**Medical Microbiology. Dental 4th semester.**

**Mid-term assignment paper.**

**INSTRUCTOR . Muhammad Sohail**

*Instruction; Write briefly and up to the point. All questions carry equal marks.*

***Name Shah Fahad***

***Student ID 14818***

***Assignment paper Microbiology .***

1. Explain Structure of bacteria in detail ? also Explain some cell organelle of bacterial cell and its function

***Answers No 1***

***Structure of Bacteria***

 Bacteria are prokaryotic and lacking nuclei membrane bounded organelles.

It composed of chromosomes of a single and closed DNA circle.

They are in many different shapes and sizes.

From minute spheres cylindrical and spiral threads to flagellated rods and filaments chain.

Bacteria are found every where in the earth.

It composed single and one body cell.

They have two external attachments called flagella and pill.

***Flagella***

 It is structure present in bacteria.

About half of all bacteria are capable For motor function a directed movement towards or away from stimulus.

Flagella are hairs like appendage which help bacteria to move.

On the base of flagella bacteria are classified into five categories.

1. ***Atrocious***

 The structure that having no flagella.

1. ***Monotonous***

 The structure That having one flagella

1. ***Amphitrichous***

 The structure having two flagella opposite to each other .

1. ***Lophotrichous***

 The structure having many flagella on one side

1. ***Peritrichous***. The structure having flagella on whole body.

***Pili***

 Those appendage that pull two cells together prior to DNA transfer from one cell to another .

It attached one bacteria with other bacteria.

Sometime pili are referred to as sex pili.

***Cell wall***

 The outermost boundaries of Bacterial cell and provide shape to the cell.

Also provide protection and prevent it from bursting in a hypotonic environment.

The cell wall of Bacteria is made up from peptidoglycan.

Which is combination of carbohydrate and protein.

On the basis of peptidoglycan bacteria are divided into two groups.

***GRAM POSITIVE***

 Those bacteria which having thick cell wall.

GRAM ***NEGATIVE***

 Those bacteria which having thin cell wall.

To finding GRAM POSITIVE and GRAM NEGATIVE a technique is used called GRAM staining technique..

***Capsule***

 Capsule is outermost covering made up from gelatinous materials and present on the outside of the cell wall.

If it is loosely attached to the cell wall called glycosylic.

It escaped bacteria from ammun system. And also protect bacteria from dehydration.

***Endospore***

Inside the cell spore like structure to with stand harsh condition certain bacteria develop resistance cell called endospore

***Genomic organelles***

 Less DNA

Protein Absence

Lack nucleus

Some cell organelles

Cell membrane

 Similar to eukaryotic and selectively permeable membrane. Present out side of the cell

Function

 Cell membrane mainly help bacteria cell to carry out cellular respiration with the help of enzymes.

It invagiants into cytoplasm to form pocket like structure called mesosome.

Mesosome also help in cell division and replication of DNA.

***Ribosome***

 In bacteria 70s ribosomes are present.

It is a cytoplasmic nucleoprotein particle.

Ribosomes of bacteria are different from eukaryotic cell.

And also different in their protein and RNA content.

Function

 The main function of ribosome is to serve at the site of mRNA translation and protein synthesis .

1. What is Bacterial culture media ? write down some types of bacterial culture media in detail.?

***Answer No 2***

Bacterial cultural media

 A bacterial culture is a test which is used for finding bacteria when it infecting a wound.

Bacterial culture are take from the blood or urine etc.

***Types of Bacterial culture media.***

There are six types of Bacterial culture media.

1. Basal Media
2. Enriched Media
3. Selective Media
4. Indicators Media
5. Transport Media
6. Storage Media

***Basal Media***

 It is used for growth of bacteria that don't need rich amount of media.

For example

 Nutrients agar, pep lone water.

***Enriched Media***

 These are Usually enriched by adding with blood, serum or egg.

***Selective Media***

 The media stop the growth of unwanted bacteria and give permission to the useful bacteria.

***Indicator Media***

 Also called signal media.

A specific organism causes change in signal. And give ideation of wound.

Indicator Media included in medium.

**Transport Media**

 Transport Media are used when specific men can't cultured soon

After the collection.

***Storage Media***

 It is used for store the bacteria for long duration of time.

1. What is the difference between Sterilization and disinfection ? write down some methods used for sterilization ?

***Answer No 3***

Difference between sterilization and disinfection.

Sterilization is a process that remove or kill all type of microorganisms or a method of killing or reducing all types of microorganisms which is harmful or not while disinfection is a process of reducing harmful microorganisms from instruments.

***Methods use for sterilization***

There are two types of sterilization

1. Chemical sterilization
2. Physical sterilization

***Chemical sterilization***

 A type of sterilization in which chemical is used for reducing microorganisms.

Like Alcohols, Aldehydes, Oxidizing agent's, ethylene oxide gas, and others...

***Physical sterilization***

 Physical sterilization are in three methods

(A)Thermal sterilization

(B) Radiation sterilization

(C)Filtration sterilization

***Thermal sterilization***

 It is also called heat sterilization. Thermal sterilization use heat for killing or reducing the microorganisms.

The most common form of thermal sterilization is stream addiction..

Stream is an inexpensive and effective carrier of heat.

***Radiation sterilization***

 The killing or reducing all types of microorganisms which through radiation.

There are two general types of radiation use sterilization.

(a)Ionizing radiation

(b)Non ionizing radiation

***Ionizing radiation***

 It use short wave length and high intensity radiation to kill microorganisms.

***Non Ionizing radiation***

 It use long wave length and low energy to kill microorganisms.

***Filtration radiation***

 It is a type of physical sterilization which is used for removal of microbes from solution.

Such as Antibiotics and vitamins are first filtered before addition to sterile cool media.

1. Write a note on Structure of fungi in detail ?

***Answer No 4***

***Structure of fungi***

 Fungi are made up of a number of elongated, tubular filaments like

Branching and usually colourless called hyphae.

Hyphae are long cylindrical tubular structure

The hyphae having a branch called mycelium which we can see through our naked eyes.

 Hyphae consist of two main structure

1. Aseptate
2. Septate

***Aseptate***

 They are Also called coenocytic hyphae.

They perform no any division.

Like a long cylindrical cell, these cylindrical contain multi nucleated cell.

And having no separate division.

Because of non division cytoplasm and cytoplasmic material move quickly inside the cell.

The performing of no any division is a disadvantage of the Aseptate hyphae of fungi.

***Septate***

 This hyphae contain a division.

***Septate has two types of structure***

1. Monokaryotic
2. Diekaryotic

***Monokaryotic***

 This type of hyphae contain single or one nucleus..

***Diekaryotic***

 Thus type of hyphae contain two nucleus

In septate hyphae are combined together and cytoplasmic material does not move quickly inside it.

Each septate containing three parts

The long term are called hyphae.

And also containing pores and septs.

(5) What are few Hospital based infections that can be transfer to others

 due to un hygienic condition ? Explain with an example ?

***Answer No 5***

The infection that can be transfer to other due to run hygienic condition

***Nosocomial infection***

 It is that types of infection that are present in the patient at the time of admitting or appointment with the doctor but develop during the course of treatment and study.

There are two types of infection present in body..

***Endogenous infection***

 This type of infection is present in the body of patient but there are no symptoms of these infection in patient during the investigation

**Cross infection**

 Also called exogenous infection

During stay in hospital the patient comes into contact with new infection agent's become contaminated and subsequently develop an infection.

The most common types are Hepatitis..

***Hepatitis***

 Hepatitis is an inflammation of liver.

The types of hepatitis is named for virus that causes it.

Following examples are

Hepatitis A

Hepatitis B

Hepatitis C

With the un Care of a doctor or hospital hygienic the hepatitis are transferred from one patient to both others patient and DOCTOR through the body fluid like blood and also through instruments which is used for treatment during surgery or other perfumes.

***Example***

When gloves is used for an infected patient and those gloves are again used for other patient and if this gloves were touch with the body fluid like blood of first infected nation so the hepatitis were transferred to the first patient.