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QNO 1:Fill in the blanks?

1,the tree main step of PCR is ,**DENATURAION ANNELING** AND **EXTENTION.**

2,the word vaccine is originated from a latin word **VACCINAE.**

3,**YEAST** is the oldest microbes exploited by human for their benefits.

4,restriction endonuclease also called as **MOLECULAR SCISSORS**.

5**, RESTRICTION MAP** is a diagram or a map of DNA molecule of in organism that show specific site of cleavage restriction site.

6,A forensic technique use to identity individual base on the variation in their DNA sequence is known is **DNA FINGER FRINTING**.

7,restriction modification system is mainly composed of **RESTRICTION ENDONUCLEAS and**  **methylase** **enzyme.**

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QNO3,

**RESTRACTION MODIFICATION SYSTEM** :

This is the main defense system of prokaryotic organism against the invading genome.

This system is present in wide variety of unicellular organism such is bacteria archaea .

,this system composed of two enzyme,

1,RESTRICTION ENDONUCLEASE.

2,METHYLASE ENZYME.

Viruses invade all type of cell .

,bacteria are one favorite target .

,defense mechanism develop by bacteria to defense themselves from these invasion.

The system they posses for this defense is the restriction modification system .

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QNO 4:.

**RESTRICTION ENZYME**: An enzyme that cut the DNA internal phosphor diester bond ;different type exist and the most usful once fore molecular biology is TYPE IIare those which cleave at specific DNA sequence .

**METHYLASE:**

The enzyme that add methyl group to a molecule ,in restriction modification system of bacteria methyl group is added to DNA it a specific site to prtect the site from restriction endonuclease cleveage .

**NUCLEASES:**

The enzyme that cleave the nucleic acid .

**ENDONUCLEASE**:

The enzyme that break the nucleic acid chain somewhere in the interior ,rather then it the end of molecule ,it is also called restriction endonuclease.

**EXONUCLEASE**:

Thy remove the nucleotides from the end of molecule.

**RESTRICTION ENDO NUCLEASE** .

In 1968 the discovery of these enzyme marked the beginning of recombinant DNA technology .

There are three classesof restriction enzyme.

**TYPE II**:

This use in recombinant DNA technique as thy can recognized the specific site of DNA cleave a site that comes withen that sequence .

**TYPE I:**

This enzyme cleave the DNA at random site it one thousand base paires from the recognition site.

**TYPE III:**

This enzyme does the same 24 to 24 base pair away from the recognition site.

**RESTRICTION SITE**:

THE restriction site or the recognition sequence are ususly four to eight nucleotide in lengh and are palindromic.

,the restriction site for different restriction enzyme is unique ande there fore different endonuclease yield have different set of cut or DNA frigment.

**RECOMBINANT DNA**:

DNA molecule formed by laboratory method of genetic recombination such as molecular cloning to bring together genetic material from multiple sources .

This is DNA that has been formed artificially by combining constituents from different organism .

**RECOMBINANT DNA TECHNOLOGY**:

Using recombinant DNA technology we can isolate and clone single copy of a gene or DNA segment into indefinite number of copy ,all identical .

It is the art of cutting and posting a gene.

**LICATAPPION OF RECOMBINANT DNA TECHNOLOGY**:

.DNA sequencing.

.Mutation study.

.transformation.

.genetic engineering .

.recombinant DNA libararies .

.restriction enzyme site analysis.

.polymarase chain reaction.

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QNO 2.

**VACCINES:**

The word vaccine is derived from latin word variolae vaccine ,cowpox ,which adward jenner demonstrated in 1798 could prevent smallpox in human .

Odays vaccine applies to all biological preparation ,produced fromliving organism.

,,when microorganism inter into the body thy initiate immune response .

This is the body natural response to infection,

,these antigen trigger the production of antibody by the immune system.

**TYPES OF VACCINE:**

1,Live vaccine.

2, killed vaccine .

3,subunit vaccine.

4,genetically engeneered.

**1 ,live vaccine:**

These vaccine are composed of living microorganism .

**2,killed vaccine**:

When it is unsafe to use live microorganism to prepare vaccine ,they are killed inactivated.

**3,subunit vaccine** :

It is a fragment of pathogen ,typically asurface protein ,that is use to trigger an immune response and stimulate acquired immunityagainst the pathogen from which is derived.

**4 ,recombinant vaccine :**

The vaccine are produce using recombinant DNA technology or genetic engineering .

**5,DNA vaccine:**

**6,cocktail vaccine**:

BIOTECHNALOGY AND ITS SCOPE;

**BIOTECHNALOGY**:The scince using of living organism and there product for the benefits of human beings is called bio technology.

For example .

Yeast in bread making and alchole industry .

,use of beneficial bacteria ,,pencilline ,,to kill harmful organism .

.cloning of plant and animal.

HISTORY OF BIOTECHNALOGY .

Histpry of biotechnslogy cane be divided into three phases .

1 ,ancient biotechnology .

2,classical biotechnology.

3, moderan biotechnology.

**SCOPE OF BIO TECHNALOGY:**

THER has been increase activity and research between different agricultur areas with commen research technique and goles .

.plant science .

.animal science .

.environmental science.

.health science.

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QNO5**, USEASES OF RESTRICTION ENZYME** :

,IN the laboratory restriction enzyme used to cut DNAinto smaller frigments .

The cut are made at specific nucleotide sequence different restriction enzyme recognized and cut different DNAsequence.

Isolated restriction enzyme are used to manipulate DNAfor different scientific study.

They are use to assist insertion of gene into plasmid vector during gene cloning and protein production .

They recognized specific sequence in DNA and then cut the DNA to produce fregmint ,called restriction fragments .

There purpose to protect the body ,bacteria from virus DNA.