

**Shri Swami Vivekanand Shikshan Sanstha's
Vivekanand College, Kolhapur (An Empowered Autonomous Institute)
Department of Biotechnology Optional**

Date: 25/01/2026

OPEN BOOK TEST – CELL THEORY

All First Year (FY) Biotechnology students are hereby informed that an Open Book Test will be conducted on the topic "Cell Theory" as part of the academic assessment.

Test Details:

- **Topic:** Cell Theory
- **Type of Test:** Open Book Test
- **Class:** FY B.Sc. Biotechnology
- **Date:** 30/01/2026
- **Time:** 12.20-1.10
- **Duration:** 50 MIN.
- **Venue:** Classroom
- **Marks:** 10M

Instructions:

1. Students may refer to their **textbooks** and **permitted study notes** during the test.
2. Students must attend the test **punctually**.
3. Answers should be written in **their own words** and should demonstrate understanding of the topic.
4. Students should carry all necessary **writing materials** and **permitted reference material**.
5. The test will cover the historical development, contributors, and fundamental principles of **Cell Theory**.

All students are required to appear for the test.




Head, Department of Biotechnology

HEAD
DEPARTMENT OF BIOTECHNOLOGY (OPTIONAL)
VIVEKANAND COLLEGE, KOLHAPUR
(EMPOWERED AUTONOMOUS)

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Vijanti

Page No.

Date

30.01.26

Q. Cell theory -

→

- i) The simple, basic and formal biological generalization of cell is called as cell theory or cell doctrine.
- ii) In 1838, German botanist Schleiden state that cell is unit of structure in plant.
- iii) In 1839, German zoologist Schwann applied Schleiden's thesis on animal.
- iv) According to both of them cell is basic unit of structure in all life.
- v) Schleiden state that cell leads to two life, one is independent for its own development and other is as integral part of plant body & he also observe nucleoli.
- vi) Schwann state that body is made up of two types of cell. He also give term metabolism.
- vii) K. Nageli state that cell is made from another pre existing cell by cell division or duplication.
- viii) Virchow give significance of division for reproduction.

Modern cell theory.

- 1) All living organism are made up of one or more cells.
- 2) All metabolic reaction in unicellular or multicellular organism take place in cell.
- 3) Cell originate from another pre existing cell i.e. No cell can originate spontaneously but come in being by cell division or duplication of pre existing cell.
- 4) A well defined unit of structure is cell.

Exception of cell theory.

- 1) The plasma membrane permit controlled exchange of matter and energy with external world.
- 2) The metabolic ~~reactions~~ machinery for sustaining life such as growth, development and repairing cells.
- 3) Viruses does not fit in as cell because
 - i) ability to auto reproduction.
 - ii) ability to mutation in their substances.
 - iii) Genetic material in the form of either DNA or RNA

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Name: Sheeya kakasahes Awate

Roll No: 7460 Date: 30/01/2020

Sub: Biotechnology (opt)

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Cell Theory :-

⇒ Cell theory is simple and basic unit functional and structural unit of life.

⇒ The second name or is also known as cell doctrine.

⇒ The simple, basic and generalization is called cell theory.

⇒ The cell is basic unit of life.

* The cell theory is discovered by two scientists :-

1) Schleiden.

2) Schwann.

* And also the cell theory is discovered, and work is complete for this scientists.

(i) Oskar

(ii) Miescher

(iii) Lamarck.

(iv) Dutrochet

(v) Turpin

(vi) Shedd.

(vii) Bionchi.

⇒ According to the Schleiden discovered by Nuclei by cell leads and he described by the double life.

Double life:

* 1st life :- own development.

* 2nd life :- Integral part of multicellular organism.

* The cell is divided into two types:-

1) prokaryotic cell:- In this cell the primitive nucleus is present.
→ well developed nucleus is present
→ well developed membrane also present.

2) Eukaryotic cell:- Do not well developed nucleus.
→ membrane is absent.
→ nucleus is absent.

Biotechnology. (Opt)

★ Cell theory.

- ★① • cell is a basic unit & structure of Plant
According to
- cell is a basic unit structure & function in our life.
 - The simple basic & biology formal biology geratization of cell is called as cell theory
 - The cell theory as will as know as the cell cluctory.
 - Alter-neit name of cell theory ducriot.

★② Scientist :-

- ① okar ② Lamark ③ Dutrochet ④ Mirbel
⑤ sheader ⑥ Turpin ⑦ Bionchi

★③ Scheledein :-

According to the scheledein discovered Nucleoli by cell leads & he describe by the double life.

★④ double life :-

1st life = own development

2nd life = Intrngal part of multicellular organism

★⑤ Modern version of cell theory.

- To study of the version cell theory.

Name - Ragini Ganjay Pandey

Roll No : 7487

Day - Friday

Topic : Cell Theory

Date - 30/1/26.

class - BSC - I optional.

Q1. Cell Theory.

→ a. In 1838, a German botanist Schleiden described the plant or examined that the plant are composed of cell. Cell forms the structure of tissues in plant. In the same year.

b. A German zoologist Theodore Schwann in (1839) observed in animal bodies are also composed of cell. Schwann does a key hypothesis on plant & animals cell that all organisms are composed of cell & products of cell.

According, to both scientist 'All the living organism are composed of cells & products of cells'. Schleiden & Schwann formulated the 'Cell Theory' in (1838 - 1839). But they do not explain that how a new cell come in existence.

In cell theory many other scientist contributed like Oken, Turpin, K. Nageli & many other.

c. K. Nageli states that the cell of plant are arises from pre-existing cell.

- d. Rudolf Virchow a scientist who gave a final shape to the cell theory. He stated that the cells arise from 'pre-existing cell'. He established the theory of "Omni-cellula-e cellula". According to the Virchow - All the organisms of living bodies have a cell and each & every cell are come due to pre-existing cells.
- e. Schwann also explained that cells have their own metabolism. Cells have their own structure, function, according to their shape & size.

Significance of Cell Theory.

- 1) All the living organisms ~~cell~~ are composed of cells & product of cells.
- 2) All cells arise from pre-existing cell.
'Omni-cellula-e-cellula'.

Modern Cell Theory.

- 1) Cells are the basic units of life. It is a structural & functional ^{unit} of life.
 - 2) Cells have their own metabolism.
 - 3) Cells are the reasons of any small disease to a big disease like cancers & Tumors.
- f. Schwann described that cells of animals have small thin outer layer today we call that 'plasma membrane'.

Name: Sanika Rajkumar Ghodake
Roll no: 7469

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• Cell Theory

- The¹⁹³⁸ botanical by Mathsiacs Japed shieldan by plant cell.
- The 1939 zoologist by schanwan is applied by same concept of animal cell.
- According to the basic cell life.

- Cell ductine.

The cell is the basic structure and function of generation of cell theory or cell ductine.

- The simple and formal biological generalization of cell

- The contribute of cell theory
Okae, Lamark, Mariable,

According to scientific of cell theory.

- ① Shieldian (1938)
- ② Schwann (1939)
- ③ Robert hook (1665)

Modern Various cell theory

- It is function of one or more cell
- It is muticellular as well as.

Q cell theory

cell theory is a fundamental biological principle that defines cell as a universal building block of life. It was first established in 19th century and explains how all organisms are structured, how they function, & how they reproduce

* [A] Core Principle:

The classical cell theory consists of three main statements:

[1] All organisms are composed of cells: whether a single-celled bacteria, or a complex human all organisms are made of cells.

[2] cell as a basic structural and function unit of life: All vital processes (metabolism and energy flow) occur within the cell.

[3] ~~All~~ All cells arise from pre-existing cells: Cells do not appear spontaneously. They are formed by division of pre-existing cells.

[B] Historical development:

The cell theory discovered at century of microscopic research.

(1) Robert Hooke (1665): first observed and named 'cell', from his observation of cork in Primitive microscope.

(2) Matthias Schleiden (1838): The German Botanist who concluded that plant tissue are composed of cells.

(3) Theodor Schwann (1839): The German zoologist who discovered that animal tissues are also composed of cells, together with Schleiden he formulated first two principles

(4) ~~Rudolf~~ Rudolf Virchow (1855): Expanded the theory by stating 'omnis cellula e cellula'

[C] Modern cell theory

Some modern addition incorporate the advance in cell theory.

(i) Energy: metabolism and biochemistry (energy transformation) takes place in the cell.

(ii) heredity: cell contain DNA that is passed from parents to daughter cell through division

(iii) chemical composition : All cells are essential in the chemical makeup across the similar species

[D] Exception of cell theory

Some biological entities do not fit in the classical cell theory

(i) viruses : They do not have a cellular structure, and can not reproduce independently, making them ~~acell~~ acellular

(ii) coenocytic organisms : Some fungi like Rhizopus and algae have many nuclei in a continuous mass of ~~cytoplasm~~ cytoplasm without membrane

Q. Cell theory

→ It is proposed by Schanwan.

It 'basic in life'.

^{cell}
It is structure of plant.

- 1839 - Zoologist is schanwann is applied by same concept of animal cell.

According to both

- The cell is the basic structure and function of the cell.

- The alternate name of cell theory is ducteine.

- The simple and Formal biological generalization of cell is called cell theory or cell ducteine.

- Other contribute of cell theory
Lamark, okae.

Scheiden was first described theory.

According to scheiden



Nuclei (Discovered by scheiden)



1st own in development

Modern various cell theory -

- It is function of one or more cell.

- It is multicellular as well as unicellular.

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Prityanka

Cell Theory.

- Cell theory is a fundamental biological principle that defines cell as a biological unit of life.
- Cell theory divided into 3 types. There is 3 scientist of Robert hook, schwan & shilden. this is the 3 scientist recognised cell theory.
- Cell is the basic unit of life. & cell is the fundamental structural unit of life.
- all organism composed of own life - cell is the part of organism.
- cell theory is a biological main part of cell organisms.

Modern cell theory

- All living organism are made up of one or more cells.
- Energy
- Modern cell is the composed of old cell theory.
- Heridity.
- This cells contain plasma membrane at the composed of modern cell structure.

- Three scientist of cell theory :-

- ① Robert hook (1665),
- ② Shwan (1838),
- ③ Sheldian (1839).

- Cell theory is a important part of cell biology.

- Histological development certain microscope research.

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Department of Biotechnology Optional

Result and attendance of open book test

Roll call	Name	Of	Student	Attendance	Marks
7459	ATTAR	GULJAR	AMJADKHAN	P	09
7460	AWATE	SHREYA	KAKASAHEB	P	07
7461	BHOSALE	PARINITA	ABHIJEET	P	05
7463	CHAVAN	PRIYANKA	AMRUT	P	07
7464	CHAVAN	SAMIKSHA	RAMESH	P	06
7465	CHHATRE	HARSHVARDHAN	NAVANATH	P	08
7466	DAVARE	DIGVIJAY	BALU	P	09
7468	DONGARE	ATHARAV	LAXMAN	P	07
7469	GHODAKE	SANIKA	RAJKUMAR	P	05
7470	GHORPADE	SAURABH	PRAVIN	P	06
7471	HAKIM	MASEERA	MAJIDKHAN	P	10
7472	JADHAV	BHARGAVI	SANGRAM	P	07
7473	JAIN	POONAM	BHUPENDRA	P	07
7475	KADAM	SAYALI	SUNIL	P	06
7476	KALE	ADITI	AJAY	P	08
7477	KAMBLE	ADITI	SHAHAJI	P	05
7478	KAMBLE	PRANALI	SARJERAO	P	06
7479	KARALE	SIDDHI	RAJARAM	P	09

7480	KATAGERI	AMAN	MAHAMADAHASHAM	P	08
7481	KATKAR	SWAROOP	SANJAY	P	07
7482	KESARKAR	ASAWARI	RAJAN	P	06
7483	KILLEDAR	SRUSHTI	SANTOSH	P	08
7484	MIRAN	KEZIYASALMA	SABIRAHMED	P	10
7485	NARAKE	TANISHA	KRUSHNAT	P	10
7486	NERLEKAR	BHIMA	SAMBHAJI	P	07
7487	PANDEY	RAGINI	SANJAY	P	08
7488	PANHALKAR	MAYURI	MADHAV	P	09
7489	PATIL	SHRADDHA	PRAKASH	P	05
7490	PATIL	PRASHANT	ANKUSH	P	07
7491	PATIL	SAGAR	ADHIKRAO	P	08
7492	PATIL	SANIKA	RAVSAHEB	P	07
7493	PATIL	TANISHKA	KIRAN	P	05
7494	POWAR	RUTUJA	RAGHUNATH	P	05
7495	SANKPAL	SHREYA	RAJARAM	P	06
7496	SAVTEKAR	HARSHAWARDHAN	ADITYA	P	08
7498	ULPE	SIDDHI	SACHIN	P	09
7587	YADAV	SHIVANI	VIJAY	P	07
7594	SHAIKH	MUBINA	ARIF	P	06

Photograph 30/01/2026

