

Name: Abdul Salam  
ID no: 14865

Paper: Human Genetic (Lab).

Q no: 2: Polymerase chain reaction:

Ans: (PCR) is a method widely used to rapidly make millions to billions of copies of a specific DNA sample. Following scientists to make a very small sample of DNA and amplify it to a large enough amount to study in detail. PCR was invented in 1984 by the American biochemist Kary Mullis at Cetus Corporation. It is fundamental to much of genetic testing including analysis of ancient samples of DNA and identification of infection agents. Using PCR, copies of very small amount of DNA sequences are exponentially amplified in a series of cycles of temperature changes. PCR is now a common and often indispensable technique used in medical laboratory and clinical laboratory research for

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for a broad variety of application including biomedical research and criminal forensics. The majority of PCR methods rely on thermal cycling. Thermal cycling exposes reactants to repeated cycles of heating and cooling to permit different temperature dependent reaction - specifically, DNA replication. PCR employs two main reagents primers (which are short single strand DNA fragment known as oligonucleotide that are a complementary sequence to the target DNA region) and a DNA polymerase. In the first step of PCR, the two strands of the DNA double helix are physically separated at a high temperature in process called nuclear acid denaturation.

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Q No 1 DNA Extraction from human blood.

Ans:

DNA:

- It is a nucleic acid, made of carbon, hydrogen, oxygen, nitrogen and phosphorus.
- A fundamental molecule found in all living things.
- Carries the genetic information in the cell.
- DNA is in the nucleus of almost every cell in your body.
- The more closely related organisms are, the more similar their DNA.
- The length of DNA per cell is about 10000 times as long as the cell itself.
- However, DNA only takes up about 1% of the cell's volume. This is because DNA is specially packaged through a series of events to fit easily in the cell's nucleus.

3) "DNA Extraction"

- DNA extraction is a routine procedure to isolate and collect DNA.
- DNA extraction is the first step for subsequent molecular or forensic analysis.

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• However, when DNA is extracted from multiple cells, the amassed quantity can easily be seen and looks like strands of mucous-like translucent cotton.

(3) Why you isolate DNA

- (1) Rapid detection of genetic disorders in a patient.
- (2) Analyze forensic evidence.
- (3) Study a gene involved in cancer.
- (4) DNA fingerprinting to identify individuals (paternity test).