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***Q. 1.***

***1. James Watson*** and ***Francis Crick*** discovered the double helical structure of the DNA molecule.

***2.*** Watson and Crick were awarded Nobel Prize in ***1963.***

***3. Nucleic acid***  store, transmit, and help express hereditary information.

***4.***  The amino acid sequence of a polypeptide is programmed by a unit of inheritance called a ***gene.***

***5.***  Hundreds of Y-shaped regions of replicating DNA molecules where new strands are growing called ***Reflection fork.***

***6. Topoisomerase*** are enzyme which relieves stress on the DNA molecule by allowing free rotation around a single strand.

***7. Genetic code*** is a dictionary that corresponds with sequence of nucleotides and sequence of amino acids.

***8. Amino acylation or charging***  is the process of covalently attaching an amino acid to the tRNA.

***9. Single strand binding protein*** are proteins which attach and help keep the separated strands apart.

***Q. 2.***

***Answer.***

***1. Common tools used in molecular biology***

* Nucleic acid fractionation
* Polymerase chain reaction
* Probes, Hybridization Vector, Molecular cloning Nucleic acid
* enzymes Microarray
* DNA sequencing
* Electrophoretic separation of nucleic acid Detection of genes:
* DNA: Southern blotting; inSitu hybridization; FISH Technique
* \*RNA: Northern blotting
* \*Protein: Western blotting, immunohistochemistry .

***2. Nucleic acid.***

* Nucleic acids store, transmit, and help express

hereditary information

* The amino acid sequence of a polypeptide is

programmed by a unit of inheritance called a

gene

* Genes are made of DNA, a nucleic acid made of

monomers called nucleotides .

* There are two types of nucleic acid
* ***Deoxyribonucleic DNA***
* ***Ribonucleic acid RNA***
* DNA provides directions for its own replication
* DNA directs synthesis of messenger RNA (mRNA) and , through mRNA, controls protein synthesis
* Protein synthesis occurs on ribosomes.

***3. Chargaff's rules :-*** In this rules Crick and Watson explain that in the DNA of any organism the amount of adenine equal to thymine and the amount of cytosine are equal to Guanine because of adenine are always pair with thymine and cytosine to Guanine.

**4. *Wobble hypothesis :-*** Crick postulated the ‘wobble hypothesis’ to account for the degeneracy of genetic code.

According this hypothesis, the first two bases of a codon pair according to the normal base pairing rules with the last two bases of the anticodon. Base-pairing at the third position of a codon is wobble.

***5. Main steps in transcription and translation.***

***Transcription :-*** the formation of mRNA from DNA is called transcription.

***Names of main Steps.***

* ***Imitation phase***
* ***Elongation phase or polymerization***
* ***Termination phase***

***Translation :-*** The formation of protein with the help of RNA are called translation.

***Names of main steps.***

* ***Activation of amino acid***
* ***Formation of initiation complex***
* ***Polypeptide elongation***
* ***Termination***

***Q. 3.***

***Answer :- DNA Replication***

* It is a process in which DNA makes a copy itself.

Crick proposed 3 type.

**Consecutive model :-**

* In this method DNA Conserve
* Means that the parental DNA not disturb in this method and make new doter stand

***Dispersive method :-***

* in this type of DNA replication DNA get diapers in one another

***semi conservative method :-***

* semi means half in this type of replication new strand made from half parent and half from new strand

***DNA REPLICATIOM DEPEND ON THE CEL :-***

 There are two type of cell.

***Prokaryotic cell:-***

* they have circular DNA present in cytoplasm
* its replicate from model.

***Eukaryotic cell :-***

* they have linear DNA present in nucleus
* mess Elson and stahl in1958 proposed that the DNA replication is of semi conservative type.
* Because he used heavy isotope of nitrogen – N 15
* Normal isotope is –N14
* And he used CSCL for his experiment
* DNA replication take place in the nucleus of cell , in S-phase of cell division.

***STEPS OF DNA :-***

 ***Replication of eukaryotic cell :-***

***Step 1.***

* activation of all the nucleotides (dNTPS).
* ***d AMP d ATP***
* ***d GMP*** ATP ***d GTP***
* ***d CMP ---------------> d CTP***
* ***d TMP*** phosphorylase ***d TTP***

***for activation use ATP and phosphorylase .***

***Step 2.***

Origen of replication with respect to cell

***prokaryotic DNA :-***

* they have small DNA
* only Origen of replication

***Eukaryotic DNA :-***

* They have large DNA

have many Origen of replication

***Step 3.***

***CUT IN DNA :-***

* The use of enzyme destroy hydrogen bond
* especially endonuclease enzyme .

***Step 4.***

***On winding of DNA*** :-

* It is done by the help of enzyme
* Replication protein breaking H-bond

***Step 5.***

* Use of single stranded binding protein (SSBP) to prevent inter coiling of DNA
* The un winded might coil with each other

***Step 6.***

* Release of tension caused due to un winded of DNA
* To release it we use topoisomerase enzyme

***Step 7.***

***Formation of RNA primers :-***

* It is a small fragment of RNA synthesized by the help of enzyme
* (DNA premise)
* It always bind only to 3 end of DNA .

***Step 8.***

***Synthesis of new DNA strand***

* It is done by help of DNA Poly meres enzyme
* ***DNA polymerase :-***
* Attract all the activated d NTPS With template and New DNA Is synthesized …

 ***Thanks***