference to the transforming principle?

(A)S strain → Inject into mice → Mice die

(B)R strain → Inject into mice → Mice live

(C)S strain → (heat killed) → Inject into mice → Mice live

(D)S strain (heat killed) + R strain (live) → Inject into mice → Mice live

66. Biochemical nature of genetic material was not defined from

(A) Transforming principle

(B)Hershey and Chase experiment

(C)Avery, Macles and McCarty

(D)None of the above

67. Which is incorrect about Hershey and Chase experiment?

(A)Viruses grown in the presence of radioactive phosphorus contained radioactive protein but not radioactive DNA

(B)Viruses grown on radioactive sulfur contained radioactive DNA but not radioactive protein

(C) Both A and B

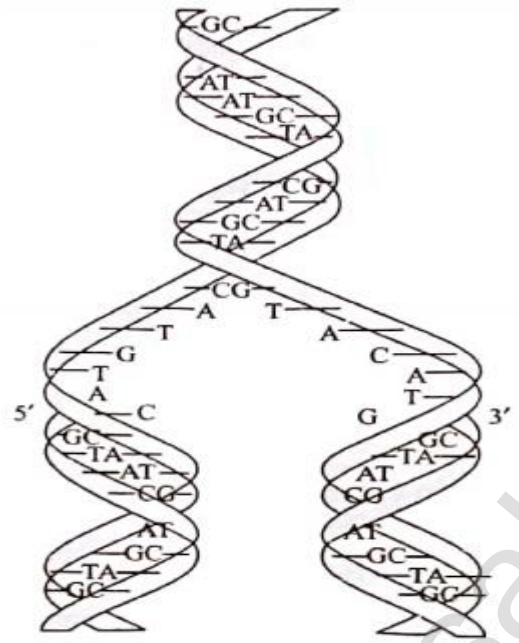
(D)None of the above

68. RNA acts as genetic material in

(A)TMV (B)QB bacteriophage

(C)HIV **(D)**All of the above

69. The following figure shows



(A) Waston —Crick model for semiconservative DNA replication

(B)Meselson and Stahl's experiment for semi-conservation DNA replication

(C)Taylor's experiment on semiconservative DNA replication

(D)Process of transcription is bacteria

70. Which of the following heavy/radioisotopes is not suitable for DNA labelling based studies?

(A)^{3}H (B)^{32}P

(C)^{15}N **(D)**^{35}S

71. In Hershey and Chase experiments, radioactive ^{32}P was used to culture bacteriophages. It resulted in radioactive

(A)Viral proteins

(B) Viral DNA

(C)Plasma membrane of bacteria

(D)Bacterial capsule

72. Pyrimidine base that has conferred additional stability to DNA over RNA is

(A)Adenine (B)Cytosine

(C)Guanine **(D)**Thymine

73. Information flow or central dogma of modern biology is

(A)RNA—Proteins—DNA

(B)DNA—RNA—Proteins

(C)RNA—DNA—Proteins

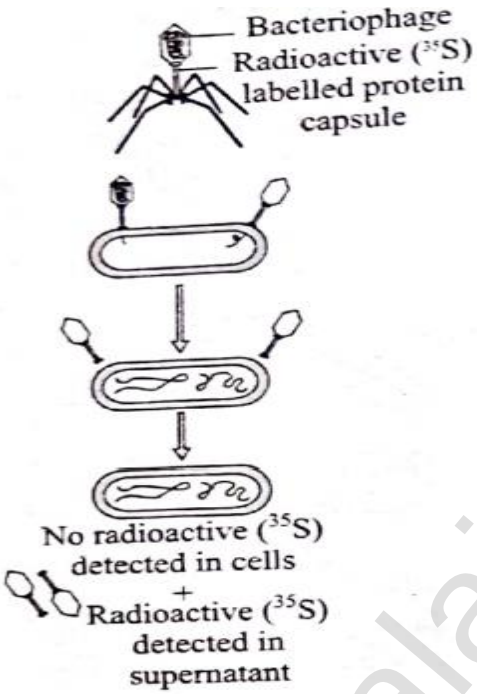
(D)DNA—RNA—Proteins

74. Information transfer from RNA to DNA is

(A)Transcription (B)Translation

(C)Replication **(D)**Reverse transcription

75. *E.coli* was infected with bacteriophage having radioactive (S^{35}) protein in a culture. It was blended, centrifuged and distribution of S^{35} determined. What does the experiment show?



(A) Protein is not the genetic material

(B)DNA is not involved in heredity

(C)Nothing is proved

(D)DNA is the genetic material

76. Who proposed central dogma?

(A)Waston and Crick (B)Beadle and Tatum

(C)Klug **(D)**Crick

77. Reverse transcriptase is

(A)RNA dependent RNA polymerase

(B)DNA dependent RNA polymerase

(C)DNA dependent DNA polymerase

(D)RNA dependent DNA polymerase

78. Transformation experiments in bacteria were first performed by

(A)Macleod **(B)**Griffith

(C)Pasteur (D)Meselson and Stahl

79. Choose the correct symbols:

RNA $\xrightarrow{a}$ DNA $\xrightarrow{b}$ DNA $\xrightarrow{c}$ mRNA $\xrightarrow{d}$ Polypeptide

(A)a = Replication, b = Transcription, c = Translation, d = Transduction

(B)a = Reverse transcription, b = Translation, c = Transcription, d = Replication

(C)a = Replication, b = Transformation, c = Transcription, d = Translation

(D)a = Reverse transcription b = Replication, c = Transcription, d = Translation

80. Who proved that DNA is basic genetic material?

(A)Griffith/Avery et al

(B)Waston

(C)Boveri and Sutton

(D) Hershey and Chase

81. Bacteriophage with radioactivity both in DNA and protein infects a bacterium. Bacterium becomes radioactive. Radioactivity occurs in

(A)Protein **(B)**DNA

(C)All parts (D)Both A and B

TOPIC 3: Replication

The Experimental Proof, The Machinery and the Enzymes

82. Semiconservative replication of DNA was studied in *E. coli* with the help of ^{15}N by

(A)Waston and Crick

(B)Kornberg and Ochoa

(C) Meselson and Stahl

(D)Luria and Delbruck

83. Identify the correct pair of combinations.

I. ^{14}C—Distinction between PSI and PSII

II. ^{14}N—Semiconservative replication of DNA

III.^{35}S—Polypeptide synthesis

IV.^{32}P—Identification of chemical nature of genetic material

(A)II, III **(B)**II, IV

(C)I, II (D)I, III

84. In the experimental conducted by Meselson and Stahl using heavy 15N to prove semi-conservative nature of DNA, the first generation was found to have

(A)14N only (B)15N only

(C)14N and 15N (D)None of these

85. In a deoxyribonucleoside triphosphates, how many high energy phosphate bonds are present?

(A)1 **(B)**2

(C)3 (D)4

86. For long DNA molecules, since the two strands of DNA cannot be separated in its entire length (due to very high energy requirement), the replication occurs within a small opening of the DNA helix, referred to as

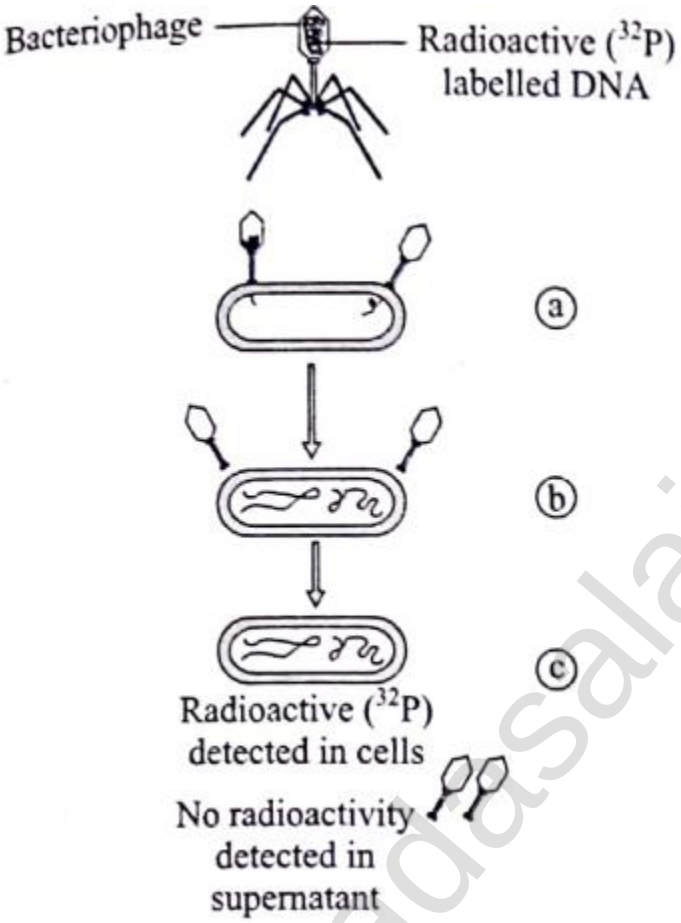
(A)Okazaki fragments

(B)Semiconservative replication

(C) Replication fork

(D)Origin of replication

87. Recognise the figure and find out the correct matching.



(A)a—blending, b—centrifugation, c—infection

(B)c—blending, a—centrifugation, b—infection

(C)b—blending, c—centrifugation, a—infection

(D)c—blending, b—centrifugation, a—infection

88. Enzyme required to catalyse polymerization of deoxynucleotides is

(A)DNA ligase (B)Stop codon

(C)DNA polymerase (D)β-galactosidase

89. Okazaki segments are formed during

(A)Transduction (B)Transcription

(C) Replication (D)Translation

90. Match the Columns I and II, and choose the correct combination from the options given.

Column I		**Column II**
a.F.Griffith	1.	*E. coli*
b.Hershey and Chase	2.	Bacteriophage
c.Meselson and Stahl	3.	Faba beans
d.Taylor etal	4.	*Pneumococcus*

(A)a—4, b—1, c—2, d—3

(B)a—4, b—2, c—1, d—3

(C)a—2, b—1, c—3, d—4

(D)a—4, b—3, c—2, d—1

91. DNA replication is

(A)Conservative and discontinuous

(B) Semiconservative and semi-discontinuous

(C)Semiconservative and discontinuous

(D)Conservative

92. Hargobind Khorana is known for

(A)Discovery of DNA

(B) Discovery of DNA ligase

(C)Discovery of *t*RNA

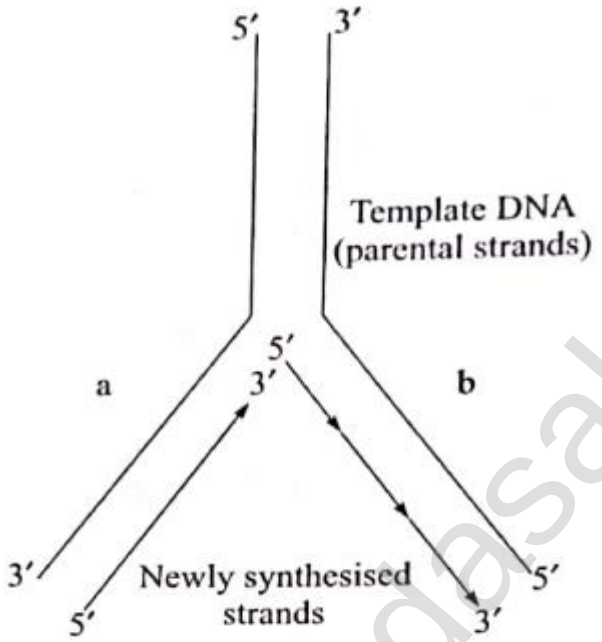
(D)Synthesis of proteins

93. Okazaki fragments are formed in the direction of

(A)3′ → 5′ **(B)**5′ → 3′

(C)5′ → 5′ (D)3′ → 3′

94. Recognise the figure and find out the correct matching.



(A)a—continuous synthesis, b—discontinuous synthesis, c—replication fork

(B)a—discontinuous synthesis, b—continuous synthesis, c—okazaki fragments

(C)a—continuous synthesis, b—discontinuous synthesis , c—okazaki fragments

(D)a—temperate strand, b—coding strand, c—replication fork.

95. DNA replication is semiconservative as

(A)Only nonparent strand acts as template

(B)Both strands of new molecules are synthesized denova

(C) One of the strand in each new molecule is parental and the other is new

(D)Daughter strands are dispersive.

96. During replication of DNA

(A)The two daughter molecules develop from both the parental strands

(B)RNA functions as template

(C) One strand from parent and one strand freshly

(D)One daughter receives both the parental strands while the other daughter receives newly formed strands.

97. Process used by Meselson and Stahl for studying semi-conservative replication of DNA was

(A)Chromatography

(B) Density gradient centrifugation

(C)Buoyant density centrifugation

(D)Centrifugation

98. Experimental material in the study of DNA replication has been

(A)*Escherichia coli*

(B)*Neurospora crassa*

(C)*Pneumococcus*

(D)*Drosophila melanogaster*

99. DNA duplication or multiplication is known as

(A) Replication (B)Transcription

(C)Transduction (D)Translation

100. Mode of DNA replication in *Escherichia coli* is

(A)Conservative and unidirectional;

(B)Semiconservative and unidirectional

(C)Conservative and bidirectional

(D) Semiconservative and bidirectional

101. In bacterial DNA replication synthesis starting form the site of origin of replication

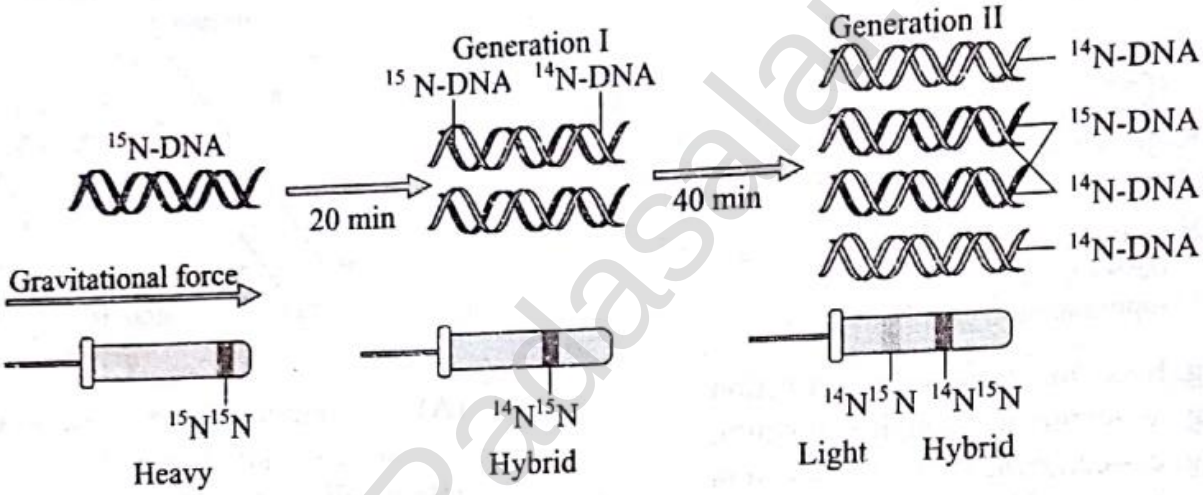
(A)Involves RNA primers

(B)Requires telomerase

(C)Proceeds unidirectionally

(D) Moves bidirectionally

102. The following figure shows



(A)Waston—Crick model for semiconservative DNA replication

(B) Meselson and Stahl's experiment for semi-conservation DNA replication

(C)Taylor's experiment on semiconservative DNA replication

(D)Process of transcription is bacteria

103. Who wrote "It has not escaped out notice that the specificpairing we have postulated immediately suggests a possible copying mechanism for the genetic material?"

(A)Meselson and Stahl

(B)Beadle and Tatum

(C) Watson and Crick

(D)Nirenberg and Ochos.

104. Isotopes used in proving semi-conservative replication of DNA were

(A)^{14}N, ^{14}C (B)^{14}C, ^{31}P

(C)^{14}N, ^{15}N (D)^{14}N, ^{31}P

105. Taylor demonstrated chromosome replication to be semi conservative in

(A)*Vicia faba* (B)*E. coli*

(C)Pea (D)Mouse liver cell

106. DNA synthesis can be measured by estimating incorporation of ratio-labelled

(A)Uracil (B)Ribose sugar

(C) Thymidine (D)Adenine

107. *Escherichia coli* with completely radioactive DNA was allowed to replicate in non-radioactive medium for two generations. Percentage of bacteria with radioactive DNA is

(A)100% **(B)**50%

(C)25% (D)12.5%

TOPIC 4: Transcription

Transcription Unit and the Gene, Types of RNA and the Process of Transcription

108. The promoter site and the terminator site for transcription are located at

(A)3′ (downstream) end and 5′ (upstream) end, respectively of the transcription unit

(B)5′ (upstream) end and 3′ (downstream) end, respectively of the transcription unit

(C)The 5′ (upstream) end

(D)The 3′ (downstream) end

109. Methyl guanosine triphosphate is added at 5′ end of hn RNA in a process of

(A)Tailing (B)Splicing

(C) Capping (D)None of the above

110. snRNAs are transcribed with the help of

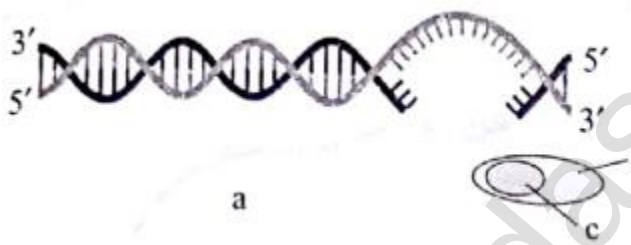
(A)RNA polymeras I

(B)RNA polymerase I and II

(C)RNA polymerase II

(D)RNA polymerase III

111. The given figure represents the process of transcription in bacteria



Select the option which correctly lables a, b and c.

(A)a—DNA, b—RNA, c—Promoter

(B)a—RNA, b—RNA polymerase, c—Rho factor

(C)a—RNA, b—RNA polymerase, c—Sigma factor

(D)a—DNA, b—DNA polymerase, c—RNA

112. Read the following statements and choose the correct option.

1.RNA polymerase associates transiently with ‘Rho’ factor to initiate transcription.

2.In bacteria transcription and translation takes place in the same compartment.

3.RNA polymerase I is responsible for transcription of rRNA.

4.When hnRNA undergoes capping process, adenylate residues are added at 3′ end in a template independent manner.

5.hnRNA is precursor of mRNA

(A)2 only is correct

(B)2,3 and 5 only correct

(C)3 and 4 only are correct

(D)1 and 4 only are correct

(E)2 and 5 only are correct

113. Which defines the position and presence of template and coding strands in transcription unit?

(A) Promoter (B)Operator

(C)Repressor (D)Inducer

114. Ultimate biological unit which controls heredity is called

(A)Genome (B)Genotype

(C)Chromosome **(D)**Gene

115. Protion of DNA having information for an entire polypeptide/trait is

(A) Cistron (B)Recon

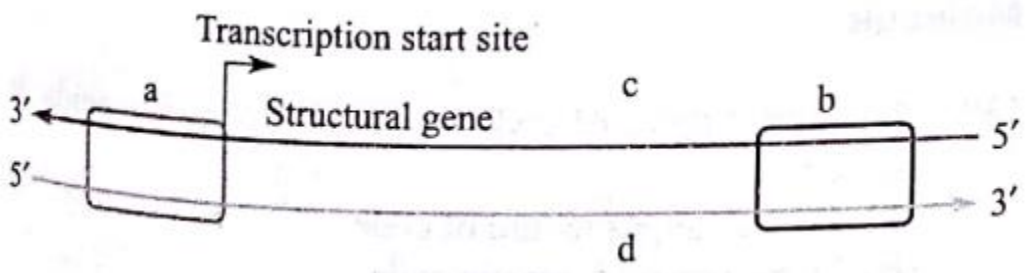
(C)Muton (D)Operton

116. Methyl guanosine triphosphate is added at 5′ end of hn RNA in a process of

(A)Tailing (B)Splicing

(C) Capping (D)None of the above

117. Recognise the figure and find out the correct matching.



(A)a—promoter, b—terminator, c—template strand, d—coding strand

(B)b—promoter, a—terminator, c—template strand, d—coding strand

(C)a—promoter, b—terminator, d—template strand, c—coding strand

(D)b—promoter, a—terminator, d—template strand, c—coding strand

118. Select the correct statement.

(a)RNA polymerase I transcribes rRNAs

(b)RNA polymerase II transcribes snRNA

(c)RNA polymerase III transcribes hnRNA

(d)RNA polymerase II transcribes hnRNA

(A)a and d are correct (B)b and c are correct

(C)a and b are correct (D)a and c are correct

119. Synthesis of RNA molecule is terminated by a signal recognized by

(A)Alpha factor (B)Sigma factor

(C)Delta factor **(D)**Rho factor

120. Study the lists and find the correct match

List I		**List II**
a.Exon	I.	Site for binding of RNA polymerase
b.Capping	II.	Coding sequence
c.Tailing	III.	Lagging strand
d.Promoter	IV.	Methyl guanosine triphosphate
	V.	Adebtkate resudyes

(A)a—II, b—IV, c—V, d—I

(B)a—II, b—IV, c—I, d—V

(C)a—III, b—I, c—II, d—IV

(D)a—IV, b—II, c—III, d—I

121. The terms cistron, recon and muton were proposed by

(A)Johnnsen (B)Morgan

(C)Lederberg **(D)**Benzer

122. Sequence of AAT GCT TAG GCA on template segment of DNA will be represented over the transcribed mRNA as

(A)UUA CGT TUC CGU

(B)AAT GCT AAG GCA

(C)UUA CGA AUC CGU

(D)TTA CTA ATC CGT

123. Hn—RNA is

(A)Heteronuclear RNA (B)Homonuclear RNA

(C) Heterogeneous RNA (D)Useful RNA

124. Consider the statements.

(i)rRNA provides template for synthesis of proteins

(ii)tRNA brings amino acids and reads genetic code

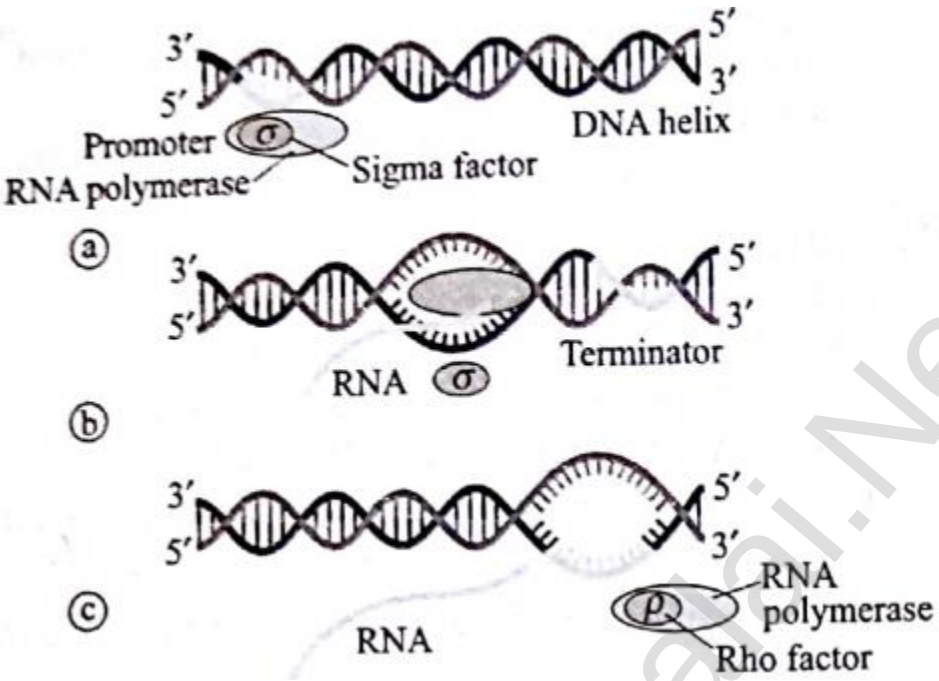
(iii)RNA polymerase binds to promoter and initiates transcription

(iv)A segment of DNA coding for polypeptide is called intron

(A)i and iii are correct (B)i, ii and iii are correct

(C)i and ii are correct **(D)**ii and iii are correct

125. Recognise the figure and find out the correct matching.



(A)a—initiation, b—termination, c—elongation

(B)b—initiation, c—termination, a—elongation

(C)c—initiation, a—termination, b—elongation

(D)a—initiation, c—termination, b—elongation

126. In eukaryotic cell, transcription RNA splicing and RNA capping take place inside

(A) Nucleus (B)Ribosomes

(C)E.R (D)Dictyosomes

127. Which one is not transcribed by DNA?

(A)Exons (B)Introns

(C)DNA (D)tRNA

128. Split genes include

(A)Exons (B)Introns

(C)Pseudoalleles **(D)**Both A and B

129. In split genes, the coding sequences are called

(A) Exons (B)Introns

(C)Cistrons (D)Operons

130. Length of mRNA/DNA that carries information for complete polypeptide synthesis is

(A)Muton (B)Codon

(C)Operon **(D)**Ciston

131. Splicing is meant for eliminating

(A)Recons (B)Mutons

(C)Exons **(D)**Introns

132. RNA polymerase requires for ignition

(A) Sigma subunit (B)a-subunit

(C)P-factor (D)rho factor

133. Transcription involves

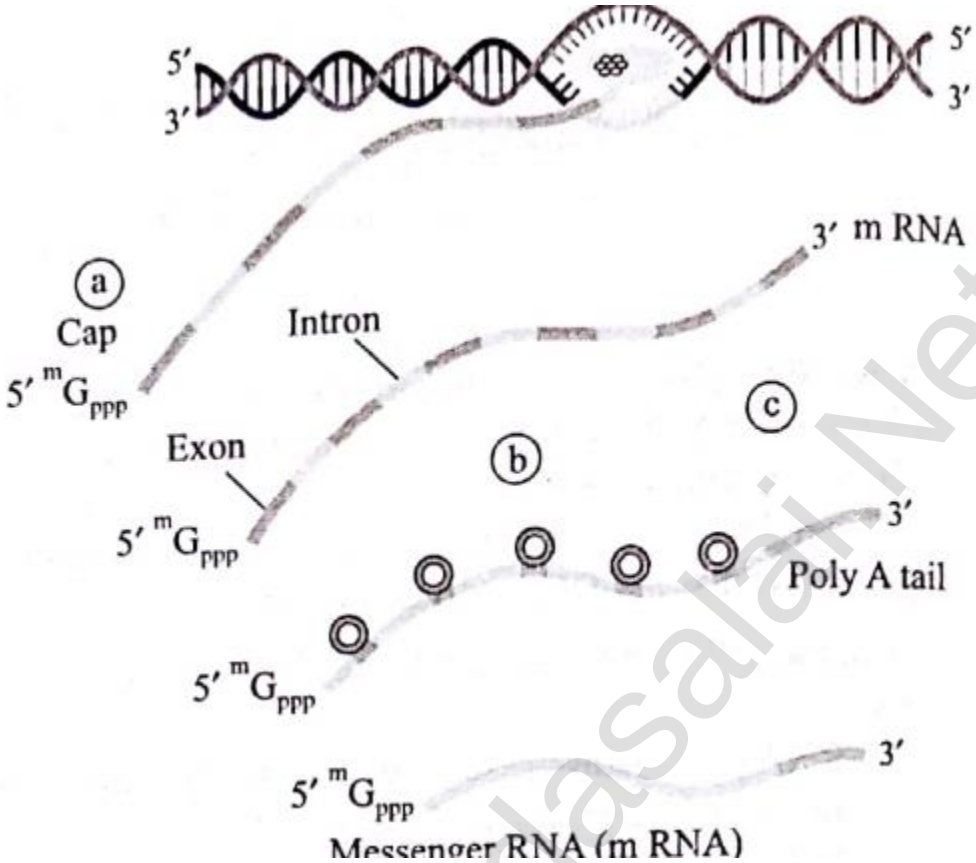
(A) Synthesis of RNA over DNA

(B)Joining of amino acids in a polypeptide

(C)Synthesis of RNA over ribosome

(D)Synthesis of DNA

134. Recognise the figure and find out the correct matching.



(A)b—RNA splicing, c—polyadenylation, a—capping

(B)b—RNA splicing, a—polyadenylation, c—capping

(C)c—RNA splicing, b—polyadenylation, a—capping

(D)a—RNA splicing, c—polyadenylation, b—capping

135. The term gene was coined by

(A)McClintock (B)Morgan

(C) Johnnsen (D)De Duve

136. Sequence of nitrogen bases in coding of DNA was found to be CAT GTT TAT CGC. What would be sequence of nitrogen bases in mRNA synthesized over the corresponding region of template strand

(A)CAU GUU UAU CGG

(B)CAA GAA TAU GCC

(C)GUA CAA AUA GCC

(D)GTA CAA ATA GCC

137. Enzyme required for transcription is

(A)RNAase (B)Endonuclease

(C)RNA polymerase (D)DNA polymerase

138. Transcription

(A)Starts at initiator region and ends at stop region

(B)Starts at operator region and ends at telomeric end

(C) Starts at promoter region and ends at terminator

(D)Starts at CAA box and ends at TATA box

TOPIC 5: Genetic Code

Mutations and Genetic Code, tRNA-the Adapter Molecule

139. Out of 64 codons, 61 code for 20 types of amino acids. It is due to

(A)Unambiguous nature of code

(B) Degeneracy of genetic code

(C)Wobbling of codons

(D)University of codons

140. Arrange the following amino acids on the basis of number of triplet codes.

(1)Leucine (2)Tryptophan (3)Valine (4)Phenylalanine

(A)3—1—2—4 (B)1—2—3—4

(C)2—4—3—1 (D)2—3—4—1

141. Addition or deletion of a single nucleotide produces mutation

(A) Frame shift (B)Inversion

(C)Deficiency (D)Duplication

142. Terminator codon amber is

(A)UGA **(B)**UAG

(C)UAA (D)UUU

143. What are mutagens?

(A)Chemicals that react with ozone and destroy the same

(B) Chemicals and radiations that cause change in genetic material

(C)Infectious RNA molecules

(D)Methane producing archaebacteria

144. Opeal is

(A)UGA (B)UAG

(C)UAA (D)UUU

145. Which is correct?

(A)Introns are present in mRNA and exons in tRNA

(B) Codons are present in mRNA and anticodons in tRNA

(C)Every intron is a set of three terminator codons

(D)Exons are present in eukaryotes and introns in prokaryotes

146. Select the incorrect statement.

(a)Six codons do not code for any amino acid

(b)Codon reading of mRNA is contiguous

(c)Three codons functions as stop codons

(d)Initiator codon AUG codes for methionine

(A)a alone is incorrect (B)a, b, and d are incorrect

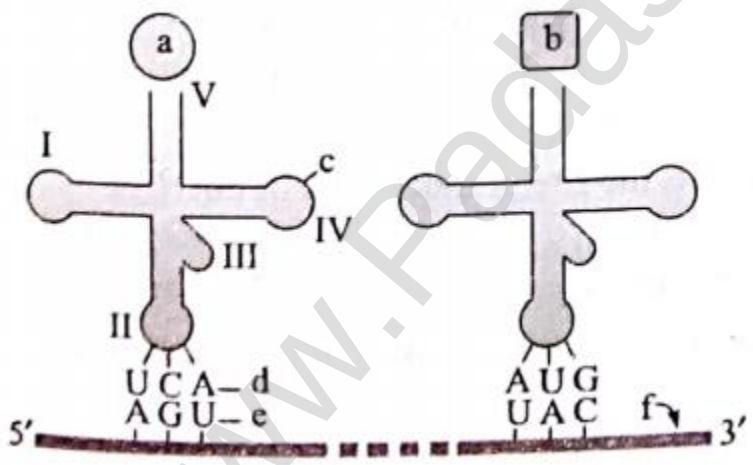
(C)a, b and c are incorrect (D)b, c and d are incorrect

147. Which one is not a termination codon?

(A)UAA (B)UAG

(C)AUG (D)UGA

148. Recognise the figure and find out the correct matching.



(A)a—Ser, b—Tyr, f—tRNA, c—mRNA, d—codon, e—anticodon

(B)a—Ser, b—Tyr, c—rRNA, f—mRNA, e—condon, d—anticodon

(C)b—Ser, a—Tyr, c—tRNA, f—mRNA, e—condon, d—anticodon

(D)b—Ser, a—Tyr, f—tRNA, c—mRNA, e—codon, d—anticodon.

149. Which is not correct?

(A)UGG codes for tryptophan

(B)UAA codes for lysine

(C)Cysteine is coded by UGU and UGC

(D)Tyrosine is coded by UAU and UAC

150. Match codons with amino acids.

(i)	UUU	a.	Serine
(ii)	GGG	b.	Methionine
(iii)	UGU	c.	Phenylalanine
(iv)	CCC	d.	Glycine
(v)	AUG	e.	Proine

(A)i—c, ii—d, iii—a, iv—e, v—b

(B)i—c, ii—a, iii—d, iv—e, v—b

(C)i—c, ii—d, iii—s, iv—a, v—b

(D)i—b, ii—d, iii—a, iv—e, v—c

151. From bacteria to men, a near universal code for phenylalanine.

(A)UUU (B)UUA

(C)UUG (D)CUU

152. Number of triplet codons having all three bases same in 64 triplet codons are

(A)8 (B)6

(C)4 (D)2

153. What is amino acid sequence encoded by base sequence UCA UUU UCC GGG AGU AND mRNA segment?

(A)Glycine—Serine—Phenylalanine—Serine—Glycine

(B) Serine—Phyenylalanine—Serine—Glycine—Serine

(C)Serine—Phyenylalanine—Glycien—Serine—Glycine

(D)Methioninei—Phenylalanine—Serine—Glycine—Serine

154. Find the correct match.

(A)UUA-Valine

(B)AUG-Cysteine

(C)AAA-Lysine

(D)CCC-Alanine

155. Codon with dual function is

(A)UGA

(B)UUU

(C)AUG

(D)AAA

156. Find out the correct options.

1.Amino acids may have more than one codon

2.All amino acids have more than one codon

3.Codons are common for higher and lower organisms

4.Codons are not found in bacteria

(A)1, 2, 3 correct

(B)1, 2 correct

(C)2, 4 correct

(D)1, 3 correct

157. In the genetic dictionary, there are 64 codons as

(A)64 amino acids are to be coded

(B)64 types of tRNAs are present

(C)There are 44 nonsnse codons and 20 sense codons

(D) Genetic code is tripler.

158. Which one represents serine?

(A)CUU, CUC, CUA and CUG

(B)UAU, UAC, UGU, and UGC

(C)UCU, UCC, UCA and UGG

(D)UGU, UGC, UGA and UAG

159. All the terminator codons begin with

(A)Guanine **(B)**Uracil

(C)Cytosine (D)Adenine

160. Which amino acid is specified by genetic codes ACU, ACC, AGA, ACG showing degeneracy?

(A)Leucine (B)Methionine

(C)Glycine **(D)**Threonine

161. Which is a soluble RNA?

(A)hnRNA (B)rRNA

(C)mRNA **(D)**tRNA

162. Cytosine base inserted in the beginning of DNA codons ATGATGATG will produce

(A)C ATG ATG ATG **(B)**CAT GAT GAT G

(C)CA TGA TGA TG (D)Nonsense mutation

163. Common to both prokaryotes and eukaryotes

(A) Genetic code (B)E.R.

(C)Histones (D)Mitotic spindle

164. In ATG ACC AGG ACC CCA ACA sequence the first base gets mutated. It will effect

(A)Change in type and sequence of amino acids

(B) Change in first amino acid only

(C)No change

(D)No coding

165. A coding sequence made of alternating C and U bases would form a polypeptide having

(A) Alternating leu and ser residues

(B)Either leu or ser residues

(C)Only ser residues

(D)Only leu residues

166. Triplet UUU codes for

(A)Leucine (B)Methionine

(C) Phenylalanine (D)Glycine

167. Nonsense codon takes part in

(A) Terminating message of gene controlled protein synthesis

(B)Formation of unspecified amino acids

(C)Conversion of sense DNA into non-sense one

(D)Releasing tRNA from polypeptide chain

168. Termination of polypeptide chin is brought about by

(A)UUG, UAG and UCG

(B)UAA, UAG and UGA

(C)UUG, UGC and UCA

(D)UCG, GCG and ACC

169. Three dimensional shape of tRNA is

(A)L-shaped (B)Clover leaf-like

(C)X-shaped (D)Y-shaped.

170. Genetic code determines

(A) Sequence of amino acids in protein chain

(B)Variations

(C)Constancy of morphological traits

(D)Structural pattern

171. The first codon discocvered by Nirenberg and Matthaei was

(A)GGG (B)CCC

(C)UUU (D)AAA

172. Genetic code was discovered by

(A)Nirenberg and Mathaei

(B)Nireberg and Holley

(C)Holley and Ochoa

(D) Holley, Nirenberg and Khorana.

173. TRNA has the function of

(A)Transcription

(B) Adapter for attaching amino acids over mRNA template

(C)Transferring information to mRNA

(D)Carry genetic code to cytoplasm

TOPIC 6: Translation

174. Aminoacylation of tRNA is essential for

(A)Replication of RNA

(B) Formation of peptide bond

(C)Splicing

(D)Initiation of transcription

175. Select correct statement about protein synthesis.

(A) Translation begins when mRNA attaches to small submit of ribosome.

(B)Petptidase catalyses formation of peptide bond.

(C)UTRs are present between start and stop codons.

(D)At the end of translation, releaqse factor binds to initiation codon.

176. Which codon does not have tRNA?

(A)Start codon **(B)**Stop codon

(C)AUG (D)GGG

177. Amino acid binding site of tRNA is

(A)5′ end (B)Anticodon loop

(C)DHU loop **(D)**—CCA3′ end

178. Which is the site of translation of mRNA?

(A)Nucleus (B)Nucleolus

(C)Golgi body **(D)**Ribosomes

179. Sequence of amino acids in a polypeptide is determined by

(A)rRNA **(B)**mRNA

(C)tRNA (D)snRNA

180. What does the following signify?

Amino acid + ATP → Aminoacyl AMP + PPi

(A)Chain termination

(B) Activation of amino acids

(C)Elongation of chain

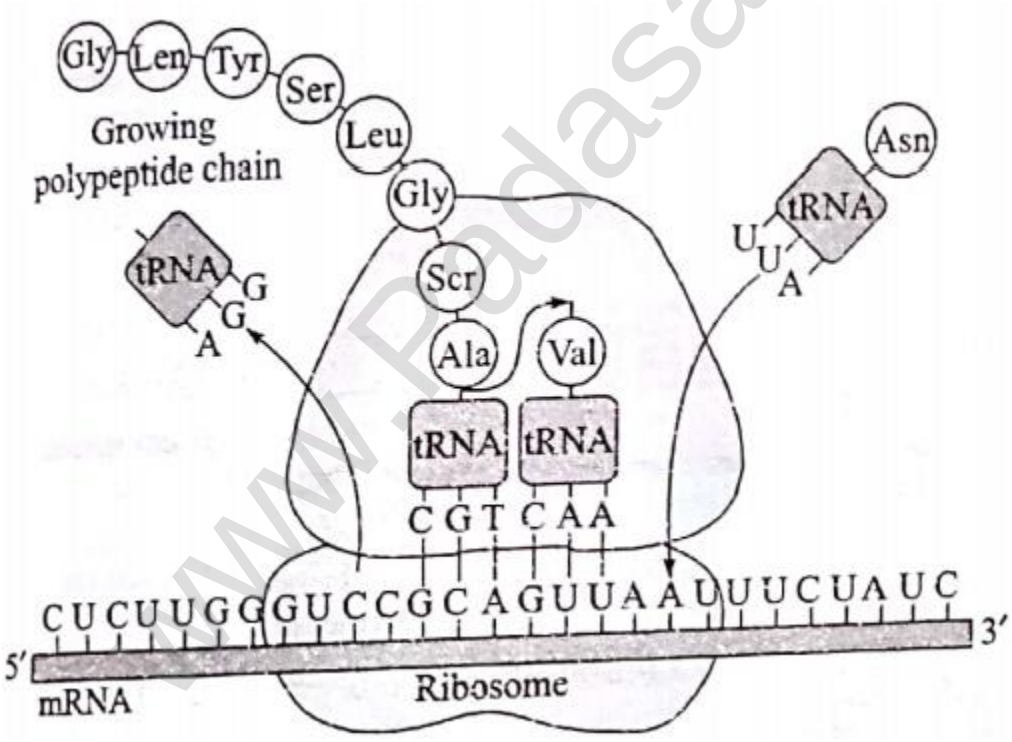
(D)None of the above

181. mRNA directs building of protein through a sequence of

(A)Introns **(B)**Exons

(C)Anticodons (D)Codons

182. The following figure shows the process of



(A) Transcription (B)Translation

(C)Replication (D)Central dogma

183. Anticodon present on tRNA complementary to initiator condon AUG of mRNA is

(A)CAU (B)GUA

(C)TAC **(D)**UAC

184. A segment of DNA, AGCTTCGAA, has lost first base. Assuming that translation starts from the next base the effect would be

(A)No change in polypeptide form

(B)Only first amino acid will be different

(C)A complete change in type sequence of amino acids

(D)Last amino acid of polypeptide will be different

185. Coding segment of DNA contains CAC. Which amino acid is picked up during translation?

(A)Leucine (B)Glutamic acid

(C) Valine (D)Methionine

186. In bacteria formation of peptide bond during translation is effected by

(A)Peroxisomes (B)Lysosomes

(C) Ribozyme (D)Nucleosome

187. Which of the following has no tRNA?

(A)UAU **(B)**UAA

(C)UGU (D)UGG

188. A sequence of 3 bases on tRNA which birds to mRNA codon is

(A)Triplet (B)Nonsense codon

(C) Anticodon (D)Termination codon

189. What is wrong about protein synthesis?

(A)Only one strand of DNA acts as template for mRNA synthesis

(B)DNA polymerase mediates mRNA synthesis

(C)mRNA passes into cytoplasm and gets attached to 30S ribosomal subunit

(D)tRTN bring amino acids one by one

190. Amino acid sequence in protein synthesis is determined by sequence of

(A)rRNA (B)tRNA

(C)mRNA (D)cDNA

191. Portion of gene which is transcribed but not translated is

(A)Exon **(B)**Intron

(C)Cistron (D)Codon

192. Which one is correct matching RNA?

(A) Anticodon—Site of tRNA having complementary bases to a codon of

(B)Trancription—Synthesis of protein

(C)Ribosomal RNA—Carries amino acid to site of

(D)Translation—Process of mRNA carrying information from nucleus to ribosome

193. Polyribosomes are formed when ribosomes are connected by

(A)rRNA **(B)**mRNA

(C)tRNA (D)All the above

194. Enzyme catalysing synthesis of RNA over DNA template is

(A)DNA polymerase **(B)**RNA polymerase

(C)Reverse transcriptase (D)Endonucleaase

195. The process by which DNA forms mRNA and mRNA forms protein are respectively

(A)Translation and transcription

(B)Translation and replication

(C) Translation and translation

(D)Replication and translation

196. RNA that picks up specific amino acid from amino acid pool of cytoplasm to carry it to ribosome during protein synthesis is

(A)tRNA (B)mRNA

(C)rRNA (D)gRNA

197. tRNA takes part in

(A)Transfer of genetic code to cytoplasm

(B) Carry amino acids to reibosomes

(C)Collection of RNA in ribosome

(D)Copy the genetic code from DNA in nucleus

TOPIC 7: Regulation of Gene Expression

The Lac operon

198. Regulation of gene expression in eukaryotes could be exerted at

a.Transcriptional level (formation of primary transcript)

b.Processing level (regulation of splicing)

c.Transport of mRNA from nucles to the cytoplasm

d.Translational level

(A)a, b and c (B)b, c and d

(C)a, c and d **(D)**a, b, c and d

199. In prokaryotes, the predominant site (or primary step) of control of gene expression is at

(A) Control of rate of transcriptional initiation.

(B)Control of rate of translational initiation.

(C)Control of rate of initiation of replication

(D)Processing level

200. Read the statement regarding the lac operon and choose the correct option.

1.An inducer regulates the switching on and off of lac operon.

2.Repressor protein dissociates from operator region and prevents RNA polymerase from transcribing the operon.

3.In the presence of lactose, the repressor is activated by interaction with lactose.

4.RNa polymerase has access to the promoter and transcription proceeds only when the repressor is inactiviated.

(A)1 and 2 alone are correct

(B)2 alone is correct

(C)3 and 4 alone are correct

(D)1 and 3 alone are correct

(E)1 and 4 alone are correct

201. Which of the following events would occur in 'Lac-operon of *E. coli* when growth medium has high concentration of lactose?

(A)Structural genes fail to produce polycistronic mRNA

(B)Repressor protein binds to RNA polymerase and prevents translation

(C)Repressor protein attaches to the promoter sequence and represses the operator

(D) Inducer molecule binds to repressor protein and RNA polymerase binds to promoter sequence.

202. Match the components of lac-operon of *Escherichia coli* and find out the correct combination.

a	Structural gene	p	Binding site for repressor
b	Operator gene	q	Codes for repressor protein
c	Promoter gene	r	Induces lactose transport from the medium
d	Regulator gene	s	Codes for enzyme proteins
		t	Binding site for RNA-polymerase

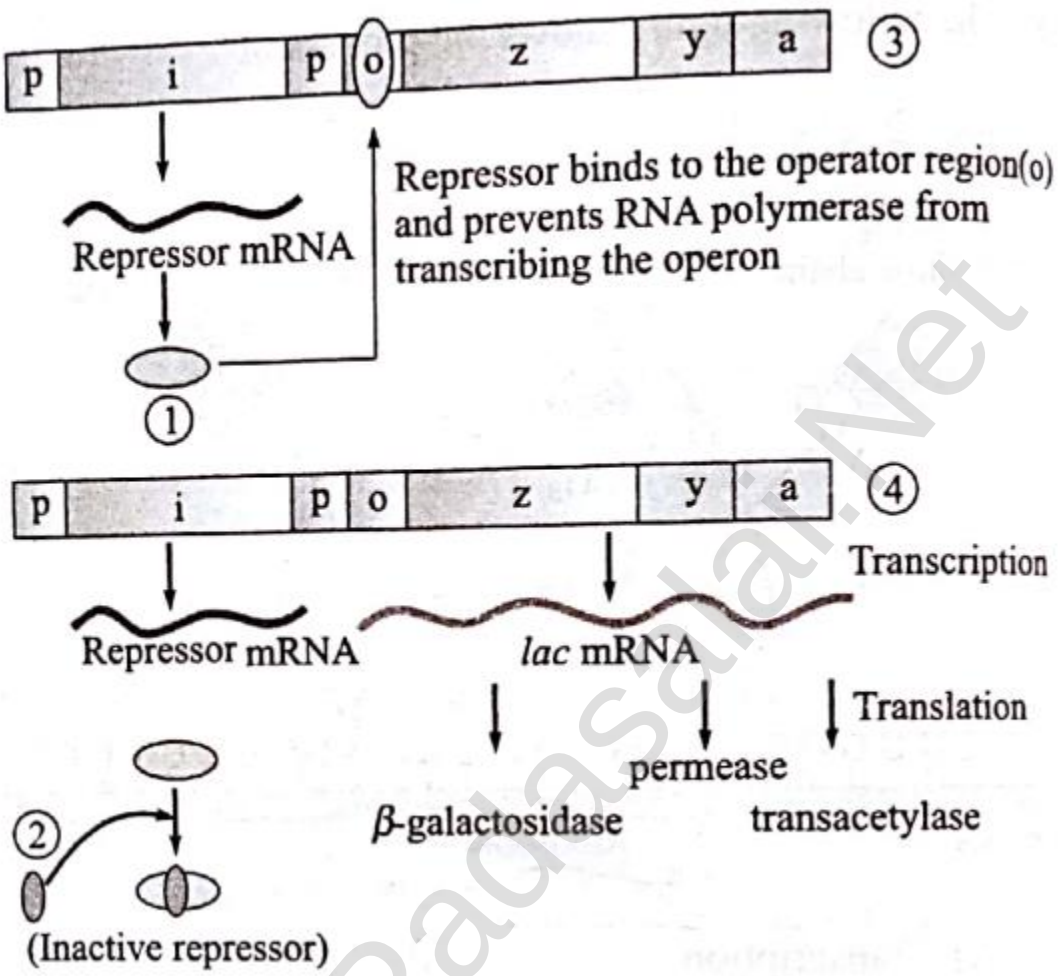
(A)a—q, b—t, c—p, d—r

(B)a—r, b—s, c—t, d—p

(C)a—s, b—p, c—t, d—q

(D)a—t, b—s, c—q, d—p

203. Recognise the figure and find out the correct matching.



(A)1—inducer, 2—repressor, 4—in absence of inducer, 3—in presence of inducer

(B)2—inducer, 2—repressor, 3—in absence of inducer, 4—in presence of inducer

(C)2—inducer, 1—repressor, 4—in absence of inducer, 3—in presence of inducer

(D)1—inducer, 2—repressor, 3—in absence of inducer, 4—in presence of inducer

204. Lac operon is turned on when allolactose binds to

(A)Operator gene (B)mRNA

(C) Repressor protein (D)Promoter site

205. Environmental agent triggering transcription from an operon is

(A) Inducer (B)Regulator

(C)Repressor (D)Controlling factor

206. Genes regulated growth and differenitation through

(A) Transcription and translation

(B)Transduction and translation

(C)Transformation

(D)Translation

207. In operon model, regulator gene functions as

(A)Repressor (B)Regulator

(C)Inhibitor **(D)**All the above

208. Operon contains

(A)Operator and regulator genes

(B)Operator and structural genes

(C)Operator and regulator genes, and reprossor

(D) Operator gene, regulator gene, repressor, structural genes and promoter gene.

209. In *Escherichia coli*, the product of *i* gene combines with

(A) Operator gene to switch off structural genes

(B)Inducer gene to switch off structural genes

(C)Operator gene to switch on structural genes

(D)Regulator gene to switch off structural genes

210. Operon is

(A)Sequendce of three nitrogen bases determining single amino acid

(B)A set of closely placed genes regulating a metabolic pathway in prokaryotes

(C)Segment of DNA specifyiong of polypeptide

(D)Gene responsible for switching on and switching off of other genes

211. *Excherichia coli* with mutated z gene of lac operon cannot grow in mediin containing only lactose as the source of energy because

(A)Lac operon is constitutively active in these cells

(B) They cannot synthesise functional galactosidase

(C)In the presence of glucose, *Escherichia coli* cannot utilise lactose

(D)The bacterium cannot transport lactose from the medium into the cell

212. Match the columns and choose the correct option.

Column I		**Column II**
1.Tayler and colleagues	a.	Lac operon
2.Hershey and Chase	b.	DNa replicates semiconservatively
3.Griffith	c.	Transforming principle
4.Jacob	d.	DNA is genetic material
	e.	Transcription

(A)1—b, 2—e, 3—a, 4—c

(B)1—c, 2—d, 3—b, 4—a

(C)1—b, 2—d, 3—c, 4—a

(D)1—a, 2—e, 3—d, 4—b

(E)1—c, 2—e, 3—b, 4—a

213. Lac operon concept was proposed by

(A) Jacob and Monod in 1961

(B)Jacob and Monodi in 1969

(C)Waston and Crick in 1953

(D)Waston and Crick in 1963

214. *Escherichia coli* growing on medium having glucose is transferred to lactose contianing medium. Which change occurs?

(A) Lac opteron is induced

(B)Lac operon is suppressed

(C)All operons are induced

(D)The bacterium stops dividing

215. In lac-operon, repressor protein binds to

(A)Regulator gene **(B)**Operator gene

(C)Promoter gene (D)Structural gene

216. A gene of operon which forms the represor protein is

(A)Operator (B)Promoter

(C) Beadle and Tatum (D)Structural

217. Operon model of gene regulation and organisation of prokaryotes was proposed by

(A)Messelson and Franklyin (B)Wilkins and Franklin

(C)Beadle and Tatum **(D)**Jacob and Monad

218. Sequence of structural gene of lac operon ios

(A)y, z, a **(B)**z, y, a

(C)a, y, z (D)a, z, y

219. What is correct gene expression pathway?

(A)Gene—mRNA

(B)Transcription—gene—translation—mRNA—protein

(C) Gene—transcription—mRNA—translation—protein

(D)Gene—translation—mRNA—transcription—protein

220. Lac operon 'inducer lactose' serves as an enzyme substrate for

(A)Transacetylase (B)Permease

(C)β-galactosidase (D)Endonuclease

221. In lac operon model, lactose functions as

(A)Inducer that binds to operator gene

(B) Repressor that binds to operator gene

(C)Inducer that binds to repressor protein

(D)Corepressor that binds to repressor protein

222. In lac operon genes a, I, y and z code for

(A)Repressor protein, permease, β—galactosidase, transacetylase

(B) Transacetylase, repressor protein, permease, β—galactosidase

(C)Transacetylase, permease, β—galactosidase, repressor protein

(D)Permease, transacetylase, repressor protein, β—galactosidase

TOPIC 8: Human Genome Project

Salient Features of Human Genome, Applications and Future Challenges

223. Choose the wrong statement regarding the observation drawn from Human Genome Project.

(A) Repetitive sequences are stretches of RNA

(B)Less than 2% of the genome codes for protein

(C)Chromosome 'Y' has the fewest number of genes

(D)SNPs help in tracing human history

224. Sequencing the whole set of genome that contained all the coding and non-coding sequence and later assigning different region in the sequence with functions are referred to as

(A)Expressed Tags **(B)** Sequence Annotation

(C)SETs (D)SNP's

225. Repetitive DNA are separated from bulk genomic DNA as different peak during density gradient centrifugation. The bulk DNA forms a major peaks and the other small peaks are referred to as

(A)Repetitive DNA (B)SNPs (Snips)

(C)Taq-DNA **(D)** Satellite DNA

226. *Coenorhabditis elegans* is

(A)Free-living (B)Non-pathogenic

(C)Nematode **(D)** All of the above

227. Many non-humans model organisms have also been sequenced along with the human genome, these are

(A)Bacteria and yeast

(B)Plants (rice and *Arabidopsis*)

(C)Fruitfly and *Coenohabditis* (nematode)

(D) All of the above

228. The application of genetic engineering is in the field of

(A)Forensic science

(B)Genetic biodiversity

(C)Evolutionary biology

(D) All of the above

229. Most number of genes are located on chromosome

(A)1

(B)6

(C)X

(D)21

230. Automated-DNA sequencing is based or method developed by

(A)Erwin Chargaff

(B)Maurice Wilkins

(C)Francis Crick

(D) Frederick Sanger

231. Match the columns I and II, and choose the correct combination from the options given.

Column I	**Column II**
a.Hershey and Chase experiment	1.1928
b.Taylor's experiment	2.1952
c.Meselson and Stahi experiment	3.1958
d.Transforming Principle	4.1990
e.Human Genome Project	5.1953

(A)a—1, b—2, c—3, d—5, e—4

(B)a—2, b—3, c—5, d—1, e—4

(C)a—2, b—3, c—4, d—1, e—5

(D)a—2, b—3, c—3, d—1, e—4

232. Single base DNA differences are called

(A)VNTR

(B)SCP

(C)SNP

(D)Expressed sequence tags

233. Largest gene in humans is

(A) Dystorphin

(B)Insulin gene

(C)Oncogene

(D)x-globin of haemoglobin

234. Haploid content of human DNA is

(A)1.62 x 10^9 bp **(B)**3.1 – 3.3 x 10^9

(C)4.6 x 10^6 bp (D)3.3 x 10^9 kbp

TOPIC 9: DNA Fingerprinting

235. Select the correct sequences of steps in DNA finger printing involving Southern blot hybridisation using radiolabelled VNTR as probe.

I. Hybridisation using labelled VNTR probe.

II. Isolation of DNA

III. Transferring (blotting) of separated DNA fragments to synthetic membrans, such as nitrocellulose or nylon.

IV. Detection of hybridisation DNA fragments by autoradiography.

V.Separation of DNA fragments by electrophoresis.

(A)I, V, VI, II, III and IV

(B)II, VI, V, II, I and IV

(C)V, I, VI, III, IV and II

(D)II, I, V, VI, IV, III

236. Find the wrongly matched pair.

(A)Hargobind Khorana — Synthesised RNA molecules chemically

(B)George Gamow—Codon is triplet

(C) Meselson and Sathl—Regulation of gene expression

(D)Alec Jeffreys—DNA finger printing

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

(A)DNA polymorphism

(B)Expressed sequence tag

(C)Sequence annotation

(D)Linkage

238. The VNTR belongs to a class of satellite DNA referred to as

(A)Repetitive DNA

(B)Mega-Satellite

(C) Mini-Satellite

(D)Micro-Satellite

239. Which is incorrect about DNA polymorphism?

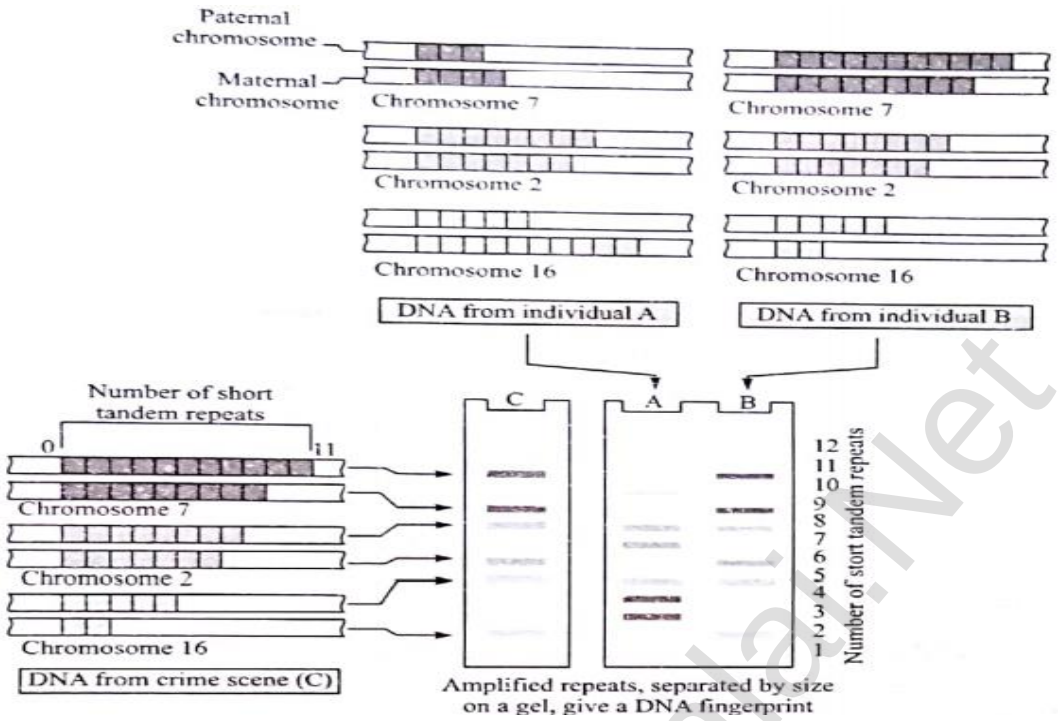
(A)The two alleles of a chromosome contain different copy numbers of VNTR.

(B)Different chromosomes contains different copy of VNTR

(C)Polymorphisms are inheritable from parents to children.

(D)DNA from different tissure from an individual shows the different degree of polymorphism.

240. In the schematic representation, few representative chromosomes have been shown contain different copy



(A)Individual 'A'

(B) Individual 'B'

(C)Can't be predicated

(D)Neither 'A' nor 'B', any other individual

241. Matching DNA sequence of criminal with suspect is knows as

(A)DNA finger printing

(B)DNA amplification

(C)Gene mapping

(D)DNA resolution

242. One of the following is major requirement for DNA finger printing is

(A)Electron microscopy **(B)**Electrophoresis

(C)ELISA (D)HPLC

243. Transfer of DNA bands from agarose gel to nitrocellulose or nylon membrane is

(A) Southern transfer (B)Western transfer

(C)Northern transfer (D)Eastern transfer

244. Which cannot be used for DNA finger printing in humans?

(A)Leucocytes **(B)**Erythrocytes/RBCs

(C)Hair bulbs (D)Sperms

245. Which is an example of highly repetitive DNA?

(A)Alu elements

(B)Histone gene cluster

(C)Dispersed repetitive DNA

(D)DNA mini-satellite

246. Blood stain component to be used for DNA profiling technique is

(A)Serum **(B)**Leucocytes

(C)Platelets (D)Erythrocytes

247. DNA finer printing technique was developed by

(A) Jeffreys et al

(B)Schleiden and Schwann

(C)Boysen and Jensen

(D)Edwards and Steptoe

248. The probe used initially by Alec Jaffrey during development of DNA finger printing was

(A)Ribozyme (B)Sed chromosomes

(C)VNTR (D)rDNA

249. DNA finger printing in forensic science was pioneered in India by

(A) Lalji (B)Khorana

(C)Bose (D)Swaminathan

250. Which is useful in solving parental disputes?

(A)Hybridoma technology

(B)DNA Finger printing

(C)Western blotting

(D)ELISA