

NAME = Muhammad abubakar

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PAPER = MICROBIOLOGY

Q1: Fill in the Blanks.

- 1) MICROOGANSIM are living things which individually are too small to be seen with naked eye.

- 2) The scientific study of algae is called **PHYCOLOGY**
- 3) Diseases causing living organisms are known as **PATHOGENS**
- 4) **RIBOSOME** cell organelle is present both in prokaryotic and eukaryotic cell.
- 5) The power house of cell is known as **MITOCHONDRIA**
- 6) **binary fission** is the most common method of asexual reproduction in microbes.
- 7) Log period of bacterial growth is also known as **LOGARITHMIC**

INCREASE

- 8) **LOG** phase of microbial growth is metabolically active and is for industrial purposes.
- 9) Shrinkage of cell's plasma membrane caused by osmotic loss of water is called

PLASMOLYSIS

- 10) For synthesis of cellular material nitrogen and sulfur is needed for **PROTEIN** synthesis.

Q2: short note on the following'

1) Mitochondria

.It was first described by a German pathologist named Richard Altman in the year 1890

.The word mitochondrion derived from the Greek word *mitos*, "thread" and *chondrion*, "granule"

.Mitochondria are membrane bonded organelles which is present in cytoplasm of all eukaryotic cell which produce ATP. ATP used as energy molecule by the cell

.Also called the powerhouse of the cell. Main work of the mitochondria as the cell digestive system. mitochondria play a major role in breaking down nutrients and produce energy for the cell

.most of the biochemical reactions involved in cellular respiration take place within the mitochondria.

2) Nucleus

. The term nucleus' putted by Robert Brown in 1831.

.The nucleus is a membrane bounded organelles that contains genetic material of eukaryotic organisms and control all the activities of cell.

Some main components of nucleus

- . A phospholipid bilayer membrane
- . Nucleoplasm
- . Nucleolus
- . Chromatic

The nucleus has 2 functions:

.It is responsible for storing the cell's hereditary material

. It is responsible for harmonize many of the important cellular activities like protein synthesis, cell division, growth and and other fuctions

3) Budding

.Budding is an asexual mode of producing new organism. In this process a new organism is produce from a small part of the parent body

.Budding is very common in plant and fungi. Sometimes it can be formed in animals for **example** with hydras or sponges

4) Culture media

.Culture media is a special medium use in microbiological laboratories to grow different kind of microorganisms

.It is important to grow micoorgansim outside from the body for the following purosas

..To find the cause of infectio from the clinical sample

..T o prepare biological products like vaccines antigrns etc.

Composition of culture media

. water .energy,carbon,nitrogen source ,mentral salt ,special growth factors

5) GROWTH FACTORS

- Essential organic compounds an organism is unable to synthesize, they must be taken from the environment
- Some bacteria having low enzymes needed for synthesis for certain vitamins, so they must obtain them directly
- **Examples:**
 - amino acids, purines, pyrimidines
 -

Q3: What is bacterial growth? Discuss different phases of bacterial growth

BACTERIAL GROWTH

Bacterial growth is the increase in numbers of bacteria but not increase in size of cell.

BINARY FISSION

BINARY FISSION is most common method of reproduction, asexual reproduction splitting of parent cell into two daughter cells

PHASES OF GROWTH

1) LAG PHASE

.in lag phase the period of little or no cell division

.bacteria adapt themselves to growth conditions its is the time where the different bacteria are maturing and and not yet able to divide.

.In lag phase of the bacterial growth cycle the synthesis of RNA enzyme and other molecules occurs

.Length of this phase depend on type of bacteria sepsis , culture medium and environmental factors.

2) LOG PHASE

. In log phase period of growth also know as logarithmic increase and sometime called as exponential growth phase

. in this phase rate of growth is constant
.composition of biomass remains constant

.This phase result in straight line .
.continue as long as cell have adequate nutrients and good environment,

END