

Topic: AIDS
Class: B.Sc Part –III (Hons.)
Paper- VII
Group – A

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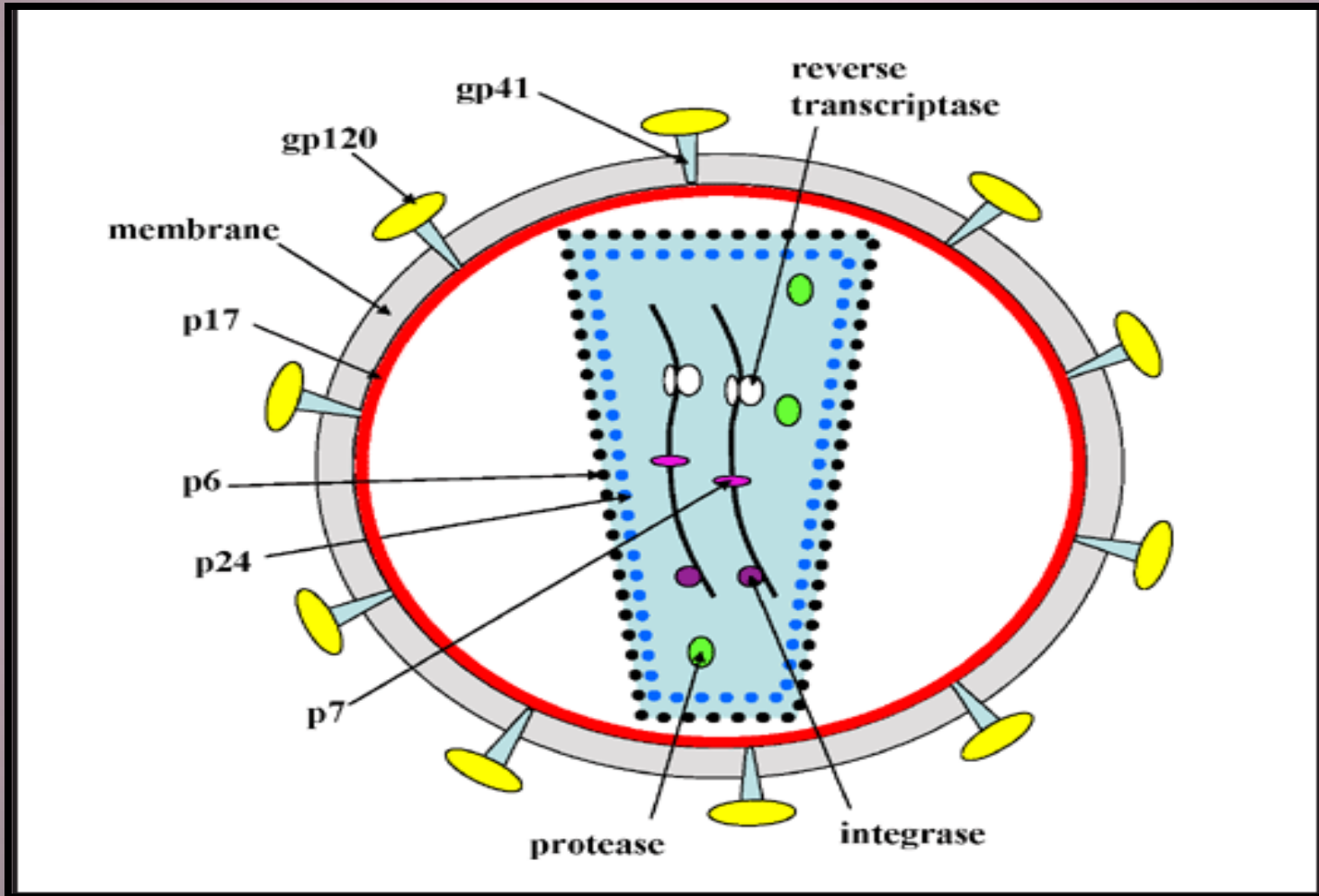
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The structure of HIV

- HIV is called a retrovirus
- It works in a back-to-front way.
- Unlike other viruses, retroviruses store
- Their genetic information using RNA instead of DNA,
- Meaning they need to 'make' DNA
- When they enter a human cell in order to make new copies of themselves.

- HIV is a spherical virus.
- The outer shell of the virus is called the **envelope**
- and this is covered in spikes of the **'glycoproteins' gp120 and gp41,**
- which allow HIV to lock onto the CD4 receptor on CD4 T cells and enter the cell.

Structure of the HIV-1 Virus



- Inside the virus envelope is a layer called the matrix.
- The core of the virus, or nucleus, is held in the capsid, a cone-shaped structure in the centre of the virion.
- The capsid contains two enzymes essential for HIV replication,
- the reverse transcriptase and integrase molecules.
- It also contains two strands of RNA – which hold HIV's genetic material.

- HIV's RNA is made up of nine genes which contain all the instructions to make new viruses.
- Three of these genes – *gag*, *pol* and *env* – provide the instructions to make proteins that will form new virus particles.
- For example, *env* provides the code to make the proteins that form the envelope, or shell, of HIV.
- *gag* makes the structural proteins such as the matrix and the capsid, and *pol* makes the enzymes that are essential for making new viruses.

- The other six genes,
- known as *tat*, *rev*, *nef*, *vif*, *vpr* and *vpu*, provide code to make proteins
- that control the ability of HIV to infect a cell,
- produce new copies of virus or release viruses from infected cells