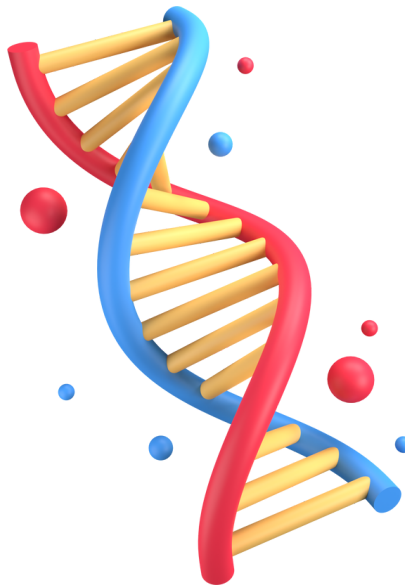


ZOOLOGY

ENTHUSIAST | LEADER | ACHIEVER



EXERCISE

Genetics : Molecular basis of inheritance

ENGLISH MEDIUM

EXERCISE-I (Conceptual Questions)

Build Up Your Understanding

GENETIC MATERIAL, DNA

1. In eukaryotic cell circular and double stranded DNA occurs in -
 (1) Golgibody (2) Mitochondria
 (3) Nucleus (4) Ribosome

MI0001

2. Double helix model of DNA which was proposed by watson and crick was of-
 (1) C-DNA (2) B-DNA (3) D-DNA (4) Z-DNA

MI0002

3. If there are 10,000 nitrogenous base pairs in a DNA then how many nucleotides are there-
 (1) 500 (2) 10,000
 (3) 20,000 (4) 40,000

MI0003

4. Double helix model of DNA was proposed by-
 (1) Watson and Crick
 (2) Schleiden schwann
 (3) Singer and Nicholson
 (4) Kornberg and Khurana

MI0004

5. Back bone in structure of DNA molecule is made up of -
 (1) Pentose Sugar and phosphate
 (2) Hexose sugar and phosphate
 (3) Purine and pyrimidine
 (4) Sugar and phosphate

MI0005

6. Substance common in DNA and RNA -
 (1) Hexose Sugar
 (2) Histamine
 (3) Thymine
 (4) Phosphate groups

MI0006

7. Nucleotide is -
 (1) N₂ - base, pentose sugar and phosphoric acid
 (2) Nitrogen, Hexose sugar and phosphoric acid
 (3) Nitrogen base, pentose sugar
 (4) Nitrogen base, trioses and phosphoric acid

MI0007

8. Unit of nucleic acids are-
 (1) Phosphoric acid
 (2) Nitrogenous bases
 (3) Pentose Sugar
 (4) Nucleotides

MI0008

9. Which element is not found in nitrogenous base :-
 (1) Nitrogen (2) Hydrogen
 (3) Carbon (4) Phosphorus

MI0009

10. DNA was first discovered by-
 (1) Meischer
 (2) Robert Brown
 (3) Flemming
 (4) Watson & Crick

MI0010

11. Nucleic acid (DNA) is not found in-
 (1) Nucleus & nucleolus
 (2) Peroxysome & ribosome
 (3) Mitochondria & plastid
 (4) Chloroplast & nucleosome

MI0011

12. DNA is not present in -
 (1) Mitochondria
 (2) Chloroplast
 (3) Bacteriophage
 (4) TMV

MI0012

13. A nucleic acid contains thymine or methylated uracil then it should be -
 (1) DNA
 (2) RNA
 (3) Either DNA or RNA
 (4) RNA of bacteria

MI0013

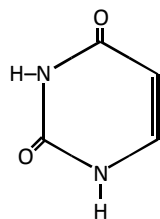
14. Prokaryotic genetic system contains -
 (1) DNA & histones
 (2) RNA & histones
 (3) Either DNA or histones
 (4) DNA but no histones

MI0014

15. A N_2 - base together with pentose sugar and phosphate forms (or) building - block unit of nucleic acid is :-
 (1) Nucleoside (2) Polypeptide
 (3) Nucleotide (4) Aminoacid
MI0015
16. Which of the following is not a pyrimidine N_2 base -
 (1) Thymine (2) Cytosine
 (3) Guanine (4) Uracil
MI0016
17. The purine & pyrimidine pairs of complementary strands of DNA are held together by -
 (1) H - bonds (2) O - bonds
 (3) C - bonds (4) N - bonds
MI0017
18. Number of H - bonds between guanine and cytosine are -
 (1) One (2) Two (3) Three (4) Four
MI0018
19. Which purine & pyrimidine bases are paired together by H - bonds in DNA -
 (1) AC & GT
 (2) GC & AT
 (3) GA & TC
 (4) None of the above
MI0019
20. A single stranded DNA is present in -
 (1) TMV (2) Salmonella
 (3) ϕ x 174 (4) Bacteria
MI0020
21. What is the nature of the 2 strands of a DNA duplex :-
 (1) Identical & Complimentary
 (2) Antiparallel & complimentary
 (3) Dissimilar & non complimentary
 (4) Antiparallel & non complimentary
MI0021
22. On an average, how many purine N_2 bases are present in single coil of DNA
 (1) Four (2) Five
 (3) Ten (4) Uncertain
MI0022
23. Distance between two nucleotide pairs of DNA is -
 (1) 0.34 nm (2) 34 \AA
 (3) 3.4μ (4) 34 nm
MI0023
24. In a double strand DNA amount of Guanine is 35% then what will be the amount of cytosine?
 (1) 70% (2) 15% (3) 30% (4) 35%
MI0024
25. Chargaff's rule is given as -
 (1) Purines \neq Pyrimidines
 (2) $A + G = T + C$
 (3) $A + U = G + C$
 (4) $A + T / G + C = \text{Const.}$
MI0025
26. In RNA, Nucleotides are bonded by -
 (1) H - bonds
 (2) Phosphodiester bonds
 (3) Ionic bonds
 (4) Salt linkage
MI0026
27. A nucleoside differs from a nucleotide is not having -
 (1) Phosphate
 (2) Sugar
 (3) Phosphate & sugar
 (4) Nitrogen base
MI0027
28. Wilkins X-ray diffraction showed the diameter of the DNA helix is -
 (1) 10 \AA (2) 20 \AA
 (3) 30 \AA (4) 40 \AA
MI0028
29. In the DNA of an animal percentage of Adenine is 30 then percentage of Guanine will be -
 (1) 40 (2) 30 (3) 20 (4) 70
MI0029
30. Length of one loop of B-DNA -
 (1) 3.4 nm. (2) 0.34 nm.
 (3) 20 nm. (4) 10 nm.
MI0031

- 31.** If base order in one chain of DNA is "ATCGA" then how many no. of H-bond found in DNA duplex :-
(1) 20 (2) 12 (3) 10 (4) 11
MI0032
- 32.** In DNA purine nitrogen bases are :-
(1) Uracil and Guanine
(2) Guanine and Adenine
(3) Adenine and cytosine
(4) None
MI0033
- 33.** Two free ribonucleotide units are interlinked with :
(1) Peptide bond
(2) Disulphide bond
(3) Hydrogen bond
(4) Phosphodiester bond
MI0034
- 34.** Short DNA segment has 80 thymine and 90 guanine bases. The total number of nucleotides are
(1) 160 (2) 40
(3) 80 (4) 340
MI0035
- 35.** Prokaryotic DNA is :-
(1) double stranded circular
(2) single stranded circular
(3) double stranded linear
(4) double stranded RNA as nucleic acid
MI0036
- 36.** Nucleoside is :-
(1) Polymer of nucleic acid
(2) Phosphoric acid + base
(3) Phosphoric acid + sugar + base
(4) Sugar + base
MI0037
- 37.** The back bone of RNA is consists of which of the following sugar :-
(1) Deoxyribose
(2) Ribose
(3) Sucrose
(4) Maltose
MI0038
- 38.** In a nucleotide H_3PO_4 binds to which carbon atom of pentose sugar :-
(1) Only 1st carbon
(2) Only 3rd carbon
(3) Only 5th carbon
(4) Both 3rd and 5th carbon
MI0040
- 39.** DNA is acidic due to :-
(1) Sugar
(2) Phosphoric acid
(3) Purine
(4) Pyrimidine
MI0041
- 40.** RNA contains which of the following base, in place of Thymine of DNA :-
(1) Thymine (2) Uracil
(3) Adenine (4) None of these
MI0043
- 41.** Genetic information are transferred from nucleus to cytoplasm of cell through :-
(1) DNA (2) RNA
(3) Lysosomes (4) ACTH
MI0044
- 42.** If one strand of double stranded DNA, consists of the sequence 3'-ATTCGTAC-5', then the complementary sequence must be—
(1) 5'-UAAGCAUG-3'
(2) 3'-TAAGCATG-5'
(3) 5'-TAAGCATG-3'
(4) 5'-TAAGCATG-3' in the reverse direction
MI0045
- 43.** DNA molecule has uniform diameter due to?
(1) Double stranded
(2) Presence of phosphate
(3) Specific base pairing between purine and pyrimidine
(4) Specific base pairing between purine and purine
MI0047

44. Following structure is related to which compound?



- (1) Adenine (2) Guanine
(3) Uracil (4) Thymine

MI0048

45. If the sequence of bases in one strand of DNA is known then the sequence in other strand can be predicted on the basis of—

- (1) Antiparallel
(2) Complementary
(3) Polarity
(4) Coiling

MI0049

46. The unequivocal proof that DNA is the genetic material came from the experiments of —

- (1) Hershey and chaese (1952)
(2) Frederik Griffith (1928)
(3) Watson and Crick
(4) Meselson and Stal (1958)

MI0050

DNA REPLICATION

47. In process of replication deoxyribonucleoside triphosphate

- (1) acting as substrate
(2) providing energy for polymerisation reaction
(3) acting as an enzyme
(4) both (1) & (2)

MI0051

48. DNA Replication occurs at -

- (1) G_0 & G_1
(2) G_2 - stage
(3) S - Stage
(4) Mitotic phase

MI0053

49. A DNA molecule in which both strands have radioactive thymidine is allowed to duplicate in an environment containing non-radioactive thymidine. What will be the exact number of DNA molecules that contains the radio active thymidine after 3 duplications —

- (1) One (2) Two
(3) Four (4) Eight

MI0054

50. A bacterium with completely radioactive DNA was allowed to replicate in a non-radioactive medium for two generation what % of the bacteria should contain radioactive DNA :-

- (1) 100 % (2) 50 %
(3) 25 % (4) 12.5 %

MI0055

51. In the base sequence of one strand of DNA is GAT, TAG, CAT, GAC what shall be the sequence of its complementary strand-

- (1) CAT, CTG, ATC, GTA
(2) GTA, ATC, CTG, GTA
(3) ATC, GTA, CTG, GTA
(4) CTA, ATC, GTA, CTG

MI0056

52. Method of DNA replication in which two strands of DNA separates and synthesize new strands:-

- (1) Dispersive
(2) Conservative
(3) Semiconservative
(4) Non conservative

MI0057

53. During replication of a bacterial chromosome DNA synthesis starts from a replication origin site and

- (1) RNA primers are not involved
(2) is facilitated by telomerase
(3) moves in one direction of the site
(4) moves in bi-directional way

MI0058

- 54.** The nature of DNA replication is :-
 (1) Conservation
 (2) Non conservative
 (3) Semi-conservative
 (4) Cyanobacteria
MI0060
- 55.** The direction of DNA replication is :
 (1) From 5' end towards 3' end
 (2) From 3' end towards 5' end
 (3) Amino terminus to carboxy terminus
 (4) Carboxy terminus to amino terminus
MI0061
- 56.** Semiconservative replication of DNA was proposed by
 (1) Watson and Crick
 (2) Bateson and Punnett
 (3) Messelson and Stahl
 (4) Avery, McCarty and Macleod
MI0062
- 57.** Which of the following enzyme is used in DNA multiplication :-
 (1) RNA polymerase
 (2) DNA endonuclease
 (3) Exonuclease
 (4) DNA Polymerase
MI0063
- 58.** Mode of DNA replication in *E. coli* is :-
 (1) Conservative and unidirectional
 (2) Semi conservative and unidirectional
 (3) conservative and bidirectional
 (4) Semi conservative and bidirectional
MI0064
- 59.** Which of the following enzyme is used to join DNA fragments :-
 (1) Terminase (2) Endonuclease
 (3) Ligase (4) DNA polymerase
MI0065
- 60.** Okazaki fragments are synthesised on :-
 (1) Leading strands of DNA only
 (2) Lagging strands of DNA only
 (3) Both leading and lagging strands of DNA
 (4) Complementary DNA
MI0066
- 61.** DNA replication includes :-
 (1) DNA ligase
 (2) DNA polymerase and ligase
 (3) RNA polymerase and ligase
 (4) All of these
MI0067
- 62.** In DNA replication, the primer is :-
 (1) A small deoxyribonucleotide polymer
 (2) A small ribonucleotide polymer
 (3) Helix destabilizing protein
 (4) Enzyme taking part in joining nucleotides of new strand
MI0068
- 63.** The strand of DNA, which does not code for anything is referred to as :-
 (1) Template strand
 (2) Antisense strand
 (3) Coding strand
 (4) Noncoding strand
MI0069
- 64.** During DNA replication discontinuously synthesized fragments are later joined by the enzyme –
 (1) Ligase
 (2) DNA polymerase
 (3) RNA primer
 (4) Primase
MI0070
- 65.** Replication fork is –
 (1) Large opening of the DNA helix
 (2) Small opening of the DNA helix
 (3) Tightly coiled part of DNA helix
 (4) Loosely coiled part of DNA helix
MI0071
- 66.** The DNA dependent DNA polymerase catalyse polymerisation in–
 (1) 3' → 5' direction
 (2) 5' → 3' direction
 (3) Depend on the nature of template strand
 (4) both (1) & (2)
MI0072

67. Main enzyme of DNA replication is –
 (1) DNA dependent RNA polymerase
 (2) DNA dependent DNA polymerase
 (3) RNA dependent RNA polymerase
 (4) RNA dependent DNA polymerase

MI0073

RNA, TRANSCRIPTION

68. The Process of copying genetic information from one strand of DNA into Y is termed as Z.

	Y	Z
(1)	Transcription	RNA
(2)	RNA	Transcription
(3)	DNA	Translation
(4)	Replication	RNA

MI0074

69. Code in RNA corresponding to AGCT in DNA-

- (1) TACA (2) UCGA
 (3) TCGA (4) AGUC

MI0075

70. Which of the following is called adaptor molecule-

- (1) DNA (2) m-RNA
 (3) t-RNA (4) RNA

MI0076

71. Which may be attached with Adenine base in RNA -

- (1) Guanine (2) Cytosine
 (3) Uracil (4) Thymine

MI0077

72. In the base sequence of one strand of DNA is CAT, TAG, CAT, CAT, GAC what would be the base sequence of its complementary m-RNA-

- (1) GUA, GUA, CUG, AUC, CUG
 (2) AUG, CUG, CUC, GUA, CUG
 (3) GUA, AUC, GUA, GUA, CUG
 (4) GUC, CUG, CUG, CUA, CUU

MI0078

73. The process by which DNA of the nucleus passes genetic information to m-RNA is called-

- (1) Transcription
 (2) Translocation
 (3) Translation
 (4) Transportation

MI0079

74. A sequence of three consecutive bases in a t-RNA molecule which specifically binds to a complementary codon sequence in m RNA is known as -

- (1) Triplet
 (2) Non - sense codon
 (3) Anti codon
 (4) Termination codon

MI0080

75. t-RNA attach to larger subunit of ribosomes with the help of which loop -

- (1) DHU – loop
 (2) T ψ C loop
 (3) Anticodon loop
 (4) Minor loop

MI0081

76. In three dimensional view the molecule of t-RNA is

- (1) L-shaped (2) S-shaped
 (3) Y- shaped (4) E-shaped

MI0083

77. During transcription, the DNA site at which RNA polymerase binds is called :-

- (1) Promoter (2) Regulator
 (3) Receptor (4) Enhancer

MI0084

78. During transcription, if the nucleotide sequence of the DNA strand that is being coded is ATACG, then the nucleotide sequence in the mRNA would be

- (1) TATGC (2) TCTGG
 (3) UAUGC (4) UATGC

MI0085

- 79.** Which form of RNA has a structure resembling clover leaf ?
 (1) rRNA (2) hnRNA
 (3) mRNA (4) tRNA
MI0086
- 80.** Which one of the following makes use of RNA as a template to synthesize DNA –
 (1) DNA dependant RNA polymerase
 (2) DNA polymerase
 (3) Reverse transcriptase
 (4) RNA polymerase
MI0087
- 81.** The enzyme responsible for transcription is:-
 (1) D.N.A polymerase-I
 (2) R.N.A. polymerase
 (3) Reverse transcriptase
 (4) D.NA. polymerase-III
MI0089
- 82.** If the base sequence in DNA is 5' AAAA 3' then the bases sequence in m-RNA is :-
 (1) 5' UUUU 3'
 (2) 3' UUUU 5'
 (3) 5' AAAA 3'
 (4) 3' TTTT 5'
MI0090
- 83.** Correct order of molecular weight is :-
 (1) DNA < r-RNA < t-RNA
 (2) DNA < m-RNA < r-RNA
 (3) t-RNA < m-RNA < DNA
 (4) t-RNA < DNA < m-RNA
MI0091
- 84.** The genes are responsible for growth and differentiation in an organism through regulation of :-
 (1) Translocation
 (2) Transformation
 (3) Transduction and translation
 (4) Translation and transcription
MI0092
- 85.** Method by which information reaches from DNA to RNA is :-
 (1) Transcription
 (2) Translation
 (3) Transformation
 (4) Transduction
MI0093
- 86.** DNA acts as a template for synthesis of :-
 (1) RNA (2) DNA
 (3) Both '1' and '2' (4) Protein
MI0094
- 87.** Which is soluble RNA :-
 (1) hnRNA (2) rRNA
 (3) mRNA (4) tRNA
MI0095
- 88.** Portion of gene which is transcribed but not translated is :-
 (1) exon (2) intron
 (3) cistron (4) codon
MI0096
- 89.** The smallest RNA is :-
 (1) r-RNA (2) m-RNA
 (3) t-RNA (4) nuclear RNA
MI0097
- 90.** The most abundant RNA of cell is :-
 (1) r-RNA (2) t-RNA
 (3) m-RNA (4) None of these
MI0098
- 91.** One strand of DNA (non template) has base sequence CAG, TCG, GAT. What will be the sequence of bases in m-RNA :-
 (1) AGC, CTA, CTA
 (2) GTC, AGC, CTC
 (3) CAG. UCG. GAU
 (4) GAC. TAG. CTA
MI0099
- 92.** Reverse transcription was discovered by :-
 (1) Watson and Crick (2) Khorana
 (3) Temin an Baltimore (4) Meischer
MI0100

93. Mature eukaryotic m-RNA is recognised by
 (1) Shine dalgarno sequence at 5' end
 (2) 7-methyl guanosine at 5' end and polyadenine bases at 3' end
 (3) Anti shine dalgarno sequence at 5' end
 (4) Presence of coding and noncoding sequence

MI0101

94. Transcription unit in DNA is composed of :
 (1) Promoter (2) Structural gene
 (3) Terminator (4) All

MI0102

95. In DNA promoter is the site for the initiation of
 (1) Replication
 (2) Translation
 (3) Transcription
 (4) Both (2) & (3)

MI0103

96. Main enzyme of transcription—
 (1) DNA dependent DNA polymerase
 (2) DNA dependent RNA polymerase
 (3) RNA dependent RNA polymerase
 (4) RNA dependent DNA polymerase

MI0104

97. Removal of introns and joining of exons is called
 (1) Capping (2) Tailing
 (3) Splicing (4) All

MI0105

GENETIC CODE, TRANSLATION

98. A codon in m-RNA has :-
 (1) 3-bases
 (2) 2-bases
 (3) 1-base
 (4) Number of bases vary

MI0106

99. A DNA strand is directly involved in the synthesis of all the following except-
 (1) Another DNA (2) t-RNA & m-RNA
 (3) r-RNA (4) Protein

MI0107

100. Genetic code was discovered by-
 (1) Nirenberg & Mathei
 (2) Kornberg & Crick
 (3) Khorana & Kornberg
 (4) Gamow

MI0108

101. Genetic code was deciphered by enzymatically synthesizing the trinucleotides by-
 (1) Watson & Crick
 (2) Beadle & Tatum
 (3) Briggs & King
 (4) M.W. Nirenberg

MI0109

102. Nirenberg synthesized an m-RNA containing 34 poly-Adenine (A-A-A-A-A--) and found a polypeptide formed of 11 poly-lysine this proved that genetic code for lysine was
 (1) one-adenine (2) A-A doublet
 (3) A-A-A triplet (4) Many adenines

MI0110

103. 64 Codons constitute genetic code because-
 (1) There was 64 types of amino acid
 (2) 64 types of t-RNA
 (3) Genetic code is triplet
 (4) There are 64 enzymes

MI0111

104. Which codon gives signal for the start of polypeptide (protein) chain synthesis-
 (1) AUG (2) UGA (3) GUA (4) UAG

MI0112

105. The function of non-sense codons is-
 (1) To release polypeptide chain from m-RNA
 (2) To form an unspecified amino acid
 (3) To terminate the message of a gene controlled protein synthesis-
 (4) To convert a sense DNA into non sense DNA

MI0113

106. Termination of chain growth in protein synthesis is brought about by-

- (1) UUG, UGC, UCA
- (2) UCG, GCG, ACC
- (3) UAA, UAG, UGA
- (4) UUG, UAG, UCG

MI0114

107. Genetic code determines-

- (1) Structural pattern of an organism
- (2) Sequence of amino acids in protein chain
- (3) Variation in offsprings
- (4) Constancy of morphological trait

MI0115

108. m - RNA is attached with -

- (1) E.R. (2) Ribosome
- (3) Nucleus (4) Lysosome

MI0116

109. Sometimes the starting codon is GUG in place of AUG, GUG normally code for:-

- (1) Valine (2) Glycine
- (3) Methionine (4) Tyrosine

MI0117

110. Which one of the following triplet codes, is correctly matched with its specificity for an amino acid in protein synthesis or as 'start' or 'stop' codon :-

- (1) UCG – Start
- (2) UUU – Stop
- (3) UGU – Leusine
- (4) UAC – Tyrosine

MI0118

111. During translation initiation in prokaryotes, a GTP molecule is needed in :-

- (1) Formation of formyl-met-tRNA
- (2) Binding of 30S subunit of ribosome with mRNA
- (3) Association of 30 S-mRNA with formyl-met tRNA
- (4) Association of 50 S subunit of ribosome with initiation complex

MI0119

112. Degeneration of a genetic code is attributed to the :-

- (1) First member of a codon
- (2) Second member of a codon
- (3) Entire codon
- (4) Third member of a codon

MI0120

113. What would happen if in a gene encoding a polypeptide of 50 amino acids, 25th codon (UAU) is mutated to UAA :-

- (1) A polypeptide of 24 amino acids will be formed
- (2) Two polypeptides of 24 and 25 amino acids will be formed
- (3) A polypeptide of 49 amino acids will be formed
- (4) A polypeptide of 25 amino acids will be formed

MI0121

114. A sequence of how many nucleotides in messenger RNA makes a codon for an amino acid ?

- (1) Three (2) Four
- (3) One (4) Two

MI0122

115. A strand of DNA has following base sequence 3'–AAAAGTGACTAGTGA–5'. On transcription, it produces an m–RNA which of the following anticodon of t–RNA recognizes the third codon of this mRNA :-

- (1) AAA (2) CUG
- (3) GAC (4) CTG

MI0123

116. Which one of the following statement is true for protein synthesis (translation) :

- (1) Amino acids are directly recognized by m-RNA
- (2) The third base of the codon is less specific
- (3) Only one codon codes for an amino acid
- (4) Every t-RNA molecule has more than one amino acid attachment site

MI0125

117. Translation is the process in which :-

- (1) DNA is formed on DNA template
- (2) RNA is formed on DNA template
- (3) DNA is formed on RNA template
- (4) Protein is formed from RNA message

MI0127

118. In a polypeptide chain of 125 amino acids, if the 25th codon is mutated to UAA, then :-

- (1) A polypeptide of 124 amino acid is formed
- (2) A polypeptide of 25 amino acid is formed
- (3) A polypeptide of 24 amino acid is formed
- (4) Any of the above can be possible

MI0128

119. The first codon discovered by Nirenberg and Mathii was :-

- (1) CCC (2) GGG (3) UUU (4) AAA

MI0129

120. t-RNA attaches, amino acid at its :-

- (1) 3' end (2) 5' end
- (3) Anticodon (4) Loop

MI0131

121. Out of 64 codons only 61 codes for the 20 different amino acids. This character of genetic code is called

- (1) Degeneracy
- (2) Non ambiguous nature
- (3) Universal
- (4) Overlapping

MI0132

122. Anticodons are found in :-

- (1) m RNA (2) t RNA
- (3) r RNA (4) In all

MI0133

123. One-gene-one enzyme hypothesis was proposed by:-

- (1) Beadle and Tatum
- (2) Jacob and Monod
- (3) Lederberg
- (4) Watson and Crick

MI0134

124. Which of the following RNA play structural and catalytic role during translation.

- (1) m-RNA
- (2) t-RNA
- (3) r-RNA
- (4) All

MI0136

125. Transfer of genetic information from a polymer of nucleotides to a polymer of amino acid is –

- (1) Replication
- (2) Transcription
- (3) Translation
- (4) Reverse transcription

MI0137

126. Translation refers to the process of –

- (1) Polymerisation of nitrogen bases
- (2) Polymerisation of nucleotides
- (3) Polymerisation of nucleosides
- (4) Polymerisation of amino acids

MI0138

GENE REGULATION

127. Gene and cistron words are sometimes used synonymously because–

- (1) One cistron contains many genes
- (2) One gene contains many cistrons
- (3) One gene contains one cistron
- (4) One gene contains no cistron

MI0140

128. A gene containing multiple exons and at least one intron is termed as :-

- (1) split gene
- (2) operator gene
- (3) synthetic gene
- (4) epistatic gene

MI0141

129. Gene which is responsible for the synthesis of a polypeptide chain is called :-

- (1) Promotor gene
- (2) Structural gene
- (3) Regulator gene
- (4) Operator gene

MI0142

- 130.** What does "lac" refer to, in what we call the lac operon :-
 (1) Lactose
 (2) Lactase
 (3) Lac insect
 (4) The number 1,00,000

MI0145

- 131.** Which of the following is not produced by E.Coli in the lactose operon –
 (1) β galactosidase
 (2) Transacetylase
 (3) Lactose dehydrogenase
 (4) Lactose permease

MI0146

- 132.** A functional complex comprising a cluster of genes including structural gene, a promoter gene, an operator gene and a regulator gene was discovered by :-
 (1) Beadle and Tatum (1958)
 (2) Watson and crick (1953)
 (3) Jacob and Monod (1961)
 (4) Britten and Davidson (1961)

MI0147

- 133.** Who explained the operon model for the first time
 (1) Francois Jacob
 (2) Jacques Monod
 (3) Francois Jacob and Jacques Monod
 (4) Beadle & Tatum

MI0148

- 134.** The accessibility of promotor regions of prokaryotic DNA by RNA polymerase is in many cases regulated by the interaction of some protein with sequences termed as –
 (1) Promoter (2) Operator
 (3) Regulator (4) Cistron

MI0149

- 135.** Regulation of lac operon by repressor is referred to as–
 (1) Positive regulation
 (2) Negative regulation
 (3) Both (1) and (2)
 (4) None

MI0150

- 136.** Which is incorrect
 (1) i-gene codes for the repressor of lac operon
 (2) z-gene codes for the beta-galactosidase
 (3) y-gene codes for transacetylase
 (4) three gene products are required for metabolism of lactose

MI0151

- 137.** Which is the primary step for regulation of gene expression, in eukaryotes.
 (1) Transport of m-RNA from nucleus to the cytoplasm
 (2) Translational level
 (3) Processing level
 (4) Transcriptional level

MI0152

- 138.** Find out the correct sequence of structural gene in lac operon
 (1) y, a, z (2) a, z, y (3) z, y, a (4) z, a, y

MI0153

MUTATION

- 139.** The concept of sudden genetic change which breeds true in an organism is visualized as :-
 (1) Natural selection
 (2) Inheritance of acquired characters
 (3) Mutation
 (4) Independent assortment

MI0154

- 140.** Mutation is :-
 (1) An abrupt or discontinuous change which is inherited
 (2) A factor for plant growth
 (3) A change which affects parents only and is never inherited
 (4) A change which affects the offspring of F_2 generation

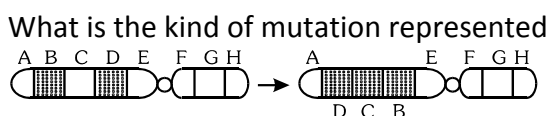
MI0155

- 141.** The exchange of chromosomal parts between non homologous pairs of chromosome :-
 (1) Crossing over/Transduction
 (2) Translocation
 (3) Inversion
 (4) Transition

MI0156

- 142.** Which of the following can be called a mutation:-
 (1) The halving of the chromosome number at meiosis
 (2) The doubling of the chromosome after syngamy
 (3) The possession of an additional chromosome
 (4) All the above
MI0157
- 143.** Mutations are generally :-
 (1) Dominant
 (2) Recessive
 (3) Codominant
 (4) Incompletely dominant
MI0158
- 144.** Genetic or gene mutations occur in :-
 (1) DNA
 (2) RNA
 (3) Protein
 (4) RNA & protein both
MI0159
- 145.** Which of the following undergoes change in mutation :-
 (1) Chromosome
 (2) Structure of gene
 (3) Sequence of gene
 (4) Any of the above
MI0160
- 146.** The locus of point mutation is generally :-
 (1) Gene (2) Chromosome
 (3) Centromere (4) Nucleus
MI0161
- 147.** In the octaploid wheat (56), the haploid (n) and basic numbers (x) of chromosomes are:-
 (1) $n = 21, x = 7$ (2) $n = 28, x = 7$
 (3) $n = 7, x = 28$ (4) $n = 7, x = 21$
MI0162
- 148.** The smallest unit of genetic material which upon mutation produce a phenotypic effect is :-
 (1) Mutons (2) Recon
 (3) Gene (4) Cistron
MI0164
- 149.** Ultimate source of genetic variation is (OR) the process which provides raw material for evolution is:-
 (1) Sexual reproduction
 (2) Meiosis
 (3) Mutation
 (4) Independent assortment
MI0165
- 150.** Type of gene mutation which involves replacement of purine with pyrimidine or vice versa (OR) The substitution of one type of base with another type of base is :-
 (1) Transduction (2) Transversion
 (3) Translocation (4) Transcription
MI0167
- 151.** The minimum requirement for mutation is:-
 (1) Change of triplet codon
 (2) Change in single nucleotide
 (3) Change in whole DNA
 (4) Change in single strand of DNA
MI0168
- 152.** Mutations are :-
 (1) Always useful (2) Mostly useful
 (3) Never useful (4) Rarely useful
MI0169
- 153.** Sickle cell anaemia is an example of :-
 (1) Frame shift mutation
 (2) Point mutation
 (3) Segmental mutation
 (4) Gibberish mutation
MI0170
- 154.** The most striking example of frame shift mutation was found in a disease called :-
 (1) Sickle cell anaemia
 (2) Colour blindness
 (3) Laesh-Nyhn Syndrome
 (4) Thalassemia
MI0171
- 155.** A nutritionally wild type organism, which does not require any additional growth supplement is known as :-
 (1) Holotype (2) Auxotroph
 (3) Prototroph (4) Phenotype
MI0172

156. Given below is the representation of a kind of chromosomal mutation :



- (1) deletion
- (2) duplication
- (3) inversion
- (4) reciprocal translocation

MI0173

157. The "cri-du-chat" syndrome is caused by change in chromosome structure involving:-

- (1) Deletion
- (2) Duplication
- (3) Inversion
- (4) Translocation

MI0174

158. A class of mutation induced by addition or deletion of a nucleotide is called :-

- (1) Missense
- (2) Non-sense
- (3) Substitution
- (4) frame shift

MI0175

159. Chromosomes with genes **abcdefg** becoming **abedcfg** is :

- (1) duplication
- (2) deletion
- (3) translocation
- (4) inversion

MI0176

160. Gene mutation is :

- (1) change in the number of chromosome
- (2) mutation in the phosphodiester linkage
- (3) mutation in the chromosomes
- (4) change in the sequence of nitrogenous bases

MI0177

161. Chromosome number $2n-1$ is an example of

- (1) trisomy
- (2) euploidy
- (3) polyploidy
- (4) monosomy

MI0178

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

- (1) protein structure
- (2) DNA replication
- (3) protein synthesis pattern
- (4) RNA transcription pattern.

MI0179

DNA FINGER PRINTING, HUMAN GENOME PROJECT

163. DNA finger printing was invented by :-

- (1) Kary Mullis
- (2) Alec Jeffery
- (3) Dr. Paul Berg
- (4) Francis Collins

MI0180

164. Which one of the following pairs of terms/ names mean one and the same thing

- (1) Gene pool - genome
- (2) Codon - gene
- (3) Cistron - triplet
- (4) DNA Fingerprinting - DNA profiling

MI0181

165. Which step does not involve in DNA finger printing

- (1) Southern blotting
- (2) Gel electrophoresis
- (3) Restriction enzyme digestion
- (4) Northern blotting

MI0182

166. The technique of transferring DNA fragment separated on agarose gel to a synthetic membrane such as nitrocellulose is known as

- (1) Northern blotting
- (2) Southern blotting
- (3) Western blotting
- (4) Dot blotting

MI0183

167. Western blotting is used for the identification of:-

- (1) DNA
- (2) RNA
- (3) Protein
- (4) All the above

MI0184

168. The approximate number of genes contained in the genome of Kalpana Chawla was

- (1) 40,000
- (2) 30,000
- (3) 80,000
- (4) 1,00,000

MI0186

169. The transfer of protein from electrophoretic gel to nitrocellulose membrane is known as :-

- (1) transferase
- (2) northern blotting
- (3) western blotting
- (4) southern blotting

MI0187

170. Which of the following is not associated with HGP–

- (1) Bioinformatics
- (2) Cloning vectors BAC & YAC
- (3) Automated DNA sequencers
- (4) VNTR

MI0188

171. In density gradient centrifugation, the bulk DNA forms _____ while satellite DNA forms _____.

- (1) Major peak; Minor peak
- (2) Minor peak; Major peak
- (3) Major peak; Major peak
- (4) Minor peak; Minor peak

MI0189

172. Which step is not correct in DNA finger printing–

- (1) Isolation of DNA
- (2) Digestion of DNA by DNA ligase enzyme
- (3) Separation of DNA by electrophoresis
- (4) Hybridisation using labelled VNTR probe

MI0190

173. DNA fingerprinting method is very useful for –

- (1) DNA tests for identity & relationships
- (2) Forensic studies
- (3) Polymorphism
- (4) All of the above

MI0191

EXERCISE-I (Conceptual Questions)

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	2	3	1	1	4	1	4	4	1	2	4	1	4	3
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	3	1	3	2	3	2	3	1	4	2	2	1	2	3	1
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	2	2	4	4	1	4	2	3	2	2	2	3	3	3	2
Que.	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	1	4	3	2	2	4	3	4	3	1	1	4	4	3	2
Que.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Ans.	4	2	3	1	2	2	2	2	2	3	3	3	1	3	2
Que.	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Ans.	1	1	3	4	3	2	3	3	4	1	3	4	2	3	1
Que.	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
Ans.	3	3	2	4	3	2	3	1	4	1	4	3	3	1	3
Que.	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Ans.	3	2	2	1	4	3	4	1	1	3	2	4	3	3	1
Que.	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135
Ans.	1	2	1	3	3	4	3	1	2	1	3	3	3	2	2
Que.	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
Ans.	3	4	3	3	1	2	3	2	1	4	1	2	1	3	2
Que.	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165
Ans.	2	4	2	4	3	3	1	4	4	4	4	1	2	4	4
Que.	166	167	168	169	170	171	172	173							
Ans.	2	3	2	3	4	1	2	4							

EXERCISE-II (Previous Year Questions)

AIPMT/NEET

AIPMT 2006

1. Amino acid sequence, in protein synthesis is decided by the sequence of
(1) tRNA (2) mRNA
(3) cDNA (4) rRNA

MI0193

2. One gene-one enzyme hypothesis was postulated by
(1) R. Franklin
(2) Hershey and Chase
(3) A. Garrod
(4) Beadle and Tatum

MI0194

3. One turn of the helix in a B-form DNA is approximately
(1) 20 nm (2) 0.34 nm
(3) 3.4 nm (4) 2 nm

MI0195

4. Antiparallel strands of a DNA molecule means that
(1) one strand turns anti-clockwise
(2) the phosphate groups of two DNA strands, at their ends, share the same position
(3) the phosphate groups at the start of two DNA strands are in opposite position (pole)
(4) one strand turns clockwise

MI0196

5. Cri-du-chat syndrome in humans is caused by the
(1) Fertilization of an XX egg by a normal Y-bearing sperm
(2) Loss of half of the short arm of chromosome 5
(3) Loss of half of the long arm of chromosome 5
(4) Trisomy of 21st chromosome

MI0197

6. Triticale, the first man-made cereal crop, has been obtained by crossing wheat with—
(1) Rye
(2) Pearl millet
(3) Sugarcane
(4) Barley

MI0198

AIPMT 2007

7. Differentiation of organs and tissues in a developing organism, is associated with :-
(1) Developmental mutations
(2) Differential expression of genes
(3) Lethal mutations
(4) Deletion of genes

MI0202

8. Molecular basis of organ differentiation depends on the modulation in transcription by:
(1) RNA polymerase
(2) Ribosome
(3) Transcription factor
(4) Anticodon

MI0203

9. The Okazaki fragments in DNA chain growth :
(1) Result in transcription
(2) Polymerize in the 3'-to-5' direction and forms replication fork
(3) Prove semi-conservative nature of DNA replication
(4) Polymerize in the 5'-to-3' direction and explain 3'-to-5' DNA replication

MI0204

10. The two polynucleotide chains in DNA are :
(1) Parallel
(2) Discontinuous
(3) Antiparallel
(4) Semiconservative

MI0205

11. In the hexaploid wheat, the haploid (n) and basic (x) numbers of chromosomes are :-
(1) $n = 7$ and $x = 21$
(2) $n = 21$ and $x = 21$
(3) $n = 21$ and $x = 14$
(4) $n = 21$ and $x = 7$

MI0206

AIPMT 2008

12. Which of the following nitrogen base is not found in DNA-
(1) Thymine (2) Cytosine
(3) Guanine (4) Uracil

MI0207

13. Polysome is formed by :-
 (1) A ribosome with several subunits
 (2) Ribosomes attached to each other in a linear arrangement
 (3) Several ribosomes attached to a single mRNA
 (4) Many ribosomes attached to a strand of endoplasmic reticulum

MI0208

14. Which one of the following pairs of nitrogenous bases of nucleic acids, is **wrongly** matched with the category mentioned against it?

- (1) Guanine, Adenine – *Purines*
 (2) Adenine, Thymine – *Purines*
 (3) Thymine, Uracil – *Pyrimidines*
 (4) Uracil, Cytosine – *Pyrimidines*

MI0209

15. In the DNA molecule :-
 (1) the proportion of Adenine in relation to thymine varies with the organism
 (2) there are two strands which run antiparallel one in 5' → 3' direction and other in 3' → 5'
 (3) the total amount of purine nucleotides and pyrimidine nucleotides is not always equal
 (4) there are two strands which run parallel in the 5' → 3' direction

MI0210

16. Which one of the following pairs of codons is **correctly** matched with their function or the signal for the particular amino acid ?

- (1) AUG, ACG – Start/Methionine
 (2) UUA, UCA – Leucine
 (3) GUU, GCU – Alanine
 (4) UAG, UGA – Stop

MI0211

17. Which of the following bond is not related to nucleic acid :
 (1) H-bond
 (2) Ester bond
 (3) Glycosidic bond
 (4) Peptide bond

MI0212

18. Haploids are more suitable for mutation studies than the diploids. This is because :-
 (1) haploids are more abundant in nature than diploids
 (2) All mutations, whether dominant or recessive are expressed in haploids
 (3) Haploids are reproductively more stable than diploids
 (4) Mutagens penetrate in haploids more effectively than in diploids

MI0213

AIPMT 2009

19. What is not true for genetic code :-
 (1) It is unambiguous
 (2) A codon in mRNA is read in a non-contiguous fashion
 (3) It is nearly universal
 (4) It is degenerate

MI0214

20. Removal of introns and joining the exons in a defined order in a transcription unit is called :-

- (1) Capping (2) Splicing
 (3) Tailing (4) Transformation

MI0215

21. Semiconservative replication of DNA was first demonstrated in :-

- (1) *Salmonella typhimurium*
 (2) *Drosophila melanogaster*
 (3) *Escherichia coli*
 (4) *Streptococcus pneumoniae*

MI0216

22. Whose experiments cracked the DNA and discovered unequivocally that a genetic code is a "triplet" :-

- (1) Beadle and tatum
 (2) Nirenberg and Mathaei
 (3) Hershey and Chase
 (4) Morgan and Sturtevant

MI0217

23. Point mutation involves :-

- (1) Deletion
 (2) Insertion
 (3) Change in single base pair
 (4) Duplication

MI0218

AIPMT 2010

24. Select the two correct statements out of the four (a-d) given below about lac operon:

- (a) Glucose or galactose may bind with the repressor and inactivated
- (b) In the absence of lactose the repressor binds with the operator region
- (c) The z-gene codes for permease
- (d) This was elucidated by Francois Jacob and Jacque Monod

The correct statements are :

- (1) (b) and (d) (2) (a) and (b)
- (3) (b) and (c) (4) (a) and (c)

MI0219

25. Satellite DNA is useful tool in :

- (1) Forensic science
- (2) Genetic engineering
- (3) Organ transplantation
- (4) Sex determination

MI0220

26. The one aspect which is not a salient feature of genetic code, is its being :

- (1) Universal (2) Specific
- (3) Degenerate (4) Ambiguous

MI0221

27. Which one of the following does not follow the central dogma of molecular biology?

- (1) *Chlamydomonas* (2) HIV
- (3) Pea (4) Mucor

MI0222

AIPMT (Pre.) 2012

28. PCR and Restriction Fragment Length Polymorphism are the methods for :-

- (1) DNA sequencing
- (2) Genetic fingerprinting
- (3) Study of enzymes
- (4) Genetic transformation

MI0223

AIPMT (Mains) 2012

29. What is it that forms the basis of DNA Fingerprinting?

- (1) The relative amount of DNA in the ridges and grooves of the fingerprints.
- (2) Satellite DNA occurring as highly repeated short DNA segments
- (3) The relative proportions of purines and pyrimidines in DNA
- (4) The relative difference in the DNA occurrence in blood, skin and saliva

MI0224

30. Read the following four statements (A-D):

- (A) In transcription, adenosine pairs with uracil.
- (B) Regulation of *lac* operon by repressor is referred to as positive regulation.
- (C) The human genome has approximately 50,000 genes.
- (D) Haemophilia is a sex-linked recessive disease.

How many of the above statements are right?

- (1) Four (2) One
- (3) Two (4) Three

MI0225

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

- (1) UV and Gamma rays are mutagens
- (2) Change in a single base pair of DNA does not cause mutation
- (3) Deletion and insertion of base pairs cause frame-shift mutations.
- (4) Cancer cells commonly show chromosomal aberrations.

MI0226

NEET-UG 2013

32. Which enzyme/s will be produced in a cell in which there is a nonsense mutation in the lac Y-gene ?

- (1) Lactose permease and transacetylase
- (2) β -galactosidase
- (3) Lactose permease
- (4) Catalase

MI0227

33. DNA fragments generated by the restriction endonucleases in a chemical reaction can be separated by :

- (1) Restriction mapping
- (2) Centrifugation
- (3) Polymerase chain reaction
- (4) Electrophoresis

MI0228

AIPMT 2014

34. Commonly used vectors for human genome sequencing are :-

- (1) T-DNA
- (2) BAC and YAC
- (3) Expression Vectors
- (4) T/A Cloning Vectors

MI0229

AIPMT 2015

35. In sea urchin DNA, which is double stranded, 17% of the bases were shown to be cytosine. The percentages of the other three bases expected to be present in this DNA are :-

- (1) G 17%, A 16.5%, T 32.5%
- (2) G 17%, A 33%, T 33%
- (3) G 8.5%, A 50%, T 24.5%
- (4) G 34%, A 24.5%, T 24.5%

MI0231

36. Gene regulation governing lactose operon of *E.coli* that involves the lac I gene product is :

- (1) Negative and inducible because repressor protein prevents transcription
- (2) Negative and repressible because repressor protein prevents transcription
- (3) Feedback inhibition because excess of β -galactosidase can switch off transcription
- (4) Positive and inducible because it can be induced by lactose

MI0232

37. The movement of a gene from one linkage group to another is called :-

- (1) Duplication
- (2) Translocation
- (3) Crossing over
- (4) Inversion

MI0233

Re-AIPMT 2015

38. Which of the following biomolecules does have a phosphodiester bond ?

- (1) Nucleic acids in a nucleotide
- (2) Fatty acids in a diglyceride
- (3) Monosaccharides in a polysaccharide
- (4) Amino acids in a polypeptide

MI0234

39. Which one of the following is **not** applicable to RNA?

- (1) Chargaff's rule
- (2) Complementary base pairing
- (3) 5' phosphoryl and 3' hydroxyl ends
- (4) Heterocyclic nitrogenous bases

MI0235

40. Satellite DNA is important because it :

- (1) Codes for enzymes needed for DNA replication
- (2) Codes for proteins needed in cell cycle
- (3) Shows high degree of polymorphism in population and also the same degree of polymorphism in an individual, which is heritable from parents to children
- (4) Does not code for proteins and is same in all members of the population

MI0236

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

- (1) Chromosome, genome, nucleotide, gene
- (2) Chromosome, gene, genome, nucleotide
- (3) Genome, chromosome, nucleotide, gene
- (4) Genome, chromosome, gene, nucleotide

MI0237

NEET-I 2016

42. Which of the following is required as inducer(s) for the expression of Lac operon?

- (1) Glucose
- (2) Galactose
- (3) Lactose
- (4) Lactose and galactose

MI0241

43. A complex of ribosomes attached to a single strand of RNA is known as :-

- (1) Polysome
- (2) Polymer
- (3) Polypeptide
- (4) Okazaki fragment

MI0242

44. Which of the following is **not** required for any of the techniques of DNA fingerprinting available at present ?

- (1) Polymerase chain reaction
- (2) Zinc finger analysis
- (3) Restriction enzymes
- (4) DNA-DNA hybridization

MI0243

45. Which one of the following is the starter codon ?
(1) AUG (2) UGA (3) UAA (4) UAG

MI0244

NEET-II 2016

46. Taylor conducted the experiment to prove semiconservative mode of chromosome replication on :
(1) *Drosophila melanogaster*
(2) *E. coli*
(3) *Vinca rosea*
(4) *Vicia faba*

MI0245

47. The equivalent of a structural gene is :
(1) Operon (2) Recon
(3) Muton (4) Cistron

MI0246

48. Which of the following rRNAs acts as structural RNA as well as ribozyme in bacteria ?
(1) 23 S rRNA (2) 5.8 S rRNA
(3) 5 S rRNA (4) 18 S rRNA

MI0247

49. A non-proteinaceous enzyme is :-
(1) Ligase
(2) Deoxyribonuclease
(3) Lysozyme
(4) Ribozyme

MI0248

50. A molecule that can act as a genetic material must fulfill the traits given below, **except** :-
(1) It should be unstable structurally and chemically
(2) It should provide the scope for slow changes that are required for evolution
(3) It should be able to express itself in the form of 'Mendelian characters'
(4) It should be able to generate its replica

MI0249

51. DNA-dependent RNA polymerase catalyzes transcription on one strand of the DNA which is called the :-
(1) Alpha strand (2) Antistrand
(3) Template strand (4) Coding strand

MI0250

52. The mechanism that causes a gene to move from one linkage group to another is called:
(1) Translocation (2) Crossing-over
(3) Inversion (4) Duplication

MI0251

NEET(UG) 2017

53. The final proof for DNA as the genetic material came from the experiments of :
(1) Hershey and Chase
(2) Avery, Mcleod and McCarty
(3) Hargobind Khorana
(4) Griffith

MI0258

54. DNA fragments are:
(1) Negatively charged
(2) Neutral
(3) Either positively or negatively charged depending on their size
(4) Positively charged

MI0259

55. If there are 999 bases in an RNA that codes for a protein with 333 amino acids, and the base at position 901 is deleted such that the length of the RNA becomes 998 bases, how many codons will be altered ?
(1) 11 (2) 33 (3) 333 (4) 1

MI0260

56. During DNA replication, Okazaki fragments are used to elongate:
(1) The lagging strand towards replication fork.
(2) The leading strand away from replication fork.
(3) The lagging strand away from the replication fork.
(4) The leading strand towards replication fork.

MI0261

57. Which of the following RNAs should be most abundant in animal cell ?
(1) t-RNA (2) m-RNA
(3) mi-RNA (4) r-RNA

MI0262

58. What is the criterion for DNA fragments movement on agarose gel during gel electrophoresis ?
(1) The smaller the fragment size, the farther it moves
(2) Positively charged fragments move to farther end
(3) Negatively charged fragments do not move
(4) The larger the fragment size, the farther it moves

MI0263

59. DNA replication in bacteria occurs:

- (1) Within nucleolus
- (2) Prior to fission
- (3) Just before transcription
- (4) During S phase

MI0264

60. Spliceosomes are not found in cells of;

- (1) Fungi
- (2) Animals
- (3) Bacteria
- (4) Plants

MI0265

61. The association of histone H1 with a nucleosome indicates:

- (1) DNA replication is occurring.
- (2) The DNA is condensed into a Chromatin Fibre.
- (3) The DNA double helix is exposed.
- (4) Transcription is occurring.

MI0266

NEET(UG) 2018

62. The experimental proof for semiconservative replication of DNA was first shown in a

- (1) Fungus
- (2) Bacterium
- (3) Plant
- (4) Virus

MI0276

63. Select the **correct** match :

- (1) Alec Jeffreys – *Streptococcus pneumoniae*
- (2) Alfred Hershey and Martha Chase – TMV
- (3) Matthew Meselson – *Pisum sativum* and F. Stahl
- (4) Francois Jacob and Jacques Monod – *Lac* operon

MI0277

64. Select the **correct** Match :

- (1) Ribozyme – Nucleic acid
- (2) $F_2 \times$ Recessive parent - Dihybrid cross
- (3) T.H. Morgan – Transduction
- (4) G. Mendel – Transformation

MI0278

65. AGGTATCGCAT is a sequence from the coding strand of a gene. What will be the corresponding sequence of the transcribed mRNA ?

- (1) AGGUAUCGAU
- (2) UGGTUTCGCAT
- (3) ACCUAUGCGAU
- (4) UCCAUAGCGUA

MI0279

66. All of the following are part of an operon *except* :-

- (1) an operator
- (2) structural genes
- (3) an enhancer
- (4) a promoter

MI0280

NEET(UG) 2019

67. Purines found both in DNA and RNA are :-

- (1) Adenine and thymine
- (2) Adenine and guanine
- (3) Guanine and cytosine
- (4) Cytosine and thymine

MI0348

68. Under which of the following conditions will there be no change in the reading frame of following mRNA ?

5'AACAGCGGUGCUAUU3'

- (1) Insertion of G at 5th position
- (2) Deletion of G from 5th position
- (3) Insertion of A and G and 4th and 5th positions respectively
- (4) Deletion of GGU from 7th, 8th and 9th positions

MI0349

69. Expressed Sequence Tags (ESTs) refers to :-

- (1) Genes expressed as RNA
- (2) Polypeptide expression
- (3) DNA polymorphism
- (4) Novel DNA sequences

MI0350

70. Match the following genes of the *Lac* operon with their respective products :-

- | | |
|------------|----------------------------|
| (a) i gene | (i) β -galactosidase |
| (b) z gene | (ii) Permease |
| (c) a gene | (iii) Repressor |
| (d) y gene | (iv) Transacetylase |

Select the **correct** option.

- | (a) | (b) | (c) | (d) |
|-----------|-------|------|------|
| (1) (i) | (iii) | (ii) | (iv) |
| (2) (iii) | (i) | (ii) | (iv) |
| (3) (iii) | (i) | (iv) | (ii) |
| (4) (iii) | (iv) | (i) | (ii) |

MI0351

NEET(UG) 2019 (Odisha)

71. What will be the sequence of mRNA produced by the following stretch of DNA ?
3'ATGCATGCATGCATG5'

TEMPLATE STRAND

5'TACGTACGTACGTAC3' CODING STRAND

- (1) 3'AUGCAUGCAUGCAUG5'
- (2) 5'UACGUACGUACGUAC3'
- (3) 3'UACGUACGUACGUAC5'
- (4) 5'AUGCAUGCAUGCAUG3'

MI0352

72. Match the following RNA polymerase with their transcribed products :

- (a) RNA polymerase I (i) tRNA
- (b) RNA polymerase II (ii) rRNA
- (c) RNA polymerase III (iii) hnRNA

Select the correct option from the following :

- (1) a-i, b-iii, c-ii
- (2) a-i, b-ii, c-iii
- (3) a-ii, b-iii, c-i
- (4) a-iii, b-ii, c-i

MI0353

73. From the following, identify the **correct combination** of salient features of Genetic Code :-

- (1) Universal, Non-ambiguous, Overlapping
- (2) Degenerate, Overlapping, Commaless
- (3) Universal, Ambiguous, Degenerate
- (4) Degenerate, Non-overlapping, Non-ambiguous

MI0354

74. Which scientist experimentally proved that DNA is the sole genetic material in bacteriophage ?

- (1) Beadle and Tatum
- (2) Messelson and Stahl
- (3) Hershey and Chase
- (4) Jacob and Monod

MI0355

75. In the process of transcription in Eukaryotes, the RNA polymerase I transcribes :-

- (1) mRNA with additional processing, capping and tailing
- (2) tRNA, 5 S rRNA and snRNAs
- (3) rRNAs—28 S, 18 S and 5.8 S
- (4) Precursor of mRNA, hnRNA

MI0356

76. What initiation and termination factors are involved in transcription in prokaryotes ?

- (1) σ and ρ , respectively
- (2) α and β , respectively
- (3) β and γ , respectively
- (4) α and σ , respectively

MI0357

NEET(UG) 2020

77. Which of the following statements is **correct** ?

- (1) Adenine does not pair with thymine
- (2) Adenine pairs with thymine through two H-bonds
- (3) Adenine pairs with thymine through one H-bond
- (4) Adenine pairs with thymine through three H-bonds

MI0358

78. If the distance between two consecutive base pairs is 0.34 nm and the total number of base pairs of a DNA double helix in a typical mammalian cell is 6.6×10^9 bp, then the length of the DNA is approximately :

- (1) 2.7 meters
- (2) 2.0 meters
- (3) 2.5 meters
- (4) 2.2 meters

MI0359

79. Name the enzyme that facilitates opening of DNA helix during transcription.

- (1) RNA polymerase
- (2) DNA ligase
- (3) DNA helicase
- (4) DNA polymerase

MI0360

80. The first phase of translation is :

- (1) Recognition of an anti-codon
- (2) Binding of mRNA to ribosome
- (3) Recognition of DNA molecule
- (4) Aminoacylation of tRNA

MI0361

81. In gel electrophoresis, separated DNA fragments can be visualized with the help of :

- (1) Ethidium bromide in infrared radiation
- (2) Acetocarmine in bright blue light
- (3) Ethidium bromide in UV radiation
- (4) Acetocarmine in UV radiation

MI0362

NEET(UG) 2020 (COVID-19)

82. The term 'Nuclein' for the genetic material was used by :
 (1) Franklin (2) Meischer
 (3) Chargaff (4) Mendel

MI0363

83. In the polynucleotide chain of DNA, a nitrogenous base is linked to the -OH of:
 (1) 2'C pentose sugar (2) 3'C pentose sugar
 (3) 5'C pentose sugar (4) 1'C pentose sugar

MI0364

84. *E.coli* has only 4.6×10^6 base pairs and completes the process of replication within 18 minutes; then the average rate of polymerisation is approximately-
 (1) 2000 base pairs/second
 (2) 3000 base pairs/second
 (3) 4000 base pairs/second
 (4) 1000 base pairs/second

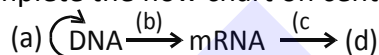
MI0365

85. Which is the basis of genetic mapping of human genome as well as DNA finger printing ?
 (1) Polymorphism in DNA sequence
 (2) Single nucleotide polymorphism
 (3) Polymorphism in hnRNA sequence
 (4) Polymorphism in RNA sequence

MI0366

NEET(UG) 2021

86. Complete the flow chart on central dogma.



- (1) (a)-Replication; (b)-Transcription;
 (c)-Transduction; (d)-Protein
 (2) (a)-Translation; (b)-Replication;
 (c)-Transcription; (d)-Transduction
 (3) (a)-Replication; (b)-Transcription;
 (c)-Translation; (d)-Protein
 (4) (a)-Transduction; (b)-Translation;
 (c)-Replication; (d)-Protein

MI0367

87. Identify the **correct** statement.
 (1) In capping, methyl guanosine triphosphate is added to the 3' end of hnRNA.
 (2) RNA polymerase binds with Rho factor to terminate the process of transcription in bacteria.
 (3) The coding strand in a transcription unit is copied to an mRNA.
 (4) Split gene arrangement is characteristic of prokaryotes.

MI0368

88. What is the role of RNA polymerase III in the process of transcription in eukaryotes ?
 (1) Transcribes rRNAs (28S, 18S and 5.8S)
 (2) Transcribes tRNA, 5s rRNA and snRNA
 (3) Transcribes precursor of mRNA
 (4) Transcribes only snRNAs

MI0369

89. DNA fingerprinting involves identifying differences in some specific regions in DNA sequence, called as :
 (1) Satellite DNA
 (2) Repetitive DNA
 (3) Single nucleotides
 (4) Polymorphic DNA

MI0370

90. If Adenine makes 30% of the DNA molecule, what will be the percentage of Thymine, Guanine and Cytosine in it ?
 (1) T : 20 ; G : 30 ; C : 20
 (2) T : 20 ; G : 20 ; C : 30
 (3) T : 30 ; G : 20 ; C : 20
 (4) T : 20 ; G : 25 ; C : 25

MI0437

91. **Statement I :**

The codon 'AUG' codes for methionine and phenylalanine.

Statement II :

'AAA' and 'AAG' both codons code for the amino acid lysine.

In the light of the above statements, choose the **correct** answer from the options given below.

- (1) Both **statement I** and **Statement II** are true.
 (2) Both **Statement I** and **Statement II** are false
 (3) **Statement I** is correct but **Statement II** is false
 (4) **Statement I** is incorrect but **Statement II** is true

MI0438

92. Which one of the following statements about Histones is **wrong**?

- (1) Histones are organized to form a unit of 8 molecules.
- (2) The pH of histones is slightly acidic.
- (3) Histones are rich in amino acids - Lysine and Arginine.
- (4) Histones carry positive charge in the side chain.

MI0439

NEET(UG) 2021 (Paper-2)

93. Which of the following step is not involved in Southern blot hybridisation ?

- (1) Electrophoresis
- (2) Autoradiography
- (3) Hybridisation
- (4) Mutation

MI0440

94. Which of the following step cannot be considered as a process of regulation of gene expression in eukaryotes ?

- (1) Translational level
- (2) Transcriptional level
- (3) Replication level
- (4) Processing level

MI0441

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

Column I

- a. Eukaryotes
- b. Translation
- c. Clover leaf model
- d. Prokaryotes

Column II

- i. tRNA
- ii. Polycistronic gene
- iii. Monocistronic gene
- iv. Ribosome

- (1) a-ii, b-i, c-iii, d-iv
- (2) a-iii, b-iv, c-i, d-ii
- (3) a-ii, b-iv, c-iii, d-i
- (4) a-i, b-ii, c-iii, d-iv

MI0442

NEET(UG) 2022

96. Read the following statements and choose the set of **correct** statements:

- (a) Euchromatin is loosely packed chromatin
- (b) Heterochromatin is transcriptionally active
- (c) Histone octamer is wrapped by negatively charged DNA in nucleosome
- (d) Histones are rich in lysine and arginine
- (e) A typical nucleosome contains 400 bp of DNA helix

Choose the **correct answer** from the options given below:

- (1) (a), (c), (d) Only
- (2) (b), (e) Only
- (3) (a), (c), (e) Only
- (4) (b), (d), (e) Only

MI0443

97. DNA polymorphism forms the basis of:

- (1) DNA finger printing
- (2) Both genetic mapping and DNA finger printing
- (3) Translation
- (4) Genetic mapping

MI0444

98. The process of translation of mRNA to proteins begins as soon as :

- (1) The larger subunit of ribosome encounters mRNA
- (2) Both the subunits join together to bind with mRNA
- (3) The tRNA is activated and the larger subunit of ribosome encounters mRNA
- (4) The small subunit of ribosome encounters mRNA

MI0445

99. If a geneticist uses the blind approach for sequencing the whole genome of an organism, followed by assignment of function to different segments, the methodology adopted by him is called as:

- (1) Gene mapping
- (2) Expressed sequence tags
- (3) Bioinformatics
- (4) Sequence annotation

MI0446

100. In an *E.coli* strain *i* gene gets mutated and its product can not bind the inducer molecule. If growth medium is provided with lactose, what will be the outcome?

- (1) *z*, *y*, *a* genes will be transcribed
- (2) *z*, *y*, *a* genes will not be translated
- (3) RNA polymerase will bind the promoter region
- (4) Only *z* gene will get transcribed

MI0447

101. If the length of a DNA molecule is 1.1 metres, what will be the approximate number of base pairs ?

- (1) 6.6×10^9 bp
- (2) 3.3×10^6 bp
- (3) 6.6×10^6 bp
- (4) 3.3×10^9 bp

MI0448

102. Ten *E.coli* cells with ^{15}N - dsDNA are incubated in medium containing ^{14}N nucleotide. After 60 minutes, how many *E.coli* cells will have DNA totally free from ^{15}N ?

(1) 40 cells (2) 60 cells
(3) 80 cells (4) 20 cells

MI0449

NEET(UG) 2022 (OVERSEAS)

103. DNA replication is semi-conservative in nature was experimentally proved in eukaryotes by :

(1) Macleod and McCarty
(2) Meselson and Stahl
(3) Talyor and his colleagues
(4) Hershey and Chase

MI0450

104. Which one of the following is not a criterion of genetic material?

(1) Should be able to express itself in the form of Mendelian character.
(2) Should be able to generate its replica.
(3) Should be stable chemically and structurally.
(4) Should not provide the scope for changes for evolution.

MI0451

105. Which one of the following experiments of Frederick Griffith resulted in the discovery of bacterial transformation?

(1) S-strain (heat killed) + R-strain (live) → injected in to Mice → Mice died
(2) S-strain → injected in to Mice → Mice died
(3) R-strain → injected in to Mice → Mice lived
(4) S-strain (heat killed) → injected in to Mice → Mice lived

MI0452

106. Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as Reason (R).

Assertion (A) : Semiconservative replication was experimentally proved by Mathew Meselson and Franklin Stahl (1958).

Reason (R) : Meselson and Stahl used radioactive isotope ^{15}N and equilibrium density gradient centrifugation technique.

In the light of the above statements, choose the **correct** answer from the options given below :

(1) (A) is not correct but (R) is correct
(2) Both (A) and (R) are correct and (R) is the correct explanation of (A)
(3) Both (A) and (R) are correct but (R) is not the correct explanation of (A)
(4) (A) is correct but (R) is not correct

MI0453

107. With respect to nucleosome, which of the following statements is **incorrect**?

(1) Nucleosomes are seen as 'beads on string' under Electron Microscope
(2) DNA is wrapped around positively charged histone octamer to form nucleosome.
(3) Nucleosome is the repeating unit of chromatin
(4) Nucleosome contains 120 bp of DNA helix

MI0454

108. One of the strands of double stranded DNA has base composition as follows : 15% A, 15% T, 40% G and 30% C. What will be the percentage of these bases in the complementary strand?

(1) 15% A, 10% T, 40% G, 15% C
(2) 15% A, 15% T, 40% G, 30% C
(3) 15% A, 40% T, 15% G, 30% C
(4) 15% A, 15% T, 30% G, 40% C

MI0455

109. What would be the proportions of light and hybrid density DNA molecule, respectively if Meselson and Stahl's experiment was continued for 60 minutes ?

(1) 25%, 75% (2) 75%, 25%
(3) 100%, 0% (4) 50%, 50%

MI0456

110. If a DNA molecule is shortened by 25 base pairs, how many helical turns will be reduced from its structure?

- (1) 3 (2) 2.5 (3) 2 (4) 1

MI0457

Re-NEET(UG) 2022

111. In *lac* operon, *z* gene codes for :

- (1) β -galactosidase (2) Permease
(3) Repressor (4) Transacetylase

MI0458

112. Match List - I with List - II :

- | List - I | List - II |
|--|------------------------------|
| (a) In <i>lac</i> operon <i>i</i> gene codes for | (i) transacetylase |
| (b) In <i>lac</i> operon <i>z</i> gene codes for | (ii) permease |
| (c) In <i>lac</i> operon <i>y</i> gene codes for | (iii) β -galactosidase |
| (d) In <i>lac</i> operon <i>a</i> gene codes for | (iv) Repressor |

Choose the **correct answer** from the options given below :

- (1) (a) - (iii), (b) - (ii), (c) - (i), (d) - (iv)
(2) (a) - (iv), (b) - (iii), (c) - (ii), (d) - (i)
(3) (a) - (iv), (b) - (i), (c) - (iii), (d) - (ii)
(4) (a) - (iii), (b) - (i), (c) - (iv), (d) - (ii)

MI0459

113. Given below are two statements :

Statement I :

DNA polymerases catalyse polymerisation only in one direction, that is $5' \rightarrow 3'$

Statement II :

During replication of DNA, on one strand the replication is continuous while on other strand it is discontinuous.

In the light of the above statements, choose the **correct answer** from the options given below :

- (1) Both **Statement I** and **Statement II** are correct
(2) Both **Statement I** and **Statement II** are incorrect
(3) **Statement I** is correct but **Statement II** is incorrect
(4) **Statement I** is incorrect but **Statement II** is correct

MI0460

114. Match List-I with List-II :

- | List-I | List-II |
|-------------------------------------|------------------------------------|
| (a) Bacteriophage $\phi \times 174$ | (i) 48502 base pairs |
| (b) Bacteriophage lambda | (ii) 5386 nucleotides |
| (c) <i>Escherichia coli</i> | (iii) 3.3×10^9 base pairs |
| (d) Haploid content of human DNA | (iv) 4.6×10^6 base pairs |

Choose the **correct answer** from the options given below :

- (1) (a) - (i), (b) - (ii), (c) - (iii), (d) - (iv)
(2) (a) - (ii), (b) - (iv), (c) - (i), (d) - (iii)
(3) (a) - (ii), (b) - (i), (c) - (iv), (d) - (iii)
(4) (a) - (i), (b) - (ii), (c) - (iv), (d) - (iii)

MI0461

115. If DNA contained sulphur instead of phosphorus and proteins contained phosphorus instead of sulfur, what would have been the outcome of Hershey and Chase experiment?

- (1) No radioactive sulfur in bacterial cells
(2) Both radioactive sulfur and phosphorus in bacterial cells
(3) Radioactive sulfur in bacterial cells
(4) Radioactive phosphorus in bacterial cells

MI0462

116. Against the codon 5' UAC 3', what would be the sequence of anticodon on tRNA ?

- (1) 5' AUG 3' (2) 5' ATG 3'
(3) 5' GTA 3' (4) 5' GUA 3'

MI0463

117. If A and C make 30% and 20% of DNA, respectively, what will be the percentage composition of T and G ?

- (1) T : 20%, G : 30% (2) T : 30%, G : 20%
(3) T : 30%, G : 30% (4) T : 20%, G : 20%

MI0464

EXERCISE-II (Previous Year Questions)

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	4	3	3	2	1	2	3	4	3	4	4	3	2	2
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	4	4	2	2	2	3	2	3	1	1	4	2	2	2	3
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	2	2	4	2	2	1	2	1	1	3	4	3	1	2	1
Que.	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	4	4	1	4	1	3	1	1	1	2	3	4	1	2	3
Que.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Ans.	2	2	4	1	1	3	2	4	1	3	2	3	4	3	3
Que.	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Ans.	1	2	4	1	4	3	2	4	1	1	3	2	2	2	3
Que.	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
Ans.	4	2	4	3	2	1	2	4	4	2	4	2	3	4	1
Que.	106	107	108	109	110	111	112	113	114	115	116	117			
Ans.	4	4	4	2	2	1	2	1	3	3	4	2			

EXERCISE-III

Master Your Understanding

EXERCISE-III(A) NCERT BASED QUESTIONS

- Match the following
 (A) $\phi \times 174$ (i) 48502 bp
 (B) Lambda phage (ii) 5386 Nucleotides
 (C) E.Coli (iii) 6.6×10^9 bp
 (D) Human somatic cell (iv) 4.6×10^6 bp
 (1) A(i), B(ii), C(iv), D(iii)
 (2) A(ii), B(i), C(iv), D(iii)
 (3) A(i), B(ii), C(iii), D(iv)
 (4) A(iv), B(iii), C(ii), D(i)
MI0371
- Which of the following pyrimidine base is common in both DNA and RNA
 (1) Adenine
 (2) Guanine
 (3) Cytosine
 (4) Thymine
MI0372
- In nucleoside which of the following bond exists between sugar and nitrogenous base
 (1) Phosphodiester bond
 (2) Hydrogen bond
 (3) Phosphoester bond
 (4) N-glycosidic bond
MI0373
- By which of the following bond phosphoric acid remain linked with 5' carbon of sugar in one nucleotide
 (1) Phosphoester bond
 (2) Phosphodiester bond
 (3) N-Glycosidic bond
 (4) Hydrogen bond
MI0374
- The backbone in a polynucleotide chain is formed due to
 (1) Sugars and nitrogenous bases
 (2) Phosphates and nitrogenous base
 (3) Nitrogenous bases and histones
 (4) Sugar and phosphates
MI0375

- In RNA, every nucleotide residue has an additional – OH group at which of the following position
 (1) 2' position of deoxyribose
 (2) 1' position of ribose sugar
 (3) 3' position of ribose sugar
 (4) 2' position of ribose sugar
MI0376
- DNA as an acidic substance present in nucleus was first identified by
 (1) Wilkins and Franklin
 (2) Watson and Crick
 (3) Friedrich meischer
 (4) Altmann
MI0377
- Double helix model of DNA proposed by watson and crick was based on
 (1) X-ray diffraction data of Meischer
 (2) X-ray crystallography data of Wilkins and Franklin
 (3) X-ray diffraction data of Watson and Crick
 (4) X-ray diffraction data of Chargaff
MI0378
- Regarding to features of double helix struture of DNA which of the following is wrong
 (1) Two polynucleotide chains have antiparallel polarity
 (2) The bases in two strands are paired through phosphodiester bonds
 (3) Adenine form two hydrogen bonds with thymine
 (4) The pitch of the helix is 3.4 nm
MI0379
- In addition to hydrogen bonding which of the following feature confers stability to helical structure
 (1) Phosphodiester bond
 (2) Pairing between one purine and one pyrimidine
 (3) Glycosidic linkage between sugar and nitrogenous base
 (4) The plane of one base pair stacks over the other
MI0380

11. Which of the following is responsible for constant distance between two polynucleotide chains in DNA
 (1) Antiparallel polarity of two polynucleotide strands
 (2) Hydrogen bonding
 (3) Pairing between one purine and one pyrimidine
 (4) All the above
MI0381
12. Phosphoric acid remain associated with which of the following carbon of sugar in a nucleotide :-
 (1) 1st (2) 3rd (3) 4th (4) 5th
MI0382
13. In there are 3.3×10^9 bp present in genome, then what would be the length of the DNA of any somatic cell
 (1) 1.1 meter
 (2) 2.2 meter
 (3) 3.3 meter
 (4) 6.6 meter
MI0383
14. Positive charge and basic nature of histone is due to abundance of
 (1) Lysines and tryptophanes
 (2) Arginines & threonines
 (3) Lysines and arginines
 (4) Tryptophanes and threonines
MI0384
15. Negative charge of DNA is due to which of the following constituent
 (1) Sugar
 (2) Nitrogenous base
 (3) Phosphoric acid
 (4) Hydroxyl group ($-OH$) present on sugar
MI0385
16. A typical nucleosome contains how much amount of DNA
 (1) 100 bp (2) 146 bp
 (3) 200 bp (4) 346 bp
MI0386
17. In a mammalian somatic cell how many nucleosomes are present
 (1) 6.6×10^9 (2) 3.3×10^9
 (3) 3.3×10^7 (4) 3.3×10^5
MI0387
18. Which of the following is actual sequence of packaging of DNA in eukaryotic cells
 (1) DNA \rightarrow Chromatin \rightarrow Nucleosome \rightarrow Chromosome
 (2) DNA Nucleosome Chromosome Chromatin
 (3) DNA Nucleosome Chromatin Chromosome
 (4) DNA Chromosome Chromatin Nucleosome
MI0388
19. The packaging of chromatin at higher level requires additional set of proteins that is known as
 (1) Histone proteins
 (2) NHC proteins
 (3) Homeotic proteins
 (4) Domain proteins
MI0389
20. Regarding to Meselson and Stahl experiment for semi conservative nature of DNA replication select out the wrong statement
 (1) ^{15}N of $^{15}NH_4Cl$ was incorporated in DNA and other compounds
 (2) ^{15}N & ^{14}N can be differentiate on the basis of radioactive activity
 (3) Heavy and normal DNA molecules could be distinguished by CsCl density gradient centrifugation
 (4) ^{15}N used in $^{15}NH_4Cl$ was not a radioactive isotope
MI0390
21. If normal E.Coli is allow to grow for 80 minutes in $^{15}NH_4Cl$ medium then what would be the proportion of hybrid and heavy density DNA molecules
 (1) 1 : 7 (2) 7 : 1 (3) 14 : 2 (4) 1 : 4
MI0391
22. Semiconservative replication of DNA in chromosomes was proved by
 (1) Meselson & Stahl by using $^{15}NH_4Cl$
 (2) Taylor by using $^{15}NH_4Cl$
 (3) Meselson & Stahl by using tritiated thymidine
 (4) Taylor by using tritiated thymidine
MI0392

23. How much duration of time required for replication of 4.6×10^6 pb in *E.coli*
 (1) 83 minutes (2) 18 minutes
 (3) 2 minutes (4) 3 hrs

MI0393

24. What is the rate of polymerisation in *E.coli*
 (1) 20,000 bp per second
 (2) 2000 nucleotides per second
 (3) 2000 bp per minute
 (4) 2000 bp per second

MI0394

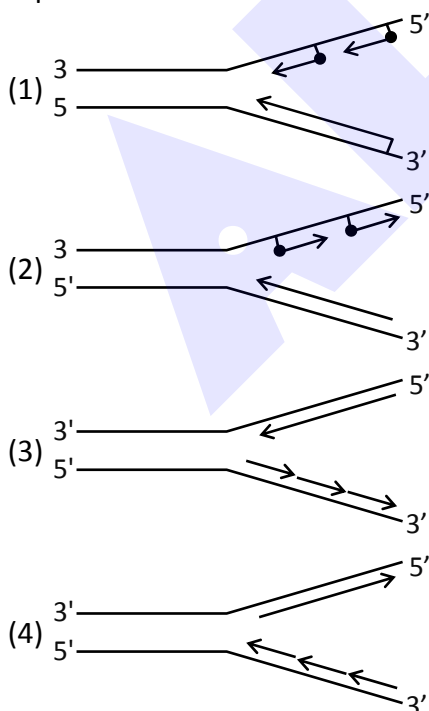
25. During replication large amount of energy get exhausted. The source of this energy is
 (1) Deoxy ribonucleotide triphosphophate
 (2) Deoxyribonucleoside monophosphate
 (3) Deoxyribonucleoside triphosphate
 (4) Both 1 and 2

MI0395

26. Regarding to direction of DNA replication select out the correct one
 (1) $5' \rightarrow 3'$ Template – continuous synthesis
 (2) $3' \rightarrow 5'$ Template – discontinuous synthesis
 (3) $3' \rightarrow 5'$ Template – continuous synthesis
 (4) $5' \rightarrow 3'$ Template – synthesis leadingstrand

MI0396

27. Which of the following scheme of replication fork is true



MI0397

28. Which of the following feature of RNA make it labile and easily degradable
 (1) Single stranded nature
 (2) $2'-OH$ group on sugar
 (3) Phosphodiester bond
 (4) Absence of Hydrogen bond

MI0398

29. Regarding to RNA which of the following feature is wrong
 (1) Catalytic property
 (2) Labile and easily degradable
 (3) Absence of thymine
 (4) Presence of methylated uracil

MI0399

30. Which of the following reason is suitable to explain that RNA is best for expression of characters
 (1) It shows catalytic properties
 (2) Presence of $2'-OH$ group on ribose sugar
 (3) It can directly code for the synthesis of protein
 (4) Presence of uracil

MI0400

31. An adapter molecule that would on one hand read the code and on the other hand would bind to specific amino acids is
 (1) m-RNA (2) r-RNA
 (3) t-RNA (4) hm-RNA

MI0401

32. Which of the following r-RNA show structural as well as catalytic role in bacteria :-
 (1) 16s rRNA (2) 23s rRNA
 (3) 5s rRNA (4) 28s rRNA

MI0402

33. The unequivocal proof that DNA is the genetic material came from the experiments of
 (1) Griffith
 (2) Avery, Macleod & McCarty
 (3) Hershey and Chase
 (4) Watson and Crick

MI0403

34. Radioactive (^{35}S) was detected in
 (1) Supernatant (2) Sediment
 (3) Both (4) Either 1 or 2

MI0404

35. Which of the following is not a criteria for determination of genetic material
 (1) Ability of replication
 (2) Chemically and structurally stable
 (3) It should be non mutable
 (4) Ability to express itself in form of Mendelian characters
MI0405
36. Which of the following is responsible for short life span and fast rate of mutation and evolution
 (1) Presence of DNA
 (2) Presence of highly reactive RNA
 (3) Double stranded genetic material
 (4) Single stranded genetic material
MI0406
37. A transcription unit in DNA is defined primarily by three regions in DNA. These regions are
 (1) Promoter, regulator and structural gene
 (2) Promoter, structural gene and terminator
 (3) Promoter, regulator and terminator
 (4) Promoter, regulator and operator gene
MI0407
38. In transcription unit promoter and terminator are determined on the basis of
 (1) Coding strand (2) Template strand
 (3) Noncoding strand (4) Antisense strand
MI0408
39. In eukaryotes as well as prokaryotes those DNA sequences that appear in mature or processed RNA are known as
 (1) Introns
 (2) Exons
 (3) Recons
 (4) Mutons
MI0409
40. Which of the following exclusive property of transcription found in RNA-polymerase
 (1) Initiation
 (2) Elongation
 (3) Termination
 (4) Processing
MI0410
41. What is the length and constituent base of tail in functional m-RNA
 (1) Poly U – 200-300 bp
 (2) Poly A – 200-300 bp
 (3) Poly C – 200-300 nucleotides
 (4) Poly A – 200-300 nucleotides
MI0411
42. DNA dependent RNA polymerases mediated synthesis of RNA over DNA called transcription. About it which of the following statement is wrong
 (1) In bacteria m-RNA doesnot required any processing to become active
 (2) In eukaryotes there is clearcut division of labour in RNA polymerases
 (3) Absence of introns in RNA of eukaryotes is reminiscent of antiquity
 (4) RNA polymerase - III is responsible for synthesis of sn-RNA
MI0412
43. At which of the following levels, regulation of gene expression in eukaryotes doesnot occur
 (1) Transcription level
 (2) Processing level
 (3) Transport of ribosomal subunits from nucleus to cytoplasm level
 (4) Translation level
MI0413
44. In prokaryotes predominant site for control of gene expression is the
 (1) Control of rate of processing of primary transcript
 (2) Control of rate of transcription initiation
 (3) Control of transport of m-RNA from nucleus to cytoplasm
 (4) Control of Translation
MI0414

- 45.** Which of the following was not involved in deciphering of genetic code
 (1) Physicist George Gamow's permutation combination of 4^3 bases
 (2) H.G. Khorana's based synthesis of RNA molecules with defined combination of bases
 (3) Severo ochoa enzyme for polymerising DNA with defined sequences
 (4) Marshall Nirenberg's cell free system for protein synthesis
MI0415
- 46.** Which of the following mutation forms the genetic basis of proof that codon is a triplet and it is read in a continuous manner
 (1) Chromosomal structural mutations
 (2) Chromosomal numerical mutations
 (3) Substitutional mutation
 (4) Frame shift insertion or deletion mutation
MI0416
- 47.** Change in a single base pair of DNA can be termed as
 (1) Chromosomal aberrations
 (2) Point mutation
 (3) Genomatric mutation
 (4) Aneuploidy
MI0417
- 48.** Which of the following cell cycle event is responsible for aneuploidy based chromosomal disorders
 (1) Failure of G_1 phase
 (2) Failure of DNA replication in s-phase
 (3) Failure of segregation/Disjunction
 (4) Failure of movement of chromosomes
MI0418
- 49.** Which of the folloiwng cell cycle event is responsible for polyploidy phenomenon
 (1) Failure of karyokinesis
 (2) Failure of cytokinesis
 (3) Failure of segregation
 (4) Failure of non-disjunction
MI0419
- 50.** Regarding to role of RNA in protein synthesis find out the odd one
 (1) m-RNA - provides the template
 (2) t-RNA - brings aminoacids
 (3) r-RNA - read genetic code
 (4) sn-RNA splicing
MI0420
- 51.** A m-RNA also has some additional sequences that are not translated called UTR. The function of UTR is
 (1) Charging of t-RNA
 (2) Formation of peptide bond
 (3) Helps in efficient translation
 (4) Helps in translocation
MI0421
- 52.** The t-RNA move away from ribosomes after translocation of ribosome in relation to m-RNA, is known as
 (1) Acylated t-RNA
 (2) Peptidyle t-RNA
 (3) Deacylated t-RNA
 (4) Charged t-RNA
MI0422
- 53.** The repressor of the operon is synthesized :
 (1) All the time
 (2) Certain time
 (3) Non constitutively
 (4) None of these
MI0423
- 54.** HGP was closely associated with the rapid development of a new area in biology called as
 (1) Biofortification
 (2) Bioinformatics
 (3) Biomining
 (4) Biotransformation
MI0424
- 55.** Which of the following is not a goal of HGP
 (1) Identify all the approximately 20,000–25,000 genes
 (2) Store this information in database
 (3) Restrict the related technologies so that other sector donot benefited with it
 (4) Address the ethical, legal and social issues
MI0425

56. The human genome project was coordinated by
 (1) U.S. department of energy
 (2) National institute of health
 (3) Sanger centre
 (4) Both 1 and 2

MI0426

57. Which of the following organism was not used as model organism is human genome project
 (1) Arabidopsis
 (2) Caenorhabditis elegans
 (3) Rice
 (4) Hyacinthus orientalis

MI0427

58. Approach of HGP focused on identifying all the genes that expressed as RNA is known as
 (1) Expressed sequence tags
 (2) Sequence annotation
 (3) Polymerase chain reaction
 (4) Dermatoglyphics

MI0428

59. Automated DNA sequencers worked on the principle of a method developed by
 (1) Watson
 (2) Chargaff
 (3) Frederick sanger
 (4) Singer and Nicolson

MI0429

60. Regarding to salient features of human genome select out the incorrect one
 (1) Human genome contains 3164.7 million bps
 (2) Human genome contain 30,000 genes
 (3) y-chromosome has largest number of genes
 (4) 1.4 million locations are associated with SNPs

MI0430

61. Match the following
- | | |
|--------------------------------------|------------------|
| A. SNPs | i 3164.7 million |
| B. Genes of chromosome No. 1 | ii 1.4 Million |
| C. Total No. of Human genes | iii 30000 |
| D. Total nucleotides of human genome | iv 2968 |

	A	B	C	D
(1)	ii	iii	iv	i
(2)	ii	iv	iii	i
(3)	ii	iv	i	iii
(4)	iv	ii	iii	i

MI0431

62. If an inheritable mutation is observed in a population at high frequency, it is referred as
 (1) DNA polyploidy
 (2) DNA polymorphism
 (3) DNA redundancy
 (4) Sequence annotation

MI0432

63. Due to high degree of polymorphism, size of VNTR varies from
 (1) 0.1 – 2 kb
 (2) 0.1 – 2000 kb
 (3) 0.1 – 20 kb
 (4) 0.1 – 200 kb

MI0433

64. What is the basis of heredity
 (1) Variations
 (2) Inheritance
 (3) Genetics
 (4) Recombination

MI0434

65. Which of the following is not the feature of human genome ?
 (1) Less than 2 percent of the genome code for protein
 (2) Chromosome 1 has fewest gene (231)
 (3) Repetitive sequences make up very large portion of human genome
 (4) The functions are unknown for over 50% of the discovered genes

MI0435

66. The sequence of which chromosome was completed in May 2006 ?
 (1) Chromosome number 1
 (2) Chromosome number 2
 (3) Chromosome number 5
 (4) Chromosome number 10

MI0436

EXERCISE-III(B) (ANALYTICAL QUESTIONS)

67. A point mutation which involves change of A→G, C→T, C→G and T→A in DNA are :-
 (1) Transition, Transition, Transversion, Transversion
 (2) Transition, Transversion, Transition, Transversion
 (3) Transversion, Transition, Transversion, Transition
 (4) None of the above

MI0295

68. A segment of DNA has a base sequence : AAG, GAG, GAC, CAA, CCA-. Which one of the following sequence represents a frame shift mutation :-
 (1) AAG, GAG, GAC, CAA, CCA-
 (2) AAG, AGG, ACC, AAC, CA-
 (3) ACG, GAG, GAC, CAG, CC-
 (4) AAG, GCG, GAC, CAG, CC-

MI0296

69. If the DNA-codons are ATGATGATG and a cytosine base is inserted at the beginning which of the following would be the result:-
 (1) A non sense mutation
 (2) CA, TGA, TGA, TG
 (3) CAT, GAT, GAT, G
 (4) C, ATG, ATG, ATG

MI0297

70. A completely radioactive double stranded DNA molecule undergoes two round of replication in a non radioactive medium. What will be the radioactive status of the four daughter molecules :-
 (1) All four still contain radioactivity
 (2) Radioactivity is lost from all four
 (3) Out of four, three contain radioactivity
 (4) Half of the number contain no radioactivity

MI0298

71. Consider the following sequence on m-RNA AUGGCAGUGCCA. Assuming that genetic code is overlap then how many number of codon may be present on this genetic code
 (1) 9
 (2) 10
 (3) 8
 (4) 11

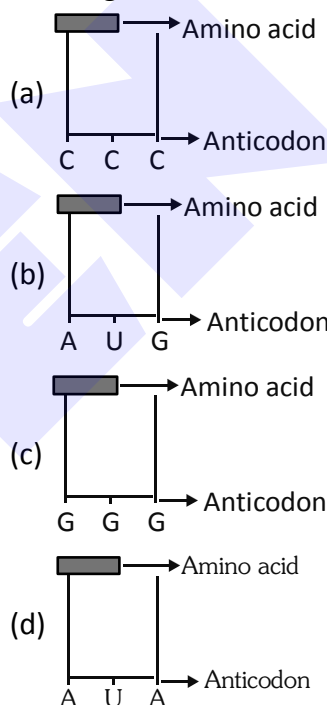
MI0299

72. A normal DNA molecule is continuously replicate in N¹⁵ medium than what is the % of lighter DNA in 4th generation.

- (1) 12.5% (2) 25%
 (3) 0% (4) 6.25%

MI0300

73. Find out the sequence of binding of the following amino acyl – t-RNA complexes during translation to an m-RNA transcribed by a DNA segment having the base sequence. 3' ATACCATGGGG 5'. Choose the answer showing the correct order of alphabets:-



- (1) a, b, c, d (2) d, a, b, c
 (3) a, b, d, c (4) b, a, c, d

MI0301

74. KHORANA synthesized two RNAs (a) with repeat sequence of AB and (b) with repeat sequence of ABC the polypeptides coded by (a) & (b) are respectively :-

- (1) Homopolypeptides in both (a) and (b)
 (2) Heteropolypeptides in both
 (3) Homopolypeptide in (a) & heteropoly peptide in (b)
 (4) Heteropolypeptide in (a) & homopoly peptide in (b)

MI0302

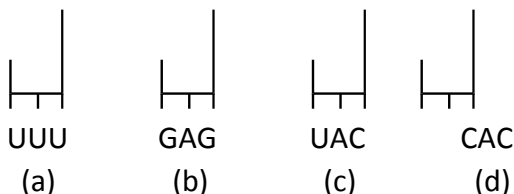
75. Which of the following m-RNA will be translated completely :-

(A) 5' AUG UGA UUA AAG AAA 3'
 (B) 5' AUG AUA UUG CCC UGA 3'
 (C) 5' AGU UCC AGA CUC UAA 3'
 (D) 5' AUG UAC AGU AAC UAG 3'

(1) (A) and (B) (2) (B) and (D)
 (3) (C) and (D) (4) (A) and (D)

MI0303

76. In a m-RNA sequence of N₂-base is 5' AUG GUG CUC AAA' 3'. What is the correct sequence of anticodons which recognizes codons of m-RNA :-



(1) a, b, c, d (2) d, a, b, c
 (3) c, d, b, a (4) d, c, b, a

MI0304

77. Suppose evolution on earth has occurred in such a way that there are 96 amino acids instead of 20. DNA has 12 different types of bases and DNA synthesis occur in the same way as today. The minimum number of bases per codon would be

(1) 12 (2) 8 (3) 2 (4) 3

MI0305

78. Assume that there are 6 types of nitrogen bases available and 40 types of amino acid are available for protein synthesis, then in genetic code each codon made up by minimum how many nitrogen bases ?

(1) 3 (2) 4 (3) 5 (4) 2

MI0306

79. In a segment of DNA 3.2 kilobases are present. If DNA segment has 820 adenine molecules, then what will be number of cytosine ?

(1) 1560 (2) 1480
 (3) 780 (4) 740

MI0307

80. Which statement is correct ?

(a) Degeneracy of code is related to, third member of codon
 (b) Single codon, codes for more than one amino acid
 (c) In codon first two bases are more specific
 (d) In codons, third base is wobble
 (e) Codon is nearly universal
 (1) a, b, c, d, e (2) a, b, d
 (3) a, c, d (4) a, c, d, e

MI0308

81. Both the strand of DNA are not copied during transcription because :-

(1) If both strands act as a template, they would code for RNA with different sequence
 (2) The two RNA molecules, if produced simultaneously would be complementary to each other, hence would form a double stranded RNA
 (3) They would code, for RNA molecules with same sequences
 (4) Both (1) and (2) are correct

MI0309

82. The salient features of B-DNA are -

(i) It is made of two polynucleotide chain
 (ii) Back bone is constituted by sugar and nitrogen base
 (iii) Two chains have parallel polarity
 (iv) Bases in two strands are paired through H-bonds
 (v) The two chains are coiled in a left handed fashion
 (1) i, iv, v (2) i, iv
 (3) i, ii, v (4) i, ii, iii, iv, v

MI0310

83. Which is incorrect for genetic code-

(i) The codon is triplet
 (ii) 64 codons code for amino acids
 (iii) Genetic code is unambiguous
 (iv) Genetic code is nearly universal
 (v) AUG has dual functions
 (1) only ii
 (2) ii & iii
 (3) iii, iv + v
 (4) All are correct

MI0311

84. Which is correct –

- (i) t-RNA has an anticodon loop that has bases complementary to the codon
 - (ii) t-RNA has an amino acid acceptor end
 - (iii) t-RNA are specific for each amino acid
 - (iv) For initiation, there is specific t-RNA that is referred to as initiator t-RNA
 - (v) For termination there is specific t-RNA that is referred to as terminator t-RNA
- (1) i, ii (2) i, ii, iii
(3) i, ii, iii, iv (4) i, ii, iii, iv, v

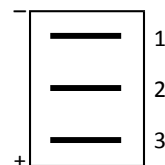
MI0312

85. **E. coli** cells with a mutated *z* gene of the *lac* operon cannot grow in medium containing only lactose as the source of energy because –

- (1) They cannot synthesize functional β -galactosidase
- (2) They cannot transport lactose from the medium into the cell
- (3) The lac operon is constitutively active in these cells
- (4) In the presence of glucose, *E. coli* cells do not utilize lactose

MI0313

86. DNA fragments separated by gel electrophoresis are shown. Mark the correct statement :-



- (1) Band 3 contains more positively charged DNA molecule than 1
- (2) Band '3' indicates more charge density than 1 and 2
- (3) Band 1 has longer DNA fragment than 2 and 3
- (4) All the bands have equal length and charges but differ in base composition

MI0315

EXERCISE-III

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	3	4	1	4	4	3	2	2	4	3	4	2	3	3
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	3	3	3	2	2	1	4	2	4	3	3	2	2	4	3
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	3	2	3	1	3	2	2	1	2	2	4	3	3	2	3
Que.	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	4	2	3	2	3	3	3	1	2	3	4	4	1	3	3
Que.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Ans.	2	2	3	2	2	1	1	2	3	4	2	3	2	4	2
Que.	76	77	78	79	80	81	82	83	84	85	86				
Ans.	3	3	1	3	4	4	2	1	3	1	3				