

Section "B"

Question no.1: fill in the blank

- 1) Probiotic
- 2) Symbiotic
- 3) Antibiotic
- 4) Bacteria
- 5) Commensalism
- 6) Conjugation
- 7) Plasmid
- 8) Normal Horror
- 9) Transcription OR Translation

Q NO.2: what is normal flora, advantages and disadvantages of normal flora?

ANS: normal flora are the microorganisms that live on another living organisms human or animal or inanimate with causing diseases. normal flora are present in the human body from birth until death. This normal flora helps to prevent us becoming colonised with more dangerous bacteria which might lead to infection.

"Advantages"

- They constitute a protective host defense mechanism by occurring ecological niches
- They produced vitamin **B** and vitamin **K**
- The oral flora contribute to immunity by inducing low levels of circulating and secretory antibodies that may react with pathogens.
- Prevent colonization by competing for attachment sites.

- Prevent colonization by competing for essential nutrients.

“Disadvantages”

- They cause disease in the following
 - (A) When individual become immunocompromised.
 - (B) When they change their usual anatomic location.
- Potential for spread in the sterile part of body
- Intestine may perforate.
- Skin broken
- Extraction of tooth
- Perinatal skin flora enter urinary tract.

Q no.3:When the detail different stages of pathogenesis?

- **ANS:** transmission from the source of infection to the portal of entry.
- Evasion of primary host defense.
- Adherence to mucus membrane.
- Colonization by growth of the bacteria at the site of adherence.
- Disease symptoms caused by bacterial toxin or invasion.
- Host immune response during steps 3,4,5
- Progressive or resolution of the disease.
- Adhesion of microorganisms to host cells.
- Propagation of organisms
- Damage to host cells by toxin or inflammatory response.
- Evasion of host secondary defense.
- Host responses caused by toxin production or invasion accompanied by inflammation
- Host responses, both non specific and specific (immunity)

- Most bacterial infections are acquired from an external source, and for those stage of infection.
- Some bacterial infection are caused by member of the normal flora as such as are not transmitted directly prior to the onset of infection.
- Transmission from an external source into the portal of entry.

Q NO.4: how the gene transfer from one bacterium to another?

ANS: 1) conjugation

Conjugation of transfer of circular DNA called plasmids through cell to cell contact. Transformation is the uptake of free DNA from the environment.

2) transformation

Horizontal gene transfer in the movement of genetic material between unicellular and multicellular organism other than by the transmission of DNA from parents to offspring. HGT is an important factor in the evolution of many organism.

transformation of cell is a widely used an versatile tool in genetic engineering and is of critical in the development of molecular biology. the purpose of the technique is to

introduce a foreign plasmid into bacteria, the bacteria then amplifies the plasmid, making large quantities of it. Horizontal gene transfer is the primary mechanism for the spread of antibiotic resistance in bacteria, and play an important role in the evolution that can degrade novel compounds such as human-created pesticides and in the evolution, maintenance, and transmission of virulence.

3) transduction

A process genetic recombination in bacteria in which genes from a host cell (bacterium) are incorporated into the genome of a bacterial virus (bacteriophage) and then carried to another host cell when the bacteriophage initiates another cycle of infection.

- A bacteriophage adsorbs to a susceptible bacterium.
- The bacteriophage genome enters the bacterium. The genome directs the bacterium's metabolic machinery to manufacture bacteriophage components and enzymes.
- Occasionally, a bacteriophage capsid mistakenly assembled around either a fragment of the donor bacterium's chromosome or around a plasmid instead of around the phage genome.

- The bacteriophage are released as the bacterium is lysed.
- The bacteriophage enter the donor bacterium DNA it is carrying in to recipient bacterium.
- Homologous recombination occurs and the donor bacterium DNA is exchanged for some of the recipient DNA.

Q NO.5: write short notes on following..

ANS: “symbiotic relationship”

1) Are a special type of interaction between species. Sometimes beneficial, sometimes harmful, these relationships are essential to many organisms and ecosystems, and they provide a balance that can only be achieved by working together.

2) (Antimicrobial drugs)

- Amoxicillin
- Ampicillin
- Cephalexin
- Penicillin
- Erythromycin

- Doxycycline
- Tetracycline
- Ciprofloxacin
- Ofloxacin

3) (antimicrobial resistance)

Antimicrobial resistance happens when microorganisms (such as bacteria, fungi, virus, and parasites) changes when they are exposed to antimicrobial drugs (such as antibiotics, antifungal, antiviral, antimalarial and anthelmintic).

Microorganisms that develop antimicrobial resistance are sometimes referred to as “superbug”.

4) “probiotic”

Probiotic are a combination of live beneficial bacteria and or yeast that naturally live in your body. bacteria is usually viewed in a negative light as something that makes you sick.

