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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.