

Exercise-I (Conceptual Questions)

Build Up Your Understanding

GENETIC MATERIAL, DNA

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

BMI001

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

BMI002

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

BMI003

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

BMI004

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

BMI005

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

BMI006

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

BMI007

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

BMI008

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

BMI009

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

BMI010

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

BMI011

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

BMI012

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
BMI013
14. Prokaryotic genetic system contains :-
 (1) DNA & histones
 (2) RNA & histones
 (3) Either DNA or histones
 (4) DNA but no histones
BMI014
15. A N₂-base together with pentose sugar and phosphate forms (or) building-block unit of nucleic acid is :-
 (1) Nucleoside (2) Polypeptide
 (3) Nucleotide (4) Amino acid
BMI015
16. Which of the following is not a pyrimidine N₂ base ?
 (1) Thymine (2) Cytosine
 (3) Guanine (4) Uracil
BMI016
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
BMI017
18. Number of H-bonds between guanine and cytosine are :-
 (1) One (2) Two (3) Three (4) Four
BMI018
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
BMI019
20. A single stranded DNA is present in:-
 (1) TMV (2) *Salmonella*
 (3) ϕ x 174 (4) Bacteria
BMI020
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
BMI021
22. On an average, how many purine N₂ bases are present in single coil of DNA :-
 (1) Four (2) Five
 (3) Ten (4) Uncertain
BMI022
23. Distance between two nucleotide pairs of DNA is :-
 (1) 0.34 nm (2) 34 Å
 (3) 3.4 μ (4) 34 nm
BMI023
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%
BMI024
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 = Const.
BMI025
26. In RNA, Nucleotides are bonded by :-
 (1) H-bonds
 (2) Phosphodiester bonds
 (3) Ionic bonds
 (4) Salt linkage
BMI026

- 27.** A nucleoside differs from a nucleotide is not having :-
 (1) Phosphate
 (2) Sugar
 (3) Phosphate & sugar
 (4) Nitrogen base
BMI027
- 28.** Wilkins X-ray diffraction showed the diameter of the DNA helix is :-
 (1) 10 Å (2) 20 Å
 (3) 30 Å (4) 40 Å
BMI028
- 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
BMI029
- 30.** Length of one loop of B- DNA:-
 (1) 3.4 nm. (2) 0.34 nm.
 (3) 20 nm. (4) 10 nm.
BMI030
- 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
BMI031
- 32.** In DNA purine nitrogen bases are :
 (1) Uracil and Guanine
 (2) Guanine and Adenine
 (3) Adenine and cytosine
 (4) None
BMI032
- 33.** Two free ribonucleotide units are interlinked with :-
 (1) Peptide bond
 (2) Disulphide bond
 (3) Hydrogen bond
 (4) Phosphodiester bond
BMI033
- 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
BMI034
- 35.** Prokaryotic DNA is :-
 (1) double stranded circular
 (2) single stranded circular
 (3) double stranded linear
 (4) double stranded RNA as nucleic acid
BMI035
- 36.** Nucleoside is :
 (1) Polymer of nucleic acid
 (2) Phosphoric acid + base
 (3) Phosphoric acid + sugar + base
 (4) Sugar + base
BMI036
- 37.** The back bone of RNA is consists of which of the following sugar ?
 (1) Deoxyribose (2) Ribose
 (3) Sucrose (4) Maltose
BMI037
- 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
BMI038
- 39.** DNA is acidic due to:-
 (1) Sugar
 (2) Phosphoric acid
 (3) Purine
 (4) Pyrimidine
BMI039

40. RNA contains which of the following base, in place of Thymine of DNA ?
 (1) Thymine
 (2) Uracil
 (3) Adenine
 (4) None of these

BMI040

41. Genetic information are transferred from nucleus to cytoplasm of cell through :-
 (1) DNA (2) RNA
 (3) Lysosomes (4) ACTH

BMI041

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

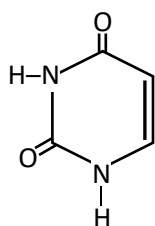
BMI042

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

BMI043

44. Following structure is related to which compound?

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



BMI044

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

BMI045

46. The unequivocal proof that DNA is the genetic material came from the experiments of :
 (1) Hershey and Chase (1952)
 (2) Frederik Griffith (1928)
 (3) Watson and Crick
 (4) Meselson and Stal (1958)

BMI046

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) and (2)

BMI047

48. DNA Replication occurs at :-
 (1) G₀ & G₁ (2) G₂-stage
 (3) S-Stage (4) Mitotic phase

BMI048

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 radioactive thymidine after 3 duplications ?
 (1) One (2) Two
 (3) Four (4) Eight

BMI049

- 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 %
BMI050
- 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
BMI051
- 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
BMI052
- 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
BMI053
- 54.** The nature of DNA replication is :-
 (1) Conservation
 (2) Non-conservative
 (3) Semi-conservative
 (4) Cyanobacteria
BMI054
- 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
BMI055
- 56.** Semiconservative replication of DNA was proposed by :-
 (1) Watson and Crick
 (2) Bateson and Punnett
 (3) Meselson and Stahl
 (4) Avery, McCarty and MacLeod
BMI056
- 57.** Which of the following enzyme is used in DNA multiplication?
 (1) RNA polymerase
 (2) DNA endonuclease
 (3) Exonuclease
 (4) DNA Polymerase
BMI057
- 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
BMI058
- 59.** Which of the following enzyme is used to join DNA fragments?
 (1) Terminase (2) Endonuclease
 (3) Ligase (4) DNA polymerase
BMI059
- 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
BMI060

61. DNA replication includes :-

- (1) DNA ligase
- (2) DNA polymerase and ligase
- (3) RNA polymerase and ligase
- (4) All of these

BMI061

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

BMI062

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

BMI063

64. During DNA replication discontinuously synthesized fragments are later joined by the enzyme :-

- (1) Ligase
- (2) DNA polymerase
- (3) RNA primer
- (4) Primase

BMI064

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

BMI065

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) and (2)

BMI066

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

BMI067

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

BMI068

69. Code in RNA corresponding to AGCT in DNA:

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

BMI069

70. Which of the following is called adaptor molecule?

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

BMI070

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

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

BMI071

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

BMI072

- 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
BMI073
- 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
BMI074
- 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
BMI075
- 76.** In three dimensional view the molecule of t-RNA is:-
 (1) L-shaped (2) S-shaped
 (3) Y- shaped (4) E-shaped
BMI076
- 77.** During transcription, the DNA site at which RNA polymerase binds is called ?
 (1) Promoter (2) Regulator
 (3) Receptor (4) Enhancer
BMI077
- 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
BMI078
- 79.** Which form of RNA has a structure resembling clover leaf ?
 (1) rRNA (2) hnRNA
 (3) mRNA (4) tRNA
BMI079
- 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
BMI080
- 81.** The enzyme responsible for transcription is
 (1) DNA polymerase-I
 (2) RNA polymerase
 (3) Reverse transcriptase
 (4) DNA polymerase-III
BMI081
- 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'
BMI082
- 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
BMI083
- 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
BMI084

85. Method by which information reaches from DNA to RNA is ?

- (1) Transcription (2) Translation
(3) Transformation (4) Transduction

BMI085

86. DNA acts as a template for synthesis of :-

- (1) RNA (2) DNA
(3) Both (1) and (2) (4) Protein

BMI086

87. Which is soluble RNA :-

- (1) hnRNA (2) rRNA
(3) mRNA (4) tRNA

BMI087

88. Portion of gene which is transcribed but not translated is ?

- (1) exon (2) intron
(3) cistron (4) codon

BMI088

89. The smallest RNA is :-

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

BMI089

90. The most abundant RNA of cell is :-

- (1) r-RNA (2) t-RNA
(3) m-RNA (4) None of these

BMI090

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

BMI091

92. Reverse transcription was discovered by :-

- (1) Watson and Crick
(2) Khorana
(3) Temin and Baltimore
(4) Miescher

BMI092

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

BMI093

94. Transcription unit in DNA is composed of :-

- (1) Promoter (2) Structural gene
(3) Terminator (4) All

BMI094

95. In DNA promoter is the site for the initiation of :-

- (1) Replication (2) Translation
(3) Transcription (4) Both (2) and (3)

BMI095

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

BMI096

97. Removal of introns and joining of exons is called :-

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

BMI097

GENETIC CODE, TRANSLATION

98. A codon in m-RNA has :-

- (1) 3-bases
(2) 2-bases
(3) 1-base
(4) Number of bases vary

BMI098

- 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
BMI099
- 100.** Genetic code was discovered by:-
(1) Nirenberg & Mathei
(2) Kornberg & Crick
(3) Khorana & Kornberg
(4) Gamow
BMI100
- 101.** Genetic code was deciphered by enzymatically synthesizing the trinucleotides by:-
(1) Watson & Crick (2) Beadle & Tatum
(3) Briggs & King (4) M.W. Nirenberg
BMI101
- 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
BMI102
- 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
BMI103
- 104.** Which codon gives signal for the start of polypeptide (protein) chain synthesis:-
(1) AUG (2) UGA (3) GUA (4) UAG
BMI104
- 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.
BMI105
- 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
BMI106
- 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
BMI107
- 108.** m - RNA is attached with :-
(1) E.R. (2) Ribosome
(3) Nucleus (4) Lysosome
BMI108
- 109.** Sometimes the starting codon is GUG in place of AUG, GUG normally code for:-
(1) Valine (2) Glycine
(3) Methionine (4) Tyrosine
BMI109
- 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 – Leucine (4) UAC – Tyrosine
BMI110

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

BMI111

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

BMI112

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

BMI113

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

BMI114

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

BMI115

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

- (1) Amino acids are directly recognized by mRNA
- (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

BMI116

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

BMI117

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

BMI118

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

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

BMI119

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

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

BMI120

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

BMI121

122. Anticodons are found in :-

- (1) mRNA (2) tRNA
(3) rRNA (4) In all

BMI122

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

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

BMI123

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

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

BMI124

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

BMI125

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

BMI126

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

BMI127

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

BMI128

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

BMI129

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

BMI130

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

BMI131

- 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)

BMI132

- 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

BMI133

- 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

BMI134

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

BMI135

- 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

BMI136

- 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

BMI137

- 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

BMI138

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

BMI139

- 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 F₂ generation

BMI140

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

BMI141

- 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
BMI142
- 143.** Mutations are generally :-
 (1) Dominant
 (2) Recessive
 (3) Codominant
 (4) Incompletely dominant
BMI143
- 144.** Genetic or gene mutations occur in :-
 (1) DNA
 (2) RNA
 (3) Protein
 (4) RNA & protein both
BMI144
- 145.** Which of the following undergoes change in mutation?
 (1) Chromosome
 (2) Structure of gene
 (3) Sequence of gene
 (4) Any of the above
BMI145
- 146.** The locus of point mutation is generally :-
 (1) Gene (2) Chromosome
 (3) Centromere (4) Nucleus
BMI146
- 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) $n = 7, x = 21$
BMI147
- 148.** The smallest unit of genetic material which upon mutation produce a phenotypic effect is:
 (1) Mutons (2) Recon
 (3) Gene (4) Cistron
BMI148
- 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
BMI149
- 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
BMI150
- 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
BMI151
- 152.** Mutations are :-
 (1) Always useful (2) Mostly useful
 (3) Never useful (4) Rarely useful
BMI152
- 153.** Sickle cell anaemia is an example of :-
 (1) Frame shift mutation
 (2) Point mutation
 (3) Segmental mutation
 (4) Gibberish mutation
BMI153

154. The most striking example of frame shift mutation was found in a disease called :-

- (1) Sickle cell anaemia
- (2) Colour blindness
- (3) Lesch–Nyhan Syndrome
- (4) Thalassemia

BMI154

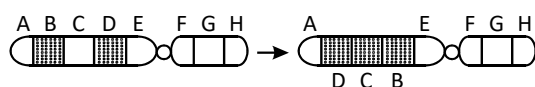
155. A nutritionally wild type organism, which does not require any additional growth supplement is known as :-

- (1) Holotype
- (2) Auxotroph
- (3) Prototroph
- (4) Phenotype

BMI155

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

What is the kind of mutation represented?



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

BMI156

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

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

BMI157

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

BMI158

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

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

BMI159

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

BMI160

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

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

BMI161

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.

BMI162

DNA FINGERPRINTING, HUMAN GENOME PROJECT

163. DNA finger printing was invented by :-

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

BMI163

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

BMI164

165. Which step does not involve in DNA finger printing ?

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

BMI165

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

BMI166

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

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

BMI167

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

BMI168

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

BMI169

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

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

BMI170

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

BMI171

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

BMI172

173. DNA fingerprinting method is very useful for:

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

BMI173

EXERCISE-I (Conceptual Questions)
ANSWER KEY

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

Exercise-II (Previous Year Questions)

AIPMT/NEET

AIPMT 2014

1. Commonly used vectors for human genome sequencing are :-
- (1) T-DNA
 - (2) BAC and YAC
 - (3) Expression Vectors
 - (4) T/A Cloning Vectors

BMI207

AIPMT 2015

2. 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%

BMI208

3. 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

BMI209

4. The movement of a gene from one linkage group to another is called :-
- (1) Duplication
 - (2) Translocation
 - (3) Crossing over
 - (4) Inversion

BMI210

Re-AIPMT 2015

5. 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

BMI211

6. 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

BMI212

7. 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

BMI213

8. 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

BMI214

NEET-I 2016

9. 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

BMI215

10. A complex of ribosomes attached to a single strand of RNA is known as :-
 (1) Polysome (2) Polymer
 (3) Polypeptide (4) Okazaki fragment

BMI216

11. 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

BMI217

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

BMI218

NEET-II 2016

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

BMI219

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

BMI220

15. 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

BMI221

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

BMI222

17. A molecule that can act as a genetic material must fulfil 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

BMI223

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

BMI224

19. 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

BMI225

NEET(UG) 2017

20. 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

BMI226

21. DNA fragments are:-

- (1) Negatively charged
(2) Neutral
(3) Either positively or negatively charged depending on their size
(4) Positively charged

BMI227

22. 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

BMI228

23. 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

BMI229

24. Which of the following RNAs should be most abundant in animal cell ?

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

BMI230

25. 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

BMI231

26. DNA replication in bacteria occurs:-

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

BMI232

27. Spliceosomes are not found in cells of:-

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

BMI233

28. The association of histone H_1 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.

BMI234

NEET(UG) 2018	NEET(UG) 2019																												
29. The experimental proof for semi-conservative replication of DNA was first shown in a:- (1) Fungus (2) Bacterium (3) Plant (4) Virus BMI235	34. Purines found both in DNA and RNA are :- (1) Adenine and thymine (2) Adenine and guanine (3) Guanine and cytosine (4) Cytosine and thymine BMI240																												
30. Select the correct match :- (1) Alec Jeffreys – <i>Streptococcus pneumoniae</i> (2) Alfred Hershey and – TMV Martha Chase (3) Matthew Meselson – <i>Pisum sativum</i> and F. Stahl (4) Francois Jacob and – <i>Lac</i> operon Jacques Monod BMI236	35. 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 BMI241																												
31. Select the correct Match :- (1) Ribozyme – Nucleic acid (2) F₂ × Recessive parent – Dihybrid cross (3) T.H. Morgan – Transduction (4) G. Mendel – Transformation BMI237	36. Expressed Sequence Tags (ESTs) refers to :- (1) Genes expressed as RNA (2) Polypeptide expression (3) DNA polymorphism (4) Novel DNA sequences BMI242																												
32. AGGTATCGCAT is a sequence from the coding strand of a gene. What will be the corresponding sequence of the transcribed mRNA ? (1) AGGUAUCGCAU (2) UGGTUTCGCAT (3) ACCUAUGCGAU (4) UCCAUAGCGUA BMI238	37. Match the following genes of the <i>Lac</i> operon with their respective products :- <table><tr><td>(a) i gene</td><td>(i) β-galactosidase</td></tr><tr><td>(b) z gene</td><td>(ii) Permease</td></tr><tr><td>(c) a gene</td><td>(iii) Repressor</td></tr><tr><td>(d) y gene</td><td>(iv) Transacetylase</td></tr></table> Select the correct option. <table><tr><td>(a)</td><td>(b)</td><td>(c)</td><td>(d)</td></tr><tr><td>(1) (i)</td><td>(iii)</td><td>(ii)</td><td>(iv)</td></tr><tr><td>(2) (iii)</td><td>(i)</td><td>(ii)</td><td>(iv)</td></tr><tr><td>(3) (iii)</td><td>(i)</td><td>(iv)</td><td>(ii)</td></tr><tr><td>(4) (iii)</td><td>(iv)</td><td>(i)</td><td>(ii)</td></tr></table> BMI243	(a) i gene	(i) β-galactosidase	(b) z gene	(ii) Permease	(c) a gene	(iii) Repressor	(d) y gene	(iv) Transacetylase	(a)	(b)	(c)	(d)	(1) (i)	(iii)	(ii)	(iv)	(2) (iii)	(i)	(ii)	(iv)	(3) (iii)	(i)	(iv)	(ii)	(4) (iii)	(iv)	(i)	(ii)
(a) i gene	(i) β-galactosidase																												
(b) z gene	(ii) Permease																												
(c) a gene	(iii) Repressor																												
(d) y gene	(iv) Transacetylase																												
(a)	(b)	(c)	(d)																										
(1) (i)	(iii)	(ii)	(iv)																										
(2) (iii)	(i)	(ii)	(iv)																										
(3) (iii)	(i)	(iv)	(ii)																										
(4) (iii)	(iv)	(i)	(ii)																										
33. All of the following are part of an operon <i>except</i> :- (1) an operator (2) structural genes (3) an enhancer (4) a promoter BMI239																													

NEET(UG) 2019 (Odisha)

38. 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'

BMI244

39. 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

BMI245

40. From the following, identify the **correct combination** of salient features of Genetic Code :-
 (1) Universal, Non-ambiguous, Overlapping
 (2) Degenerate, Overlapping, Comma less
 (3) Universal, Ambiguous, Degenerate
 (4) Degenerate, Non-overlapping, Non-ambiguous

BMI246

41. Which scientist experimentally proved that DNA is the sole genetic material in bacteriophage ?
 (1) Beadle and Tatum
 (2) Meselson and Stahl
 (3) Hershey and Chase
 (4) Jacob and Monod

BMI247

42. 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

BMI248

43. 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

BMI249

NEET(UG) 2020

44. 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

BMI250

45. 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

BMI251

46. Name the enzyme that facilitates opening of DNA helix during transcription: -
 (1) RNA polymerase (2) DNA ligase
 (3) DNA helicase (4) DNA polymerase

BMI252

47. 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

BMI253

48. 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

BMI254

NEET(UG) 2020 (COVID-19)

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

BMI255

50. 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

BMI256

51. *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

BMI257

52. 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

BMI258

NEET(UG) 2021

53. 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

BMI259

54. 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.

BMI260

55. 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

BMI261

56. 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

BMI262

57. Which is the "Only enzyme" that has "Capability" to catalyse Initiation, Elongation and Termination in the process of transcription in prokaryotes?

- (1) DNA dependent DNA polymerase
(2) DNA dependent RNA polymerase
(3) DNA Ligase
(4) DNase

BMI263

58. Which of the following RNAs is not required for the synthesis of protein?

- (1) mRNA (2) tRNA
(3) rRNA (4) siRNA

BMI264

59. 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

BMI265

NEET(UG) 2022

60. 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

BMI266

61. DNA polymorphism forms the basis of:-

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

BMI267

62. 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.

BMI268

63. 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

BMI269

64. 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

BMI270

65. 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

BMI271

66. 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

BMI272

67. 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)

BMI273

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

BMI274

69. 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)	4.6×10^9 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)

BMI275

70. 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

BMI276

71. In *lac* operon, *z* gene codes for :-

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

BMI277

NEET (UG) 2023

72. Unequivocal proof that DNA is the genetic material was first proposed by

- (1) Alfred Hershey and Martha Chase
- (2) Avery, MacLeod and McCarthy
- (3) Wilkins and Franklin
- (4) Frederick Griffith

BMI364

73. Among eukaryotes, replication of DNA takes place in -

- (1) S phase (2) G_1 phase
- (3) G_2 phase (4) M phase

BMI365

74. What is the role of RNA polymerase III in the process of transcription in Eukaryotes ?

- (1) Transcription of tRNA, 5S rRNA and snRNA
- (2) Transcription of precursor of mRNA
- (3) Transcription of only snRNAs
- (4) Transcription of rRNAs (28S, 18S and 5.8S)

BMI366

75. Expressed Sequence Tags (ESTs) refers to

- (1) All genes that are expressed as proteins.
- (2) All genes whether expressed or unexpressed.
- (3) Certain important expressed genes.
- (4) All genes that are expressed as RNA.

BMI367

76. How many different proteins does the ribosome consist of?

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

BMI368

77. Match List I with List II.

- | List I | List II |
|-------------|---------------------------|
| A. Gene 'a' | I. β -galactosidase |
| B. Gene 'y' | II. Transacetylase |
| C. Gene 'i' | III. Permease |
| D. Gene 'z' | IV. Repressor protein |
- Choose the **correct** answer from the options given below :
- (1) A-II, B-III, C-IV, D-I
 - (2) A-III, B-IV, C-I, D-II
 - (3) A-III, B-I, C-IV, D-II
 - (4) A-II, B-I, C-IV, D-III

BMI369

78. Given below are two statements:

Statement I : RNA mutates at a faster rate.

Statement II : Viruses having RNA genome and shorter life span mutate and evolve faster.

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

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

BMI370

79. Given below are two statements:

Statement-I : In prokaryotes, the positively charged DNA is held with some negatively charged proteins in a region called nucleoid.

Statement-II : In eukaryotes, the negatively charged DNA is wrapped around the positively charged histone octamer to form nucleosome.

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

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

BMI371

80. Which one of the following is the sequence on corresponding coding strand, if the sequence on mRNA formed is as follows
5' AUCGAUCGAUCGAUCGAUCG
AUCG 3'?

- (1) 3' UAGCUAGCUAGCUAGCUA
GCUAGCUAGC 5'
- (2) 5' ATCGATCGATCGATCGATCG
ATCGATCG 3'
- (3) 3' ATCGATCGATCGATCGATCG
ATCGATCG 5'
- (4) 5' UAGCUAGCUAGCUAGCUAGC
UAGCUAGC 3'

BMI372

NEET (UG) 2023 (Manipur)

81. The last chromosome sequenced in Human Genome Project was :

- (1) Chromosome 6
- (2) Chromosome 1
- (3) Chromosome 22
- (4) Chromosome 14

BMI373

82. Name the component that binds to the operator region of an operon and prevents RNA polymerase from transcribing the operon.

- (1) Promotor
- (2) Regulator protein
- (3) Repressor protein
- (4) Inducer

BMI374

83. Given below are two statements :

Statement-I: The process of copying genetic information from one strand of the DNA into RNA is termed as transcription.

Statement-II: A transcription unit in DNA is defined primarily by the three regions in the DNA i.e., a promoter, the structural gene and a terminator.

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

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

BMI375

84. Which scientist conducted an experiment with ^{32}P and ^{35}S labelled phages for demonstrating that DNA is the genetic material ?

(1) James D. Watson and F.H. C. Crick
(2) A. D Hershey and M.J. Chase
(3) F. Griffith
(4) O.T. Avery, C.M. MacLeod and M. McCarty

BMI376

85. **Statement-I:** RNA being unstable, mutate at a faster rate.

Statement-II: RNA can directly code for synthesis of proteins hence can easily express the characters.

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

(1) Statement I is true but Statement II is false
(2) Statement I is false but Statement II is true
(3) Both Statement I and Statement II are true
(4) Both Statement I and Statement II are false

BMI377

86. Select the **correct** statements about sickle cell anaemia.

(A) There is a change in gene for beta globin.
(B) In the beta globin, there is valine in the place of Lysine.
(C) It is an example of point mutation.
(D) In the normal gene U is replaced by A.

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

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

BMI378

87. Which one of the following acts as an inducer for lac operon ?

(1) Sucrose (2) Lactose
(3) Glucose (4) Galactose

BMI379

88. With reference to Hershey and Chase experiments. Select the **correct** statements.

(A) Viruses grown in the presence of radioactive phosphorus contained radioactive DNA.
(B) Viruses grown on radioactive sulphur contained radioactive proteins.
(C) Viruses grown on radioactive phosphorus contained radioactive protein.
(D) Viruses grown on radioactive sulphur contained radioactive DNA.
(E) Viruses grown on radioactive protein contained radioactive DNA.

Choose the **most appropriate** answer from the options given below :

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

BMI380

89. The salient features of genetic code are :

(A) The code is palindromic
(B) UGA act as initiator codon
(C) The code is unambiguous and specific
(D) The code is nearly universal

Choose the **most appropriate** answer from the options given below :

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

BMI381

NEET-UG 2024

90. The lactose present in the growth medium of bacteria is transported to the cell by the action of :-

- (1) Beta-galactosidase
- (2) Acetylase
- (3) Permease
- (4) Polymerase

BMI382

91. A transcription unit in DNA is defined primarily by the three regions in DNA and these are with respect to upstream and down stream end;

- (1) Repressor, Operator gene, Structural gene
- (2) Structural gene, Transposons, Operator gene
- (3) Inducer, Repressor, Structural gene
- (4) Promotor, Structural gene, Terminator

BMI383

92. Match List-I with List-II.

	List-I		List-II
A.	Frederick Griffith	I.	Genetic code
B.	Francois Jacob & Jacque Monod	II.	Semi-conservative mode of DNA replication
C.	Har Gobind Khorana	III.	Transformation
D.	Meselson & Stahl	IV.	Lac operon

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

- (1) A-III, B-II, C-I, D-IV
- (2) A-III, B-IV, C-I, D-II
- (3) A-II, B-III, C-IV, D-I
- (4) A-IV, B-I, C-II, D-III

BMI384

93. Which of the following statement is **correct** regarding the process of replication in *E.coli*?

- (1) The DNA dependent DNA polymerase catalyses polymerization in one direction that is $3' \rightarrow 5'$
- (2) The DNA dependent RNA polymerase catalyses polymerization in one direction, that is $5' \rightarrow 3'$
- (3) The DNA dependent DNA polymerase catalyses polymerization in $5' \rightarrow 3'$ as well as $3' \rightarrow 5'$ direction
- (4) The DNA dependent DNA polymerase catalyses polymerization in $5' \rightarrow 3'$ direction.

BMI385

94. Which one is the correct product of DNA dependent RNA polymerase to the given template ?

3'TACATGGCAAATATCCATTCA5'

- (1) 5'AUGUACCGUUUAUAGGUAAGU3'
- (2) 5'AUGUAAAGUUUAUAGGUAAGU3'
- (3) 5'AUGUACCGUUUAUAGGGAAGU3'
- (4) 5'ATGTACCGTTTATAGGTAAGT3'

BMI386

95. Match List-I with List-II.

List I		List II	
(A)	RNA polymerase III	(I)	snRNPs
(B)	Termination of transcription	(II)	Promotor
(C)	Splicing of Exons	(III)	Rho factor
(D)	TATA box	(IV)	SnRNAs, tRNA

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

- (1) A-II, B-IV, C-I, D-III
- (2) A-III, B-II, C-IV, D-I
- (3) A-III, B-IV, C-I, D-II
- (4) A-IV, B-III, C-I, D-II

BMI387

RE-NEET-UG 2024

96. In a chromosome, there is a specific DNA sequence responsible for initiating replication. It is called as :-

(1) recognition sequence
(2) cloning site
(3) restriction site
(4) *ori* site

BMI388

97. Given below are two statements regarding RNA polymerase in prokaryotes.

Statement-I: In prokaryotes, RNA polymerase is capable of catalysing the process of elongation during transcription.

Statement-II: RNA polymerase associate transiently with 'Rho' factor to initiate transcription.

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

(1) Statement I is true but Statement II is false
(2) Statement I is false but Statement II is true
(3) Both Statement I and Statement II are true
(4) Both Statement I and Statement II are false

BMI389

98. Which of the following is a nucleotide ?

(1) Uridine (2) Adenylic acid
(3) Guanine (4) Guanosine

BMI390

99. **Statement I:** In eukaryotes there are three RNA polymerases in the nucleus in addition to the RNA polymerase found in the organelles.

Statement-II: All the three RNA polymerases in eukaryotic nucleus have different roles.

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

(1) Statement I is true but Statement II is false
(2) Statement I is false but Statement II is true
(3) Both Statement I and Statement II are true
(4) Both Statement I and Statement II are false

BMI391

100. Match List-I with List-II.

	List I		List II
A.	Histones	I.	Loosely packed chromatin
B.	Nucleosome	II.	Densely packed chromatin
C.	Euchromatin	III.	Positively charged basic proteins
D.	Heterochromatin	IV.	DNA wrapped around histone octamer

Choose the correct answer from the options given below :

(1) A-IV, B-III, C-II, D-I
(2) A-III, B-I, C-IV, D-II
(3) A-II, B-III, C-IV, D-I
(4) A-III, B-IV, C-I, D-II

BMI392

101. **Statement-I:** In the *lac* operon, the *z* gene codes for beta-galactosidase which is primarily responsible for the hydrolysis of lactose into galactose and glucose.

Statement-II: In addition to lactose, glucose or galactose can also induce *lac* operon.

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

(1) Statement I is true but Statement II is false
(2) Statement I is false but Statement II is true
(3) Both Statement I and Statement II are true
(4) Both Statement I and Statement II are false

BMI393

102. Aneuploidy is a chromosomal disorder where chromosome number is not the exact copy of its haploid set of chromosomes, due to:

- A. Substitution B. Addition
C. Deletion D. Translocation
E. Inversion

Choose the **most appropriate** answer from the options given below:

- (1) C and D only (2) D and E only
(3) A and B only (4) B and C only

BMI394

EXERCISE-II (Previous Year Questions)

ANSWER KEY

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

Exercise-III

Master Your Understanding

(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)
BMI278
- Which of the following pyrimidine base is common in both DNA and RNA:-
 (1) Adenine
 (2) Guanine
 (3) Cytosine
 (4) Thymine
BMI279
- 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
BMI280
- 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
BMI281

- 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
BMI282
- 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
BMI283
- DNA as an acidic substance present in nucleus was first identified by:-
 (1) Wilkins and Franklin
 (2) Watson and Crick
 (3) Friedrich Miescher
 (4) Altmann
BMI284
- Double helix model of DNA proposed by Watson and Crick was based on:-
 (1) X-ray diffraction data of Miescher
 (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
BMI285

9. Regarding to features of double helix structure 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

BMI286

10. 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

BMI287

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

BMI288

12. Phosphoric acid remain associated with which of the following carbon of sugar in a nucleotide ?

- (1) 1st (2) 3rd (3) 4th (4) 5th

BMI289

13. If 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

BMI290

14. Positive charge and basic nature of histone is due to abundance of:-

- (1) Lysine and tryptophan
- (2) Arginine & threonine
- (3) Lysine and arginine
- (4) Tryptophan and threonine

BMI291

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

BMI292

16. A typical nucleosome contains how much amount of DNA?

- (1) 100 bp
- (2) 146 bp
- (3) 200 bp
- (4) 346 bp

BMI293

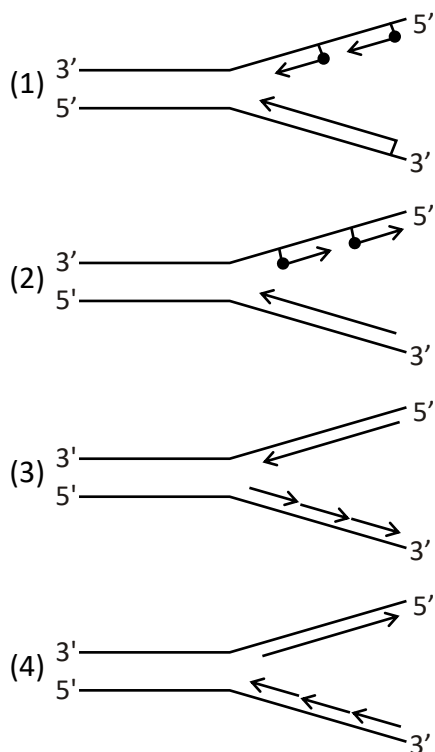
17. In a mammalian somatic cell how many nucleosomes are present?

- (1) 6.6×10^9
- (2) 3.3×10^9
- (3) 3.3×10^7
- (4) 3.3×10^5

BMI294

- 18.** Which of the following is actual sequence of packaging of DNA in eukaryotic cells?
 (1) DNA → Chromatin → Nucleosome → Chromosome
 (2) DNA → Nucleosome → Chromosome → Chromatin
 (3) DNA → Nucleosome → Chromatin → Chromosome
 (4) DNA → Chromosome → Chromatin → Nucleosome
BMI295
- 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
BMI296
- 20.** Regarding to Meselson and Stahl experiment for semi conservative nature of DNA replication select out the wrong statement: -
 (1) ^{15}N of $^{15}\text{NH}_4\text{Cl}$ 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 $^{15}\text{NH}_4\text{Cl}$ was not a radioactive isotope
BMI297
- 21.** If normal *E. coli* is allow to grow for 80 minutes in $^{15}\text{NH}_4\text{Cl}$ 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
BMI298
- 22.** Semiconservative replication of DNA in chromosomes was proved by:-
 (1) Meselson & Stahl by using $^{15}\text{NH}_4\text{Cl}$
 (2) Taylor by using $^{15}\text{NH}_4\text{Cl}$
 (3) Meselson & Stahl by using tritiated thymidine
 (4) Taylor by using tritiated thymidine
BMI299
- 23.** How much duration of time required for replication of 4.6×10^6 bp in *E. coli*?
 (1) 83 minutes (2) 18 minutes
 (3) 2 minutes (4) 3 hrs
BMI300
- 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
BMI301
- 25.** During replication large amount of energy get exhausted. The source of this energy is
 (1) Deoxyribonucleotide triphosphate
 (2) Deoxyribonucleoside monophosphate
 (3) Deoxyribonucleoside triphosphate
 (4) Both (1) and (2)
BMI302
- 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 of leading strand
BMI303

27. Which of the following diagram of replication fork is correct?



BMI304

28. Which of the following feature of RNA make it labile and easily degradable?

- (1) Single stranded nature
- (2) 2'-OH group on ribose sugar
- (3) Phosphodiester bond
- (4) Absence of Hydrogen bond

BMI305

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

BMI306

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

BMI307

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) mRNA
- (2) rRNA
- (3) tRNA
- (4) hnRNA

BMI308

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

BMI309

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

BMI310

34. Radioactive (^{35}S) was detected in:-

- (1) Supernatant
- (2) Sediment
- (3) Both
- (4) Either (1) or (2)

BMI311

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 the form of Mendelian characters

BMI312

- 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
BMI313
- 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
BMI314
- 38.** In transcription unit promoter and terminator are determined on the basis of :-
 (1) Coding strand
 (2) Template strand
 (3) Non-coding strand
 (4) Antisense strand
BMI315
- 39.** In eukaryotes those DNA sequences that appear in mature or processed RNA are known as :-
 (1) Introns (2) Exons
 (3) Recons (4) Mutons
BMI316
- 40.** Which of the following exclusive property of transcription found in RNA-polymerase?
 (1) Initiation (2) Elongation
 (3) Termination (4) Processing
BMI317
- 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
BMI318
- 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 does not required any processing to become active
 (2) In eukaryotes there is clear cut 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 snRNA
BMI319
- 43.** At which of the following levels, regulation of gene expression in eukaryotes do not occur: -
 (1) Transcriptional initiation level
 (2) Processing level
 (3) Transport of ribosomal subunits from nucleus to cytoplasm level
 (4) Translation level
BMI320
- 44.** In prokaryotes, predominant site for control of gene expression is the :-
 (1) Control of processing of primary transcript
 (2) Control of transcription initiation
 (3) Control of transport of m-RNA from nucleus to cytoplasm
 (4) Control of Translation
BMI321

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.
BMI322
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
BMI323
47. Change in a single base pair of DNA can be termed as:-
 (1) Chromosomal aberrations
 (2) Point mutation
 (3) Genomatic mutation
 (4) Aneuploidy
BMI324
48. Which of the following cell cycle event is responsible for aneuploidy based on 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
BMI325
49. Which of the following 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
BMI326
50. Regarding to role of RNA in protein synthesis find out the odd one:-
 (1) m-RNA - provides the template
 (2) t-RNA - brings amino acids
 (3) r-RNA - read genetic code
 (4) sn-RNA splicing
BMI327
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
BMI328
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) Peptidyl t-RNA
 (3) Deacylated t-RNA
 (4) Charged t-RNA
BMI329
53. The repressor of the operon is synthesized
 (1) All the time
 (2) Certain time
 (3) Non constitutively
 (4) None of these
BMI330

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
BMI331
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 do not benefited with it
 (4) Address the ethical, legal and social issues
BMI332
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)
BMI333
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*
BMI334
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
BMI335
59. Automated DNA sequencers worked on the principle of a method developed by:-
 (1) Watson
 (2) Chargaff
 (3) Frederick Sanger
 (4) Singer and Nicolson
BMI336
60. Regarding to salient features of human genome select out the incorrect one:-
 (1) Human genome contains 3164.7 million nucleotide bases.
 (2) Human genome contain 30,000 genes.
 (3) Y-chromosome has largest number of genes.
 (4) 1.4 million locations are associated with SNPs.
BMI337
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

BMI338
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
BMI339

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

BMI340

64. What is the basis of heredity?

- (1) Variations (2) Inheritance
(3) Genetics (4) Recombination

BMI341

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

BMI342

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

BMI343

(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

BMI344

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–

BMI345

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

BMI346

70. A completely radioactive double stranded DNA molecule undergoes two rounds 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

BMI347

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

BMI348

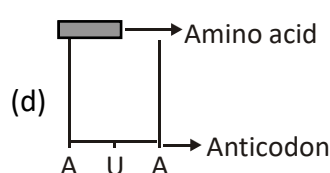
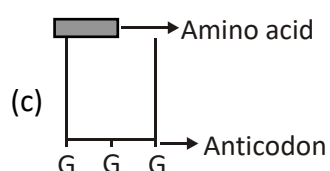
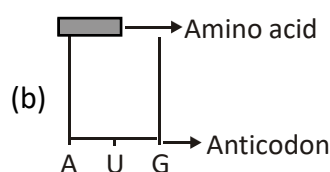
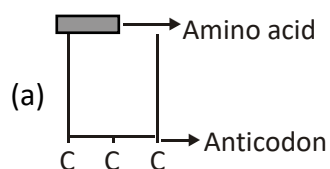
72. A normal DNA molecule is continuously replicate in N^{15} medium than what is the % of lighter DNA in 4th generation?

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

BMI349

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

BMI350

74. **KHORANA** synthesized two RNAs (a) with repeat sequence of AB and (b) with repeat sequence of ABC the polypeptides coded by (a) and (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)

BMI351

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'

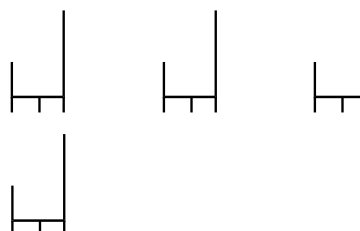
(C) 5' AGU UCC AGA CUC UAA 3'

(D) 5' AUG UAC AGU AAC UAG 3'

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

BMI352

76. In a m-RNA sequence of N_2 -base is 5' AUG GUG CUC AAA' 3'. What is the correct sequence of anticodons which recognizes codons of m-RNA ?



UUU GAG UAC CAC
(a) (b) (c) (d)

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

BMI353

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

BMI354

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

BMI355

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

BMI356

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

BMI357

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

BMI358

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

BMI359

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

BMI360

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

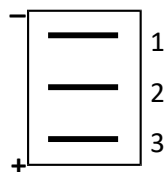
BMI361

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 beta 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.

BMI362

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

BMI363

87. Amino acid sequence, in protein synthesis is decided by the sequence of:-

- | | |
|-----------|-----------|
| (1) t-RNA | (2) m-RNA |
| (3) c-DNA | (4) r-RNA |

BMI174

88. One gene-one enzyme hypothesis was postulated by:-

- (1) R. Franklin
- (2) Hershey and Chase
- (3) A. Garrod
- (4) Beadle and Tatum

BMI175

89. 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

BMI176

90. 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

BMI177

91. 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

BMI178

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

BMI179

93. 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

BMI180

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

BMI181

95. 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.

BMI182

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

BMI183

97. 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 $x = 7$

BMI184

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

BMI185

99. 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

BMI186

100. 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

BMI187

101. 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

BMI188

102. 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

BMI189

103. Which of the following bond is not related to nucleic acid ?

- (1) H-bond
- (2) Ester bond
- (3) Glycosidic bond
- (4) Peptide bond

BMI190

104. 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.

BMI191

105. 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

BMI192

106. 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

BMI193

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

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

BMI194

108. Whose experiments cracked the DNA and discovered unequivocally that a genetic code is a "triplet" ?

- (1) Beadle and Tatum
- (2) Nirenberg and Matthaei
- (3) Hershey and Chase
- (4) Morgan and Sturtevant

BMI195

109. Point mutation involves :-

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

BMI196

110. 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 Jacques Monod.

The **correct** statements are :-

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

BMI197

111. Satellite DNA is useful tool in :-

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

BMI198

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

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

BMI199

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

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

BMI200

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

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

BMI201

115. 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

BMI202

116. 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

BMI203

117. 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.

BMI204

118. 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

BMI205

119. 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

BMI206

EXERCISE-III

ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	2	3	4	1	4	4	3	2	2	4	3	4	2	3	3
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	3	3	3	2	2	1	4	2	4	3	3	2	2	4	3
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	3	2	3	1	3	2	2	1	2	2	4	3	3	2	3
Question	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Answer	4	2	3	2	3	3	3	1	2	3	4	4	1	3	3
Question	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Answer	2	2	3	2	2	1	1	2	3	4	2	3	2	4	2
Question	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Answer	3	3	1	3	4	4	2	1	3	1	3	2	4	3	3
Question	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
Answer	2	1	2	3	4	3	4	4	3	2	2	4	4	2	2
Question	106	107	108	109	110	111	112	113	114	115	116	117	118	119	
Answer	2	3	2	3	1	1	4	2	2	2	3	2	2	4	

Important Notes