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## Q NO # 1 part (a)

Ans: Diagnosis of CML:-

(i) BLOOD Test: CBC  
TLC increase  
HB and platelet increase

(ii) Biopsy:-

Bone marrow aspiration  
Bone marrow biopsy.

(iii) Cytogenetics:-

Deduct chromosomal abnormality  
e.g Philadelphia chromosomes 22 into  
Abnormal

(iv) Imaging Diagnosis:-

- 2) X-rays Lymphnodes
- 2) CT scan
- 2) MRI

(v) Spinal Tap:- for CSF diagnosis  
to suck the blast cells.

(vi) Fish Test is used for chromosomal  
study (BCR-ABL gene)

(vii) PCR in CML is used to look  
for the BCR-ABL gene in  
Leukemia etc----



## QNO#1 part (b)

Ans: The main cause of CML is unknown but it is believed that it is caused from the Genetic mutation, during the swapping of DNA between the chromosomes [22 and 9] leads to the formation of a gene known as BCR-ABL. These genes produce a specific protein called Tyrosine Kinase. This protein causes CML cells to grow and divide out of control. Result CML occurs.



## Q No # 1 (c)

Ans:- Philadelphia occurs due to the translocation or swapping of chromosomes 22 and 9 respectively.

So it means that it is a mutation which only occurs due to abnormal chromosomes. Simply we can say that it is a somatic mutation which is not inheritable to the offspring.

## Q No # 2 (a)

Ans:- The diagnosis of Corona virus occurs through a special PCR called R-T-PCR.

It is nuclear technique through which the corona virus can be found in even a small sample from the patient and it allows for the rapid detection which is vital to limit the spread of corona virus.

In this method radioactive isotopes marker are used to ~~protect~~ Detect Target genetic material.



## Q no # 2 part (b)

Ans:- RT-PCR can be carried out by one step RT-PCR protocols or Two step RT-PCR protocols.

(i) One step RT-PCR. Take mRNA Target and subjects them to Reverse Transcription and then PCR amplification in a single Test Tube.

(ii) Two step RT-PCR, as the name implies, occur in two steps first the reverse Transcription and then the PCR.

## part (c)

Ans:- Biosafety :

(i) N95 mask (ii) head cover (iii) Foot wear

(iv) Lab coat (v) Gloves (vi) protection of eyes through lab goggles (vii) Avoid to touch face nose, eyes during experiment.

P.T.O



(VIII) Hand washing facilities like sanitizers.

2) All those infectious items which cause splash, droplets or aerosols is to be ~~manipulated~~ manipulated.

⇒ uses of BSCs mainly class II BSCs to protect work surface material and protect him/herself and environment.



## Q NO # 3 part (a)

Ans: The function of Taq polymerase

To make multiple copies of DNA. in

PCR we used Taq polymerase because

is heat tolerant so it can work

at high temperature.

part (b)

Loading dyes is mixed with DNA

sample for use in gel electrophoresis,

dye shows us fast our gel is running

while gel agarose separates DNA

fragments at a specific size.

part (c)

primary antibody: An antibody which

is directly attached or binds to the

antigen. The region of primary antibody

recognizes the epitope on the antigen.

P.T.O



Secondary antibody: It binds with primary antibody to help in detection and purification of target antigen.

part (d)  
Blotting paper is used in Southern blotting for finding the specific DNA fragment.