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***Paper. Microbiology***

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***Question no 1. MCQs***

***Answers.***

1. ***…. Probiotics***
2. ***…. Symbiotic***
3. ***….. bacteriostatic***
4. ***……resident Flora***
5. ***……commensalism***
6. ***……conjugation***
7. ***…. Plasmid***
8. ***….. normal microbial flora***
9. ***….. transcription and translation***
10. ***…***

***Question no 2***

***What is normal Flora, what is the advantages and disadvantages of Flora?***

***Answer. Normal Flora is the term used to describe the various bacteria and fungi that are permanent resident of certain body sites, especially the skin, oropharynx, colon, and vagina. Viruses and parasites w of them normal Flora of which are the other major group of microorganisms, are usually not considered member of the normal Flora, although they can be present in asymptomatic individual, the normal Flora organisms or often referred to as commensal. Commensal are organisms that drive benefits from another Host but don’t damage that host. The term human microbiome is often used to describe the normal Flora.***

 ***The members of the normal Flora vary in both numbers and kind from one site to another. Although the normal Flora extensively populate many area of the body. The internally organ usually are sterile. Areas such as the central nervous system, blood, lower bronchi, and alveoli, liver, spleen, kidneys and bladder.***

***, preservation of food, and prevention of colon being and animal.***

***Advantages of Flora***

***produce myriad beneficial effect for human being include , alleviation of lactose intolerance, diarrhea, peptic ulcer, stimulation of immune system, antiallergic effect, antifungal a***

***Disadvantages of Flora.***

***It has both advantages and disadvantages,***

* ***They can cause disease when individual become immunocompromised.***
* ***When they changed their usual anatomic location.***

***Most***

***Question no 3.***

***Write detail different stages of pathogenesis.***

***Answer. Stage of pathogenesis.***

***Pathogenesis is a method which a disease can develop.***

***They can occur through foodborne intoxication where the causative agent produce toxins in the body.***

1. ***Transmission***

 ***In order to begin infection and eventually cause disease, pathogens must find a transmission route. Transmission of an infectious agent can occur in many ways, but it is typically through exposed skin (e.g., a cut, abrasion, puncture, or wound) or mucous membranes (e.g., gastrointestinal tract, respiratory tract, or urogenital tract).***

1. ***Adherence***

***Once the pathogen has gained access to the body, it must have some means of attaching itself to the host’s tissues. This attachment is called adherence and is a necessary step in pathogenicity. Microbes contain ligands, which are projections that attach host receptors or surface proteins. If a microorganism cannot adhere to a host cell membrane, disease will not occur.***

1. ***Invasion***

***At this point, microbes begin to invade the host and produce a bacteremia (i.e., presence of bacteria in the bloodstream) or viremia (presence of a virus in the bloodstream). Some bacteria are able to cause disease while remaining on the epithelial barriers, while many need to penetrate that barrier. Once this barrier has been penetrated, these pathogens can multiply without competition.***

1. ***Colonization***

***Colonization is the multiplication of pathogenic organisms where toxins are produced and the normal flora are overcome. During this stage, pathogens compete with normal flora for space and nutrients. Pathogens usually colonize host tissues that are in contact with the external environment.***

1. ***5: evasion of host defense. After colonization, pathogens circumvent the host’s innate & adapted defenses by phagocytosis. Multiple mechanisms are used by pathogens to evade a host’s immune system. Pathogens must also avoid adapted defenses. They can also utilize antigenic variation to alter the antigen structure. In addition, pathogens can mimic host molecules, which can cause disease-related damage.***
2. ***Cause damage or disease to host***

 ***Damage can occur through direct or indirect pathways. Direct methods produce toxins, which are poisonous substances that produce toxemia within a host. Three types of toxins are produced to cause damage: • Exotoxins: Proteins secreted by pathogens that cause damage to the host (botulinum toxin, tetanus toxin). • Endotoxins: Toxic substances that are released when a cell is killed (Lipolysaccharides). • Exoenzymes: Enzymes that function outside the host cells or tissues.***

1. ***Exiting the host. A pathogen must exit the body. This occurs through various routes. Examples include sneezing, coughing, diarrhea, coitus, pus, blood, or insect bites.***
2. ***Survival out side the host.***

***Finally, a pathogen must be able to survive in the environment long enough to be transmitted to another host. Some are hardy and can survive for several weeks before a new host is found. There are others that survive in animal reservoirs or require direct contact because they are fragile.***

***Question no 4***

***How the gene transfer from one bacterium to another?***

***Answer. Bacteria can acquire new Gene for transferring in three basic ways.***

1. ***Transformation. Uptake and retention of external DNA molecule. Under the right condition bacteria can take in external DNA fragment by transformation.***
* ***DNA binding protein transfer external DNA across cell envelope.***
* ***Homologous recombination can be occur.***
* ***Bacterial cell capable of DNA transformation are referred to as competent***
1. ***Bacterial conjugation. Required in factor plasma.***
* ***Has all conjugation gene.***
* ***Daric formation of a sex pilus.***
* ***Single DNA strand produce by DNA replication is transferred to F- cell through the sex pilus recipient produce 2nd strand.***
1. ***Transduction. A virus (phage) particle can transfer DNA fragments from one host to another following recombination.***

***Required a virus to be packed with a bacterial DNA by mistake.***

***Question no 5***

***Write Short notes on the following***

1. ***Symbiotic relationship.***

***Symbiotic relationships 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.***

1. ***Antimicrobial drug.***

***A drug use to treat Microbial infection. Antimicrobial drug is a general terms that refer to a group of drug***

 ***That includes antibacterial, antifungal, antiviral and antiprotozoal.***

1. ***Antimicrobial resistance. Antimicrobial resistance happen when microorganisms ( such as bacteria, fungi, virus, parasites) change when they are exposed to antimicrobial drug (such as antibiotics, antifungal, antiviral, antimalarial) microorganisms that develop antimicrobial resistance are some time refer to as SUPERBUGS. As a result a medicine become ineffective, and infection persist in the body increasing the risk of spread to other.***
2. ***Probiotics. Probiotics are live bacteria and yeast that good for us, especially for our digestive system. We usually think of these as germ that cause disease, but our body full of bacteria both good and bad. Probiotics are often called good and helpful bacteria because they keep our gut healthy. We can find probiotics in complement. And food like yogurt.***
3. ***Prebiotics. Prebiotics are type of dietary fiber that feed the friendly bacteria in our gut. This helps the gut bacteria which produce nutrients for our colon cells and lead to a healthy digestive system. Some of these nutrients contains Short chain fatty acids like butyrate, acetate and propionate.***

The end.