**Basic Microbiology**

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**Q1: Fill in the blanks …**

**1: Microorganism**

**2: Algolog or phycology**

**3: pathogens**

**4: Ribosome**

**5: Mitochondria**

**6: Binary Fission**

**7: Growth phase**

**8: long phase**

**9: plasmolysis**

**10: protein synthesis-**

**Q2: write short note on the following**

**Q1:**

**Ans:** Mitochondria is a type of cell organelles which is present in all eukaryotic cells except few (i-e , R.B.C )

**Discovery** : mitochondria was disver in 1850 in musle clles.

**Shape** : mitochondria may be rod, vesicles (round /gain )or filamentous etc in shape .

**Number** : The number of mitochondria varies in different cells i,e from one to thousand .

**Structure** : Under electron microscope the mitochondria is bounded (surround) by two membrane the outer membrane is smooth while the inner membrane from infolding cinward growth to the chamber called mitochondrial matrix these infolds are called cristae .

The inner surface of cristae has small knob like structure called elementary particles or F1particale criste of reaction of respiration.

**Q2:**

**Ans: Nucleus:** Nucleus is one of the large part of the eukaryotic cell which was discover by Robert Brown (1831).

Shape: Nucleus may be spherical or irregular in shape.

**Diameter :** Nucleus is about 10 um in diameter .

The cell have one nucleus are called mono nucleate.

PAERT Of component of nucleus :

Consist of four part .

1,nucleur membrane

2,nucleovs

3,nucleoplasm

4,chromosome.

**Q3**

Ans:

Budding is a type of asexual reproduction in which a new organism develops from an outgrowth or bud due to cell division at one particular site. The small bulb-like projection coming out from the yeast cell is called a bud

**Q4**:

Ans: culture medium: nutrient prepared for the microboes in a lab

**\*Inoculum**: when microbes are introduced into a culture medium

**\*sterile** : initially containing no living organisms

**\*Agar**: A complex polysaccharide derived from marine alga which has long been used as a thickener in foods such as lellies

**Slants** :what test tubes are called when agar is allowed to solidify with the tube held at an angle so that a large surface .

Deep : what test tubes when the solidifies vertically.

**Composition of nutrient agar, a complex for the growth of heterotrophic bacteria**

Constituent amount

Reptone 5.0 g

Beef extract 3.0 g

Agar 15.0 g

Water 1 liter.

**Q5:**

**Ans** : Essential organic compound an organism is unable to synthesize , they must be directly obtained them directly obtain them environment

Example : some bacteria lack the enzyme needed for synthesis for certain vitamins , so they must obtain them directly .

i.e : Amino acids , purines pyrimidines.

**Q3:**

Ans : bacteria Growth : An increase in bacteria numbers –does not refer to an increase in size of the individual cells

**Phases of bacterial growth**

1. **lag phase**, [bacteria](https://en.wikipedia.org/wiki/Bacterium) adapt themselves to growth conditions. It is the period where the individual [bacteria](https://en.wikipedia.org/wiki/Bacterium) are maturing and not yet able to divide. During the lag phase of the bacterial growth cycle, synthesis of RNA, enzymes and other molecules occurs. During the lag phase cells change very little because the cells do not immediately reproduce in a new medium. This period of little to no cell division is called the lag phase and can last for 1 hour to several days. During this phase cells are not dormant
2. **log phase** (sometimes called the logarithmic phase or the *exponential phase*) is a period characterized by cell doubling.[[5]](https://en.wikipedia.org/wiki/Bacterial_growth#cite_note-Bacanova2008-5) The number of new bacteria appearing per unit time is proportional to the present population. If growth is not limited, doubling will continue at a constant rate so both the number of cells and the rate of population increase doubles with each consecutive time period.
3. **stationary phase** is often due to a growth-limiting factor such as the depletion of an essential nutrient, and/or the formation of an inhibitory product such as an organic acid. Stationary phase results from a situation in which growth rate and death rate are equal. The number of new cells created is limited by the growth factor and as a result the rate of cell growth matches the rate of cell death. The result is a “smooth,” horizontal linear part of the curve during the stationary phase.
4. **death phase** (decline phase), bacteria die. This could be caused by lack of nutrients, environmental temperature above or below the tolerance band for the species, or other injurious conditions.