

## Questionbank Biology

**UNIT-VII****Chapter-6. Molecular Basis of Inheritance****IMPORTANT POINTS**

**DNA** :- Deoxy ribonucleic acid is the largest biomolecule which has polynucleotide chains with specific arrangement of nitrogen bases that possess coded information of Cryptogram of a large number of hereditary traits

**History**

1. Friedrich Miescher - isolated nucleic acid and named nuclein
2. Zacharis - Found nuclein to be restricted to chromatin
3. Alt man - named nuclein of nucleic acid
4. Fisher - discovered purine and pyrimidine bases
5. Chargoff - found purine and pyrimidine content of DNA to be equal with  $A = T$  and  $G = C$  ( = equal to )
6. Franklin - found DNA to be helix
7. Watson Crick & Wilkins - Double helical model of DNA
8. Linus Pauling - a Nobel Laureate for unravelling protein structure

**Functions of DNA :-**

1. Autocatalytic Function :- DNA direct its own biosynthesis at the time of DNA replication
2. HeteroCatalytic Function :- Directing Synthesis of another biochemical is called heterocatalytic function

Ex :- Synthesis of RNA over DNA template

In 1948 Beadle and Tatum proposed one-gene one enzyme hypothesis which states that a gene controls metabolic machinery of the organism through synthesis of an enzyme. This laid foundation of biochemical genetics

One - Gene and one Polypeptide hypothesis was proposed by Yanofsky (1965).

It states that a structural genes specifies the synthesis of a single polypeptide

Ex :- Haemoglobin is made of two  $\alpha$  and two  $\beta$  chains (polypeptides)

Two separate genes play vital role in synthesis of two different ( $\alpha$  and  $\beta$ ) Chains.

Cistron - In biochemical genetics the term gene is replaced by cistron

Regulatory gene - Which controls the functioning of structural genes

Structural gene - Produces biochemicals required for cellular machinery

Split gene - In this coding, bases are not continuous but are interrupted by non- coding sequences These are respectively called as exons and introns Functional m - RNA is formed by splicing removal of intron portions and fusion of coding parts / Exon portions

A Few eukaryotic genes are without introns. They are called exonic genes ( = not split genes ) /

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Processed genes Ex :- histone genes, interferon genes

**House - Keeping genes (or) Constitutive genes:-** Those genes which are always in action because their products are always required for cellular activities

Ex :- ATPase, Enzymes of glycolysis

**Non -Constitutive genes :-** Genes which can be switched on or off as per requirements

**Types of Non Constitutive genes :-**

(i) **Inducible - non - constitutive genes :-**

Remain repressed but are switched on in the presence of an inducer chemical

Ex :- Lac - operon

(ii) **Repressible - non Constitutive genes :-**

Remain active till switched off by a chemical

Ex :- Tryptophan operon

**Single copy genes :-** They are represented only once in the which genome

**Repeated genes :-** Genes having more than one copy in the same genome are called repeated genes Ex :- histone genes

**Cryptic genes :-** Genes which are not expressed during the life cycle of an organism

**Overlapping genes :-** Reported in  $\phi$  x 174 Virus Three of its genes (E, B and K) overlap others

**Transposons / Jumping genes :-** DNA segments Which can pass from one place to another in the genome

Transposons may take strong promoters to new sites or cause reshuffling of gene Segments Which lead to change in gene expression

Ex :- Proto oncogene  $\rightarrow$  Oncogene

**Tumour Suppressing genes :-** Checks unrestricted cell cycles

**DNA finger printing :-**

**Dermatoglyphics** : Derma - Skin, glyphein - to carve

Dermatoglyphics is the science of finger printing

It deals with study of patterns of ridges of the skin finger, palms, toes and soles

Dermatoglyphics is used in establishing identity of individuals

It also can indicate genetic abnormalities

Conventional finger prints can be altered through surgery

DNA finger printing / gentic finger printing is never be changed being it is the process of analysis VNTR from samples of DNA of a person

1. Name the conjugated protein used as genetic material in living cells  
(A) Glyco protein                      (B) Nucleo protein                      (C) Metallo protein                      (D) Lip oprotein
2. Who supported Griffith effect by molecular explanation ?  
(A) Hershay and chase                      (B) Watson, crick Ninenberg  
(C) Avery , Mc Carty and Macleod                      (D) Griffith and Avery

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3. Synthesis of nucleic acids always takes place in  
(A)  $3' - 5'$  direction (B)  $5' - 3'$  direction (C) Both ways (D) in any direction
4. DNA Chain initiation phase during replication is  
(A) formation of stepping stone (B) Activation of deoxy ribonucleotides  
(C) Formation of Okazaki fragments (C) Formation of replication fork stage
5. What is called Griffith effect ?  
(A) DNA transcription (B) RNA translation  
(C) Bacterial transformation (D) Bacterial transduction
6. Genetic information is carried by the long chain molecules which are made up of  
(A) Amino acids (B) Nucleotides (C) Chromosomes (D) Enzymes
7. By which bonds the purine & pyrimidine pairs of Complementary Strands of DNA held together?  
(A) H - bonds (B) O - bonds (C) C - bonds (D) N - bonds
8. State the nature of the 2 Strands of DNA duplex.  
(A) identical & Complementary (B) Anti parallel & complementary  
(C) Disimilar & non - complementary (D) Anti parallel & Non - complementary
9. The code AUG stands for  
(A) Glycine (B) Methionine (C) N-formyl methionine (D) Alanine
10. 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  
(A) Triplet Codon (B) Non - Sense Codon  
(C) Anti Codon (C) Termination Codon
11. A Codon is made up of  
(A) Single nucleotide (B) two nucleotides (C) three nucleotides (D) Four nucleotides
12. Nucleus of a cell is the site of Synthesis of  
(A) DNA (B) m - RNA (C) t - RNA (D) All
13. DNA replication requires  
(A) DNA polymerase only (B) DNA polymerase and ligase  
(C) Ligase only (D) RNA polymerase
14. The enzyme involved in transcription is  
(A) RNA polymerase (B) DNA polymerase I (C) DNA polymerase II (D) DNA polymerase III
15. Enzymes needed for formation of replication fork  
(A) RNA polymerase and DNA polymerase I (B) Helicase and gyrase  
(C) Hexokinase and aldolase (D) Ligase and endo nuclease
16. Okazaki fragments are Synthesized on  
(A) Leading strands of DNA only (B) Lagging Strands of DNA only  
(C) Leading and Lagging Strands (D) Complementary DNA Strand

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17. Which of the following is used in DNA multiplication?  
(A) RNA polymerase (B) DNA endonuclease (C) DNA exonuclease (D) DNA Polymerase
18. t - RNA attaches aminoacid at its  
(A) 3<sup>1</sup> end (B) 5<sup>1</sup> end (C) Anticodon (D) Loop
19. DNA acts as a template for synthesis of  
(A) RNA (B) DNA (C) Both 'a' and 'b' (D) Protein
20. Antiparallel strand in DNA is due to  
(A) Disulphide linkage (B) Hydrogen bond (C) Phosphodiester bond (D) Ionic bond
21. Multiplication of DNA is called  
(A) Translation (B) Replication (C) Transduction (D) Transcription
22. Which is the smallest RNA ?  
(A) r RNA (B) m RNA (C) t - RNA (D) nuclear RNA
23. Genetic information are transferred from nucleus to cytoplasm of cell through  
(A) DNA (B) RNA (C) Lysosomes (D) Anticodon
24. The information from RNA to DNA are transferred by which process  
(A) Replication (B) Transcription (C) Translation (D) Reverse transcription
25. Which statement is correct ?  
(A) Degeneracy of code is related to third member of codon  
(B) Single codon, codes for more than one aminoacid  
(C) In codon first two bases are more specific  
(D) In codons third base is wobble  
(E) code is universal  
(A) A,B,C,D,E (B) A, B, D (C) A., C, D (D) A, C, D, E
26. DNA molecule has uniform diameter due to ?  
(A) Double stranded  
(B) Presence of phosphate  
(C) Specific base pairing between purine and pyrimidine  
(D) Specific base pairing between purine and purine
27. In a transcription unit promotor is said to be located towards  
(A) 3<sup>1</sup> end of structural gene (B) 5<sup>1</sup> end of structural gene  
(C) 5<sup>1</sup> end of template strand (D) 3<sup>1</sup> end of template strand
28. In DNA replication the primer is  
(A) A Small deoxyribonucleotide polymer  
(B) A small ribonucleotide polymer  
(C) Helix destabilizing protein  
(D) Enzyme taking part in joining nucleotides of new strands

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29. Non - sense codons take part in
- (A) formation of unspecified aminoacids
  - (B) Terminating message of gene controlled protein synthesis
  - (C) Releasing t-RNA from polynucleotide chain
  - (D) Conversion of sense DNA in to non-sense one
- 30, select the correct sequence of following in DNA replication
- (A) single stranded binding proteins - Helicase - Topoisomerase - DNA polymerase
  - (B) Helicase - single stranded binding proteins -Topoisomerase - DNA polymerase
  - (C) Helicase - DNA polymerase - Topoisomerase - Single stranded binding proteins
  - (D) Helicase - Topoisomerase - DNA polymerase - Single stranded binding proteins
31. Which of the following enzymes can detect and correct the wrong inserted base during DNA replication ?
- (A) DNA polymerase - I
  - (B) DNA polymerase - II
  - (C) Primase
  - (D) Ligase
32. Which one is a ribozyme ?
- (A) Helicase
  - (B) Ribonuclease - P
  - (C) Peptidyl transferase
  - (D) Both (B) & (C)
33. Which of the following pairs is not correctly matched ?
- (A) Recombinant DNA - DNA forming by union of segments of DNA from different Sources
  - (B) Purines - Nitrogenous bases Cytosine , thymine and Uracil
  - (C) ATP - The principal energy carrying compound in the cell
  - (D) r-RNA - RNA molecules found in ribosomes
34. Which one of the following pairs is correctly matched ?
- (A) Ribosomal RNA - Carries amino acids to the site of protein synthesis
  - (B) Transcription - Process by which protein is synthesized
  - (C) Translation - Process by which mRNA carries the information from nucleus to ribosomes
  - (D) Anticodon - Site of t-RNA that binds to the m-RNA
35. Which is not the step of translation ?
- (A) Initiation
  - (B) Replication
  - (C) Elongation
  - (D) Termination
36. The enzyme amino acyl t-RNA-synthetase facilitates.
- (A) Joining two neighbouring amino acids on ribosomes
  - (B) A doption of amino acids by a t-RNA molecule
  - (C) Insertion of amino acyl t-RNA into the ribosome sites
  - (D) Transfer of amino acyl t-RNA from the ribosomal 'A' site to 'P' site

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37. state the anticodon of initiation codon of protein synthesis  
(A) UAC                      (B) UUU                      (C) CAU                      (D) AUG
38. Which is the energy source for the process of elongation ?  
(A) ATP                      (B) GTP                      (C) Creatine-PO<sub>4</sub>                      (D) All the above
39. What does a gene consist of ?  
(A) Promoter    (B) Initiation site & termination site  
(C) coding sequence    (D) All the above
40. Name the enzymes needed for lactose Catabolism in E.coli ?  
(A)  $\beta$  - galactosidase, permease transacetylase                      (B)  $\beta$  - galactosidasee Lactase, transacetylase  
(C)  $\beta$  - galactosidase, lactase, permease                      (D) Lactase, permease, transacetylase
41. What does operon contain ?  
(A) Regulator gene + promotor gene  
(B) Operator gene + structural gene  
(C) Regulator gene + promotor gene structural gene  
(D) Regulator gene + promotor gene + operator gene + structural gene
42. Select correct match with respect to lac-operon model ?  
(A) Active repressor + inducer  $\rightarrow$  Inactive repressor  
(B) Active repressor + corepressor  $\rightarrow$  Inactive repressor  
(C) Inactive repressor + inducer  $\rightarrow$  Active repressor  
(D) Inactive repressor + corepressor  $\rightarrow$  Active repressor
43. In relation of lac operon in E-coli , Which protein is not regulated by the repressor ?  
(A) Tryptophan    (B) galactosidase  
(C) Lactose permease    (D) Transacetylase
44. Which is not correct regarding the activity of helicase during DNA replication ?  
(A) Cuts hydrogen bomds    (B) Requires ATP  
(C) separates DNA strands    (D) Stabilizes single strands
45. Which of the following enzyme is not produced by E. coli during lactose catabolism ?  
(A)  $\beta$  - galactosidase    (B) Thiogalactoside translacetylase  
(C) Lactose dehydrogenase    (D) Lactose permease
46. Which is the incorrect statement regarding HGP ?  
(A) HGP is an Indian scientific research project  
(B) In 1990, the Project was initiated  
(C) A working draft of the genome was announced in 2000  
(D) In February 2001, the analysis of the working draft was published
47. Humans have approximately \_\_\_\_\_ times more genes than E.coli  
(A) 8    (B) 15    (C) 100    (D) 50

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48. Which of the following is not according to the Chargoff's rule ?  
(A)  $A = T$                       (B)  $C = G$                       (C)  $A + G = T + C$                       (D)  $A + T / G + C = 1$
49. Select the correct answer / answers from the following
1. Ligase :- Joins short segments of DNA together
  2. DNA Polymerase :- cuts DNA at specific sequence
  3. Helicase :- Breaks the hydrogen bonds between complementary pairs during DNA replication
  4. Gyrase :- Joins weak hydrogen bonds between complementary pairs
- (A) 1, 2, 3 and 4, are correct  
(B) 1 and 2 are correct, 3 and 4 are false  
(C) 1 and 3 are correct, 2 and 4 false  
(D) 1, 2, 3 are correct, 4 is false
50. DNA replication in eukaryotes is  
(A) Unidirectional with many origin  
(B) Bidirectional with many origin  
(C) Unidirectional with single origin  
(D) Bidirectional with single origin
51. Amino acids lysine, serine and arginine are coded by how many codons ?  
(A) 6, 4, and 3 respectively  
(B) 4, 2 and 2 respectively  
(C) 6 codons  
(D) 4 codons
52. Which of the following amino acid is coded by 3 codons ?  
(A) serine                      (B) Proline                      (C) Tryptophan                      (D) Isoleucine
53. How many nucleotides make one Okazaki segment in eukaryotes ?  
(A) 1000-1500                      (B) 100-200                      (C) 5000                      (D) Not fixed
54. Which of the following enzymes help in the process of formation of phosphodiester bond during reverse transcription ?  
(A) DNA - dependant RNA polymerase  
(B) DNA dependant DNA polymerase  
(C) RNA - dependant RNA polymerase  
(D) RNA - dependant DNA polymerase
55. The two strands of a DNA molecule are separated and one of them is analysed for its  $A + T / G + C$  ratio, This is found to be 0.2 What is the  $A + T / G + C$  ratio of the other strand  
(A) 0.02                      (B) 0.08                      (C) 0.8                      (D) 0.2
56. DNA replication in lagging strand of most of the eukaryotic organisms is  
(A) conservative and continuous                      (B) semi conservative but discontinuous  
(C) conservative and semi - discontinuous                      (D) semi conservative but continuous

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57. How many bases consist in an average gene ?

- (A) 3, 00, 000      (B) 3000      (C) 4, 00, 000      (D) 4000

58. Match the following using salient features of Human genome project

A

B

- |                          |                                |
|--------------------------|--------------------------------|
| (P) Less than 2 % genome | (i) 3 billion nucleotide bases |
| (Q) Chromosome 1         | (ii) 231 genes                 |
| (R) Y chromosome         | (iii) 2968 genes               |
| (S) Human genome         | (iv) codes for protein         |

(A) (P - iv)      (Q - iii)      (R - ii)      (S - i)

(B) (P - iv)      (Q - ii)      (R - iii)      (S - i)

(C) (P - iv)      (Q - i)      (R - ii)      (S - iii)

(D) (P - i)      (Q - iii)      (R - iv)      (S - ii)

59. State the use of molecular medicine ?

- (A) Improves diagnosis of diseases  
 (B) Used as gene therapy  
 (C) Used to understand several disease like Alzheimer's Parkinsons diseases etc.,  
 (D) All the above

60. Among the following which is used for separation of DNA fragments ?

- (A) centrifugation      (B) Cell fractionation      (C) Cell homogenation      (D) Electrophoresis

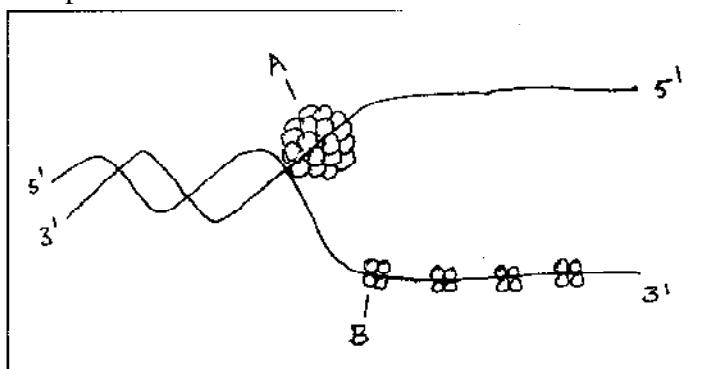
61. In Which of the following DNA not directly involved ?

- (A) Replication      (B) Transcription      (C) Translation      (D) Transformation

62. Transcription begins when one of the following enzymes binds to promotor site.

- (A) DNA polymerase (B) RNA polymerase      (C) helicase      (D) Gyrase

63. What dose A & B represent ?

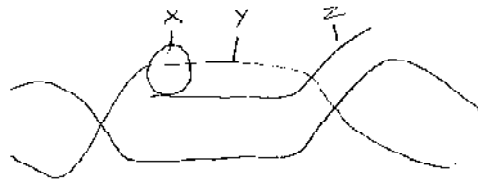


- (A) Gyrase , Helicase  
 (B) Double Stranded Protein, Helicase  
 (C) Helicase, Single strand binding protein  
 (D) Topoisomerase Helicase



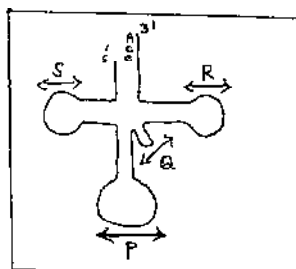
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64. State the process and mention the labelled portion.



- (A) Process of Translation - X-RNA Polymerase  
- Y-DNA Template  
- Z-m RNA Transcript
- (B) process of Transcription - X-RNA Polymerase  
- Y-DNA Template  
- Z- RNA Transcript
- (C) process of Translocation - X-DNA polymerase  
- Y- Template  
- Z- Transcript
- (D) Process of Transformation - X - DNA polymerase  
- Y - RNA template  
- Z - RNA transcript

65. What do P, Q, R and S regions of t RNA ?



- (A) P - Anticodon loop  
Q - Variable loop  
R - T ψ c loop  
S - D Loop
- (B) P. D Loop  
Q - T ψ c loop  
R - Variable loop  
S - Anticodon loop
- (C) P - T ψ c loop  
Q - D loop  
R - Anticodon loop  
S - Variable loop
- (D) P - Anticodon Loop  
Q - T ψ c loop  
R - D loop  
S - Variable loop

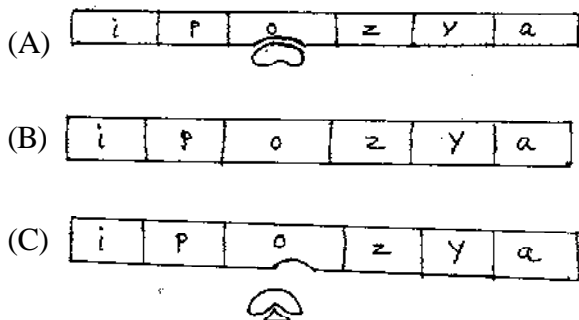


Which state is represent by the above model

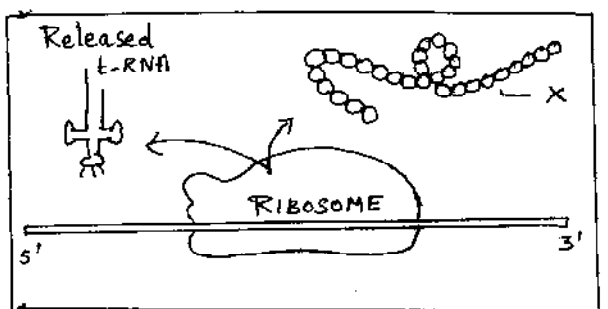
- (A) Repressed state of lac operon
- (B) Inactive state of Lac operon
- (C) Active state of Lac operon
- (D) Induced state of Lac operon

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67. When does the structural genes of Lac operon switch on ?



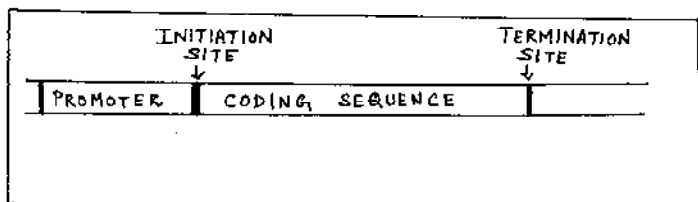
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What does X represent in the above diagram

- (A) Released polypeptide chain
- (B) Released 3D protein molecule
- (C) Released secondary protein
- (D) Released tertiary protein

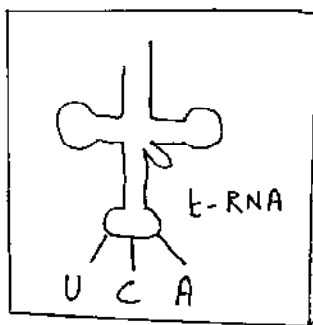
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What does 'X' represent

- (A) gene
- (B) segment of DNA
- (C) segment of DNA coding for specific protein
- (D) Both A & C

70. Write the codon for the anticodon on the t - RNA



- (A) AGU
- (B) UGU
- (C) UGA
- (D) ACU

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The question consist of two statements each Assertion (A) and Reason (R)

So answer these question choose any one of the following four responses

(A) If both (A) and (R) one true and (R) is the correct explanation of (A)

(B) If both (A) and (R) are true but (R) is not the correct explanation of (A)

(C) If (A) is true but (R) is false

(D) If both (A) and (R) as false

71. Assertion (A) Lac - operon is an inducible system  
Reason (R) - Transcription occurs in the presence of lactose  
(A) (B) (C) (D)
72. A :- Operon concept was given by Hershey and chase  
R :- Separation of DNA fragments are done by centrifugation technique  
(A) (B) (C) (D)
73. A :- DNA is cut into Sections by using restriction endonucleases  
R :- Ligase is used to join DNA nucleotides  
(A) (B) (C) (D)
74. A:- Abraham Lincon has been analyzed for evidence of a genetic disorder called Marfan's syndrome  
R :- An additional benefit of DNA fingerprint technology is the diognos is of inherited disorders  
(A) (B) (C) (D)
75. A :- Helicase is called unwindase  
R :- DNA helix uncoils and splits into single strands by breaking of hydrogen bonds between complementary bases  
(A) (B) (C) (D)
76. A :- Formation of Lagging strand is slow  
R :- Formation of lagging strand begins bit later than that of leading strand  
(A) (B) (C) (D)
77. A Doublet codons are inadequate for 20 types of aminoacids  
R One aminoacid can be coded by many codons in triplet gentic code  
(A) (B) (C) (D)
78. A:- Mutations effect protein structure and function  
R :- Only one changed codon may be mis sense when it changes insertion of one aminoacid  
(A) (B) (C) (D)
79. A:- Catching criminals could become easier and quicker using DNA fingerprints  
R :- The process begins with blood or cell sample from which DNA is extracted  
(A) (B) (C) (D)
80. A :- Dr. Hargobind Khorana Synthesized one gene of yeast containing 77 nucleotides  
R:- Nirenberg synthesized more complex gene in rabbit which contains 650 nucleotides.  
(A) (B) (C) (D)

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81. In the genetic code dictionary how many codons are used to code for all the 20 essential amino-acids?  
(AIPMT - 2003)  
(A) 20 (B) 64 (C) 61 (D) 60
82. What would happen if in a gene encoding polypeptide of 50 aminoacids 25th codon (UAU) is mutated to UAA ?  
(AIPMT - 2003)  
(A) A Polypeptide of 24 aminoacids will be formed  
(B) Two polypeptides of 24 and 25 aminoacids will be formed  
(C) A polypeptide of 49 aminoacids will be formed  
(D) A polypeptide of 25 aminoacids will be formed
83. Which one of the following triplet codes, is correctly matched with its specificity for an aminoacid in protein synthesis or as 'start' or 'stop' codon ?  
(A) UCG - start (B) UUU - stop  
(C) UGU - Leucine (D) UAC - Tyrosine
84. What does "Lac" refer to in what we call the lac operon ?  
(AIPMT - 2003)  
(A) Lactose (B) Lactase  
(C) Lac insect (D) The number 1,00,000
85. The following ratio is generally constant for a given species  
(AIPMT - 2004)  
(A)  $A + G / C + T$  (B)  $T + C / G + A$   
(C)  $G + C / A + T$  (D)  $A + C / T + G$
86. 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  
(AIPMT - 2004)  
(A) TATGC (B) TCTGG (C) UAU GC (D) UATGC
87. Which one of the following makes use of RNA template to synthesize DNA  
(AIPMT - 2005)  
(A) DNA polymerase (B) RNA polymerase  
(C) Reverse transcriptase (D) DNA dependant RNA polymerase
88. Protein synthesis in an animal cell occurs  
(AIPMT - 2005)  
(A) only on the ribosomes present in cytosol  
(B) only on ribosomes attached to the nuclear envelope and endoplasmic reticulum  
(C) On ribosomes present in the nucleolus as well as in cytoplasm  
(D) on ribosomes present in cytoplasm as well as in mitochondria
89. E coli cells with a mutant z gene of the lac operon cannot grow in medium containing only lactose as the source of energy because  
(AIPMT - 2005)  
(A) the lac operon is constitutively active in these cells  
(B) they cannot synthesize functional beta galactosidase  
(C) in the presence of glucose E Coli cell do not utilize lactose  
(D) they cannot transport lactose from the medium into the cell
90. Aminoacid Sequence in protein synthesis is decided by the sequence of  
(AIPMT - 2006)  
(A) rRNA (B) t-RNA (C) mRNA (D) cDNA

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91. Antiparallel strands of a DNA molecule means that (AIPMT - 2006)  
(A) One strand turns clockwise  
(B) One strand turns anticlockwise  
(C) The phosphate groups of two DNA strands , at their ends share the same position  
(D) The phosphate groups at the start of two DNA strands are is opposite position (Pole).  
(AIPMT-2006)
92. Polysome is formed by (AIPMT - 2008)  
(A) a ribosome with several subunits  
(B) ribosomes attached to each other in a linear arrangement  
(C) several ribosomes attached to a single m RNA  
(D) many ribosomes attached to a strand of endoplasmic reticulum
93. In the DNA Molecule (AIPMT - 2008)  
(A) the proportion of adenine in relation to thymine varies with the organism  
(B) there are two strands which run antiparallel one in  $5^1 \rightarrow 3^1$  direction and other in  $3^1 \rightarrow 5^1$   
(C) the total amount of purine nucleotides and pyrimidines nucleotides is not always equal  
(D) there are two strands which run parallel in the  $5^1 - 3^1$  direction
94. Semiconservative replication of DNA was first demonstrated in (AIPMT - 2009)  
(A) Escheirchia coli (B) streptococcus pneumoniae  
(C) Salmonella typhimurium (C) Drosophila melanogaster
95. Whose experiments cracked the DNA and discovered unequivocally that a genetic code is a “triplet” (AIPMT - 2009)  
(A) Hershey and chase (B) Morgan and sturtevant  
(C) Beadle and Tatum (D) Nirenberg and Mathai
96. Select the two correct statement out of the four statement given below about “Lac opern”(AIPMT -2010)  
(i) Glucose or galactose may bind with the repressor and inactivate it  
(ii) In the absence of lactose the repressor bind with the operator region  
(iii) The Z -gene codes for permease  
(iv) This was elucidated by Francois Jacob and Jacques Monod  
The correct statements are  
(A) ii and iii (B) i and iii (C) ii and iv (D) i and ii
97. Which one of the following does not follow the central dogma of molecular biology ? (AIPMT - 2010)  
(A) Pea (B) Mucor (C) Chlamydomonas (D) HIV
98. The lac opern consists of (AIPMT - 2010)  
(A) four regulatory genes only  
(B) One regulatory gene and three structural genes  
(C) Two regulatory genes and three structural genes  
(D) three regulatory genes and three structural genes

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99. The 3' - 5' Phosphodiester linkages inside a polynucleotide chain serve to join (AIPMT - 2010)
- (A) One DNA strand with the other DNA strand
  - (B) One nucleoside with another nucleoside
  - (C) One nucleotide with another nucleotide
  - (D) One nitrogen base with pentose sugar
100. Ribosomal RNA is actively synthesized by
- (A) Lysosomes (B) nucleolus (C) nucleoplasm (D) ribosomes
101. If one strand of DNA has the nitrogenous base sequence as ATCTG, What would be the complementary RNA strand Sequence (AIPMT - 2012)
- (A) TTAGU (B) UAGAC (C) AACTG (D) ATCGU
102. Initiation codon of protein synthesis (in eukaryotes) is (AIIMS - 1986)
- (A) GUA (B) GCA (C) CCA (D) AUG
103. Semiconservative DNA replication using <sup>15</sup>N was demonstrated by (AIIMS -1994)
- (A) Meselson (B) Taylor (C) Meselson and Stahl (D) Hershey and Chase
104. In operon concept, the operator gene combines with (AIIMS -1986)
- (A) Regulator protein to switch off structural gene transcription
  - (B) Regulator protein to switch on structural gene transcription
  - (C) Inducer to switch off structural gene transcription
  - (D) Regulator gene to switch off structural gene transcription
105. Termination of polypeptide chain is brought about by
- (A) UUG, UAG and UGA
  - (B) UAA, UAG and UGA
  - (C) UUG, UGC and UCA
  - (D) UCG, GCG and ACC
106. RNA that picks up specific amino acid from amino acid pool of cytoplasm to carry it to ribosome during protein synthesis is
- (A) t RNA (B) m RNA
  - (C) r RNA (D) g RNA
107. Correct sequence of code transfer during polypeptide formation is (AIIMS -1999)
- (A) DNA, mRNA, t RNA and amino acids
  - (B) DNA, t RNA, r RNA and mRNA
  - (C) mRNA, t RNA, DNA and amino acids
  - (D) r RNA, DNA, mRNA and t RNA
108. Best method to determine paternity is
- (A) Protein analysis
  - (B) chromosome counting
  - (C) gene counting
  - (D) DNA finger printing

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109. DNA is copied from m-RNA molecule with help of  
 (A) Restriction enzyme  
 (B) Reverse transcriptase  
 (C) DNA polymerase  
 (D) Adenosine deaminase
110. Match the column
- | I                        | II                                      |
|--------------------------|---|
| (P) t- RNA               | (i) Joining of aminoacids               |
| (Q) m - RNA              | (ii) Transfer of genetic information    |
| (R) r - RNA              | (iii) Nucleolar organising region       |
| (S) Peptidyl transferase | (iv) Passage of aminoacids to ribosomes |
- (A) ( P - iv) , (Q - ii), (R - iii) (S - i)  
 (B) (P - i), (Q - iv), (R - iii), (S - ii)  
 (C) (P - i), (Q - ii) (R - iii), (S - iv)  
 (D) (P - i), (Q - iii), (R - ii), (S - iv)
111. Nucleotide arrangement in DNA can be seen by  
 (A) X - ray crystallography  
 (B) Electron microscope  
 (C) Ultra centrifuge  
 (D) Light microscope
112. Pneumococcus experiment proved that  
 (AFMC - 1993)  
 (A) Bacteria do not reproduce asexually  
 (B) Bacteria undergo binary fission  
 (C) DNA is genetic material  
 (D) RNA may sometimes control a production of DNA and protein
113. A DNA nucleotide chain has A G C T T C G A sequence The nucleotide sequence of other chain would be  
 (A) T C G A A G C T  
 (B) G C T A A G C T (AFMC - 1993)  
 (C) T A G C A T A T  
 (D) G A T C C T A G
114. A functional unit in synthesis of protein is (MPPMT - 1994)  
 (A) Lysosome (B) Peroxisome (C) Polysome (D) Dictyosome
115. VNTR is employed for (AMU - 2002)  
 (A) Protoplasmic culture (B) DNA finger printing  
 (C) Regulation of plant growth hormones (D) Enhancing photosynthesis in desert plant
116. Out of 64 codons 61 code for 20 types of aminoacids It is due to (CBSE - 2002)  
 (A) Overlapping genes (B) Degeneracy of genetic code  
 (C) Wobbling of codons (D) Universality of codons
117. Okazaki fragments are joined by enzyme (Kerala 2005)  
 (A) DNA helix (B) DNA ligase  
 (C) DNA polymerase II (D) RNA polymerase II

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118. Heat killed pathogenic cells and live non pathogenic cells are mixed and injected into Mice

The result would be

(Kerala - 2001)

(A) Mice develop disease and die

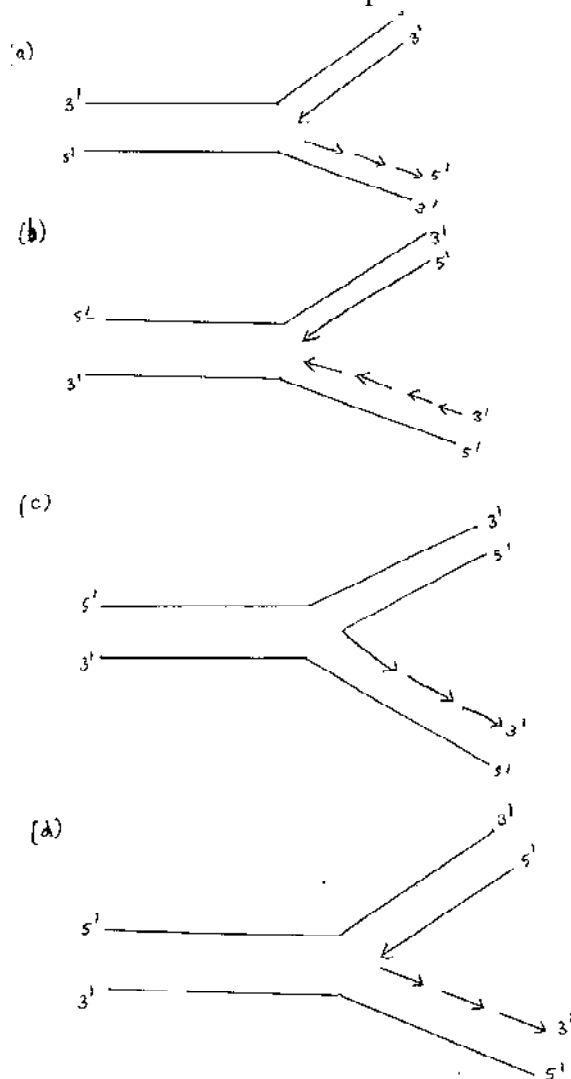
(B) Mice die without developing disease

(C) Mice remain healthy

(D) 50% mice develop disease and die

119. Which one represents the correct manner of DNA replication ?

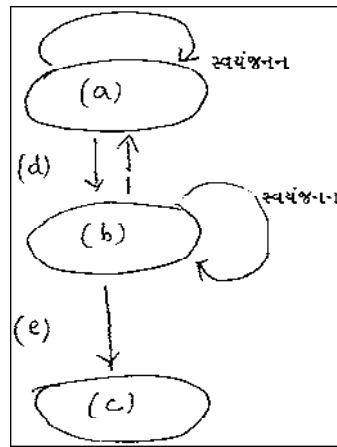
(AIIMS - 2003)





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120. Diagram represents “central dogma” of molecular biology chose correct combination of labelling  
(Kerala - 2001)



- (A) a - protein b - RNA - c - DNA, d- Translation, e- Transcription  
 (B) a - DNA, b - RNA, c- Protein, d- Transcription, e - Translation  
 (C) a - RNA, b- DNA, c- protein, d - Transcription, e - Translation  
 (D) a - Transcription, b- Translation, c- Protein, d - DNA, e - RNA

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### ANSWER KEY

1	B	31	A	61	C	91	D
2	C	32	D	62	B	92	C
3	B	33	B	63	C	93	B
4	D	34	D	64	B	94	A
5	C	35	B	65	A	95	D
6	B	36	B	66	A	96	C
7	A	37	A	67	C	97	D
8	B	38	B	68	A	98	C
9	B	39	D	69	D	99	C
10	C	40	A	70	A	100	B
11	C	41	D	71	A	101	B
12	D	42	A	72	D	102	D
13	B	43	A	73	B	103	C
14	A	44	C	74	B	104	A
15	B	45	C	75	A	105	B
16	B	46	A	76	A	106	A
17	D	47	D	77	B	107	A
18	A	48	D	78	A	108	D
19	C	49	C	79	B	109	B
20	C	50	B	80	C	110	A
21	B	51	C	81	B	111	A
22	C	52	D	82	A	112	C
23	B	53	A	83	D	113	A
24	D	54	D	84	A	114	C
25	D	55	D	85	C	115	B
26	C	56	B	86	C	116	B
27	D	57	B	87	C	117	B
28	B	58	A	88	D	118	A
29	B	59	D	89	B	119	D
30	B	60	D	90	C	120	B

