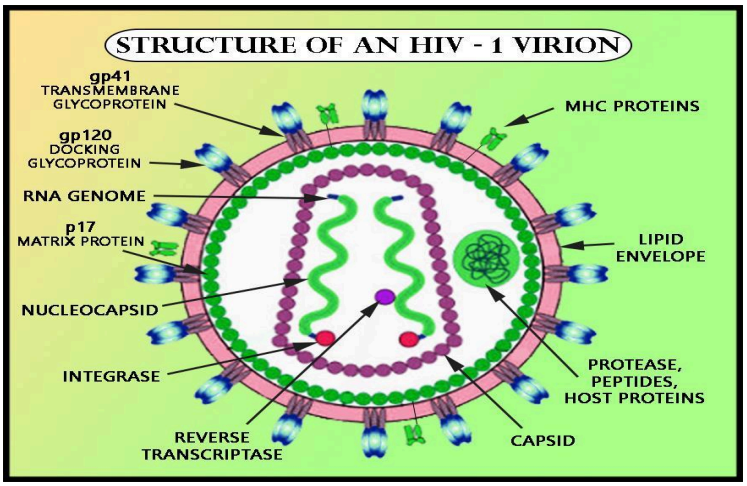
BIOLOGY FOR ENGINEERS – UNIT 3- QUESTION BANK

2 MARKS

1. **What are the types of immunity?**
   - Innate immunity
   - Adaptive immunity
2. **What are the different types of immunoglobulins available in human blood stream**?
   - Ig G
   - Ig A
   - Ig M
   - Ig E
   - Ig D
3. **List down parasite names that can cause malaria**.
   - Plasmodium falciparum (or P. falciparum)
   - Plasmodium malariae (or P. malariae)
   - Plasmodium vivax (or P. vivax)
   - Plasmodium ovale (or P. ovale)
4. **What are the sign and symptoms of malaria?**
   - Fever.
   - Chills.
   - General feeling of discomfort.
   - Headache.
   - Nausea and vomiting.
   - Diarrhea.
   - Abdominal pain.
   - Muscle or joint pain
5. **List down bacterial species that can cause TB.**
   Tuberculosis (TB) is caused by a bacterium called *Mycobacterium tuberculosis.*
6. **How could you define the characteristics of TB bacteria?**
   Mycobacterium tuberculosis are aerobic, non–spore-forming, nonmotile, facultative, curved intracellular rods measuring 0.2-0.5 μm by 2-4 μm.
7. **List down the sign and symptoms of TB**.
   - Coughing for three or more weeks.
   - Coughing up blood or mucus.
   - Chest pain, or pain with breathing or coughing.
   - Unintentional weight loss.
   - Fatigue.
   - Fever.
   - Night sweats.
   - Chills
8. **What are the drugs can be prescribed for TB?**
   - isoniazid (INH)
   - rifampin (RIF)
   - ethambutol (EMB)
   - pyrazinamide (PZA)

9. **Pictorially represent the structure of HIV.**



10. **List down the drugs that can be utilized against HIV.**
    - Non-nucleoside reverse transcriptase inhibitors (NNRTIs) – **Example : efavirenz**
    - **Nucleoside or nucleotide reverse transcriptase inhibitors (NRTIs) – Example : Abacavir**
    - **Protease inhibitors (PIs) – Example : atazanavir**
    - **Entry or fusion inhibitors – Example : enfuvirtide**
    - **Integrase inhibitors – Example : raltegravir**

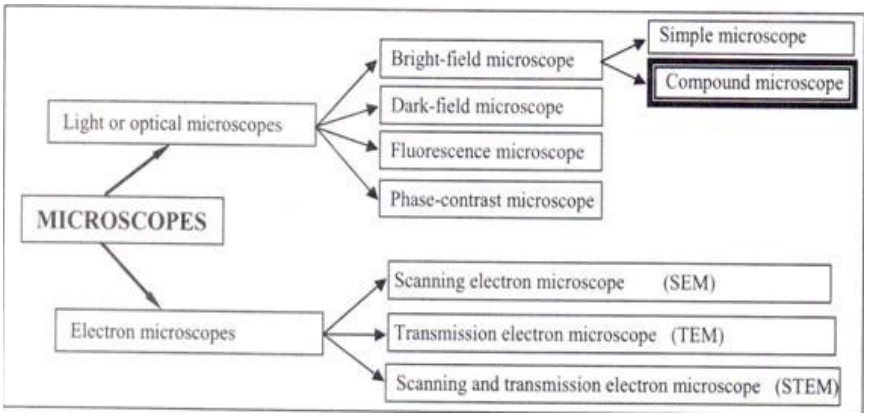
11. **How could you define polio virus?**
    - A poliovirus, the causative agent of polio, is a serotype of the species Enterovirus C, in the family of Picornaviridae.
    - Poliovirus is composed of an RNA genome and a protein capsid. The genome is a single-stranded positive-sense RNA genome that is about 7500 nucleotides long

12. **Differentiate the symptoms of two types of polio.**

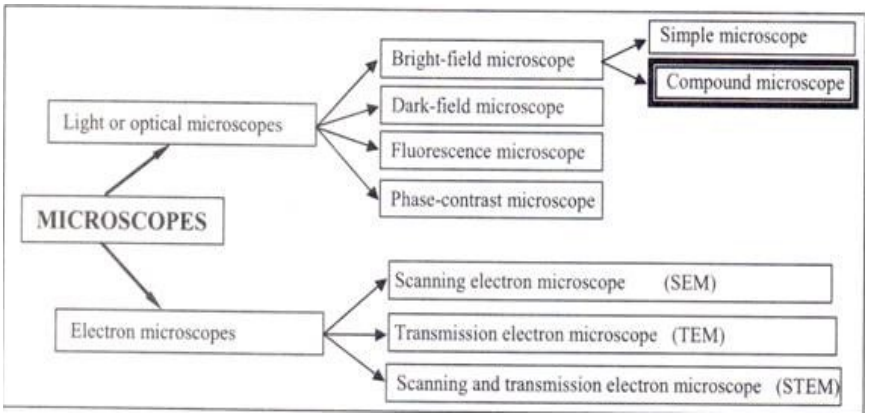
    ✔ **Non-paralytic polio symptoms:**
    - fever, sore throat ,headache, vomiting, fatigue, back and neck pain, arm and leg stiffness, muscle tenderness and spasms, meningitis, an infection of the membranes surrounding the brain

    ✔ **Paralytic polio symptoms:**
    - a loss of muscle reflexes, severe muscle pain and spasms, loose or floppy limbs that are often worse on one side of the body

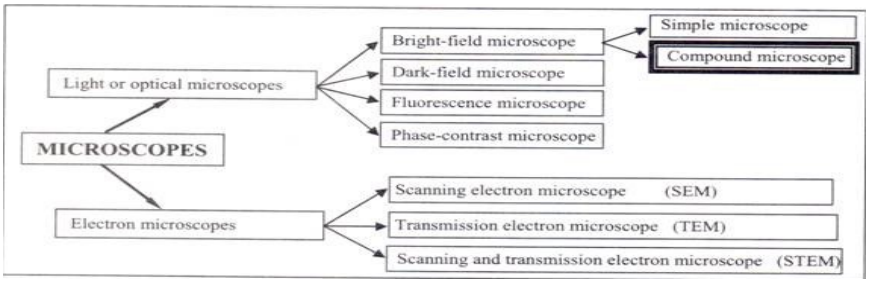
13. **List out the types of Light microscopes.**



14. **Classify the types of microscopes.**



15. **How could you define microscopy?**
    Microscopy is the technical field of using microscopes to view samples & objects that cannot be seen with the unaided eye
16. **Define Magnification.**
    - Ability to show detail
    - Increase in size of the object.
    - Magnification beyond the resolving power is of no value. It is because the larger image will be less distinct in detail and fuzzy in appearance
17. **List out the types of electron microscopes.**



18. **What is the role of phase-contrast microscope?**
    Phase contrast is a light microscopy technique used to enhance the contrast of images of transparent and colourless specimens. It enables visualisation of cells and cell components that would be difficult to see using an ordinary light microscope.
19. **Differentiate SEM and TEM**.

Differences between SEM and TEM

TEM	SEM
Electron beam passes through thin sample.	Electron beam scans over surface of sample.
Specially prepared thin samples are supported on TEM grids.	Sample can be any thickness and is mounted on an aluminum stub.
Specimen stage halfway down column.	Specimen stage in the chamber at the bottom of the column.
Image shown on fluorescent screen.	Image shown on TV monitor.
Image is a two dimensional projection of the sample.	Image is of the surface of the sample

20. **How can you define electron microscope?**
    An electron microscope is a microscope that uses a beam of accelerated electrons as a source of illumination.
21. **Write a short note on 'microscope'.**
    Microscope- optical instrument consisting of a lens (or) a combination of lens for making enlarged (or) magnified images of minute objects