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🡺SUBJECT MOLECULAR BIOLOGY

🡺DEPT BS-MLT

QNO.01:-

ANSWER.NO:- Fill in the Blanks.

1) The three main steps of PCR are ***DEHYDRATION***, ***ANNEALING*** and ***EXTENTION***

2) The word “vaccine” originates from the Latin word ***VACCINE***.

3) ***YEAST*** is the oldest microbes exploited by humans for their benefit.

4) Restriction endonucleases are also called as ***MOLECULAR SCISSORS.***

5)***RESTRICTION MAP*** is a diagram or map of DNA molecule of an organism that shows specific sites of cleavage restriction sites.

6) A forensic technique used to identify individuals based on the variations in their DNA sequences is known as ***DNA FINGER PRINTING***.

7) Restriction modification system is mainly composed of ***RESTRACTION ENDONUCLEAS*** and ***METHAYLES ENZYME***

QNO.02:-

ANSWER.NO.02:-

🡪(A):-

🡺VACCINE AND ITS TYPES:-

🡺VACCINE:-

🡪Vaccine is biological, preparation product from living

-Organisms, that enhance immunity against the disease

-And either prevent.

🡪(Prophylactic vaccine)-(Therapeutic vaccines).

🡺There are 4 main types of vaccines:

🡪 Live- attenuated vaccines.

🡪 Inactivate vaccines.

🡪 Subunit, Recombinant, Polysaccharide, and Conjugate vaccines.

🡪 Toxoid vaccines.

🡺 Live-attenuated vaccines:-

🡪Live vaccines use a weakened (or attenuated) form of the germ that causes a disease.

🡺 Live vaccines are used to protect against:-

>Measles, mumps, rubella (MMR combined vaccine)

>Rotavirus

>Smallpox External Link:-

🡪 You are leaving vaccines.gov and entering a non-federal website. View full disclaimer.

>Chickenpox

>Yellow fever

🡺INAVTIVATED VACCINE:-

🡪 Inactivated vaccines use the killed version of the germ that causes a disease.

🡪 Inactivated vaccines are used to protect against:

>Hepatitis A

>Flu (shot only)

>Polio (shot only)

>Rabies

🡺 Subunit, recombinant, polysaccharide, and conjugate vaccines:-

> Subunit, recombinant, polysaccharide, and conjugate vaccines use

-specific pieces of the germ — like its protein, sugar, or capsid

-(a casing around the germ).

🡪 These vaccines are used to protect against:-

* Hib (Haemophilus influenzae type b) disease.
* Hepatitis B.
* HPV (Human papillomavirus).
* Whooping cough (part of the DTaP combined vaccine).
* Pneumococcal disease.
* Meningococcal disease.
* Shingle.

🡺Toxoid vaccine:-

🡪 Toxoid vaccines use a toxin (harmful product) made by the germ that causes a disease.

🡪Toxoid vaccines are used to protect against:-

>Diphtheria

>Tetanus

🡪(B):-

🡺BIOTECHNOLOGY AND ITS SCOPES:-

🡪BIOTECNOLOGY:-

> Biotechnology is the manipulation of living organisms and

- Organic material to serve human needs.

🡺Examples:**-**

>Yeast in bread making and alcohol production

>Artificial insemination

🡪 SCOPES:-

>Plant Science

>Animal Science

>Environmental Science

>Health/Agriculture-Medicine.

QNO.3:-

ANSWER.NO.03:-

🡺 Restriction-modification systems:-

🡪 Restriction-modification (R-M) systems are important components of prokaryotic defense mechanisms against invading genomes.

🡪They occur in a wide variety of unicellular organisms.

🡺They comprise two contrasting enzymatic activities:

-Restriction endonuclease (REase)

-Methyl-Transferase-(MTase).

🡪Phage (or viruses) invade all types of cells.

🡪Bacteria are one favorite target.

🡪 This system is composed of,

>Restriction endonuclease

>Methylase-Enzyme

🡪 Restriction enzyme  :-

>An enzyme that cuts DNA at internal (PD)bonds;

>D/F types exist and the most useful ones for molecular biology

🡪Methylase :-

>An enzyme that adds a methyl group to a molecule.

>In restriction the modification system and bacteria is add to DNA.

>A specific site to protect the site from restriction.

QNO.04:-

ANSWER.NO.04:-

> There are six key types of enzymes in organic chemistry.

>They are organized according to the way they work on a molecular level.

🡪Oxidoreductases

>Transfer of O and H atoms.

>Substances involved – oxidation and reduction reactions

🡪Transferase

>Transfer of a chemical group.-->- EXAMPLE:-

🡪 Amino, carboxyl, methyl, phosphoryl or acyl.

🡪 groups from one substrate to another

🡪Isomerase

> The rearrangement of groups within a molecule

🡪Ligases Formation of bonds between two molecules using energy derived from the breakdown of ATP

🡪lyase enzymes.

>Addition or removal of a chemical group (e.g. H2O, CO2and NH2) other than by hydrolysis to form a double bond

🡪Hydrolases:-

>This is the breaking of chemical bonds with the addition water.

🡺Recombinant DNA:-

🡪 DNA molecules formed by laboratory methods of genetic

-recombination (such as molecular cloning) to bring together genetic

-material from multiple sources.

🡺Recombinant DNA and Tecnology:-

🡪 We can isolate and clone single copy of a gene or a DNA segment.

🡪 There is indefinite number of copies, all identical.

🡪 It is the art of cutting and pasting genes.

🡺Application:-

🡪 DNA sequencing

🡪 Mutation studies

🡪Transformation

🡪Genetic engineering

🡪Recombinant DNA libraries

🡪Restriction enzyme site analysis

🡪Polymerase chain reaction (PCR).

QNO.5:-

ANSWER.NO.05:-

🡺In the laboratory restriction endonuclease or use to cut

- DNA into smaller fragments.

>These cut are always made at specific nucleotides.