



# BIOLOGY

## BOOKS - PEARSON IIT JEE

### FOUNDATION

#### CELL-THE BASIC UNIT OF LIFE

#### Quick Recap

1. What are the morphological and physiological features that distinguish 'Rough

ER' and 'Smooth ER? Why are they named so?



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2. DNA has a double helical structure. What purpose does this structure serve?



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3. The nitrogen bases in the polynucleotide chain are oriented toward the interior. Give reason for the specific orientation.



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## Test Your Concepts Fill In The Blanks

1. \_\_\_\_\_ is a group of the basic entities of living organisms that are specialized to perform specific functions.



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2. All the activities of a cell are performed by a single cell in an \_\_\_\_\_ organism.



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3. \_\_\_\_\_ is the main characteristic phenomenon taking place in living cells which is responsible for growth of an individual.



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4. \_\_\_\_\_ are the structures that are found |  
floating in cytoplasm of a cell.



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5. In a plant cell, \_\_\_\_\_ protects  
protoplasm against infections.



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6. The stable condition of an organism and its internal structure as regulated by a plasma membrane is known as \_\_\_\_\_.



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7. About 90% of the cytoplasm is occupied by \_\_\_\_\_.



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8. The cell organelle that imparts colours to fruits and flowers is \_\_\_\_\_ .



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9. \_\_\_\_\_ separates nucleus from the cytoplasm.



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10. DNA and RNA stand for \_\_\_\_\_ and \_\_\_\_\_ respectively.



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11. The non-living materials found in cytoplasm are known as \_\_\_\_\_ .



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Test Your Concepts Select The Correct Alternatives



1. Protoplasm of a cell comprises cytoplasm along with

A. Plasma membrane

B. Cell organelles

C. Nucleolus

D. Nucleus

**Answer: D**



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2. Identify the cell organelles that are responsible for intercellular transport system.

A. Mitochondria

B. Ribosome

C. Endoplasmic reticulum

D. Golgi complex

**Answer: C**



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3. Identify the cell organelle in which respiration in a living cell takes place.

A. Mitochondria

B. Ribosome

C. Endoplasmic reticulum

D. Golgi complex

**Answer: A**



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4. Which of the following components help maintain the osmotic pressure in a plant cell?

A. Plasma membrane

B. Cytoplasm

C. Cell wall

D. Cell organelle

**Answer: C**



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5. Which of the following cell organelles contain a green pigment that contributes to greenery around us?

A. Chloroplast

B. Chromoplast

C. Leucoplast

D. Vacuole

**Answer: A**



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6. The functions of cell organelles are controlled by which component of the cell?

A. Protoplasm

B. Cytoplasm

C. Nucleus

D. Tissue

**Answer: C**



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7. Identify the cell organelle which is specialized in detoxification of a cell in animals.

A. Lysosome

B. Ribosome

C. Peroxisome

D. Centrosome

**Answer: A**



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8. Which one of the following term is not a part of the nucleus?

A. Chromatin

B. Nucleolus

C. Nucleoplasm

D. Ribosome

**Answer: D**



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**9. Which of the following components are not present in RBC of mammals?**

(i) Nucleus

(ii) Mitochondria

(iii) Plasma membrane

(iv) Ribosomes

A. (i), (ii)

B. (i), (ii), (iii)

C. (i), (ii), (iv)

D. (i), (iv)

**Answer: B**



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**10.** Which of the following cell organelles form more than half of the membranous content of the cell?

A. ER

B. Mitochondria

C. Golgi complex

D. Ribosomes

**Answer: A**



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**11.** Identify the organelles involved in the protein synthesis.

(i) ER

(ii) Ribosomes

(iii) Golgi apparatus

(iv) Nucleus

A. (i), (ii)

B. (i), (ii), (iv)

C. (i), (ii), (iii)

D. (i), (ii), (iii), (iv)

**Answer: D**



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**12.** The nucleotide sequence for one strand of DNA starts with GGA AGA and so on. Predict the nucleotide sequence of the other strand.

A. TTC TCT

B. CTC TCT

C. CCT TGT

D. CCT TCT

**Answer: D**



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**Mastering The Concepts Knowledge And  
Understanding**

1. What are the functions of a cell wall?



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2. What are the major components of a cell nucleus?



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3. What are the basic units of deoxyribose nucleic acid? What are they composed of?



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4. Name the four nitrogenous bases associated with nucleotides of DNA.



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5. Define gene.



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6. What is complementary base pairing? What is its significance?



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7. Mention the types of chromosomes based on the position of centromere.



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8. What is the significance of chromosomes?





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9. What is the difference between cytoplasm and cytosol?



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10. Identify the similarities between mitochondria and chloroplasts.



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**11.** Adenine cannot pair with cytosine. Give reason.



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## Mastering The Concepts Application And Analysis

**1.** Explain the role of DNA in protein synthesis.



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2. Smooth endoplasmic reticulum is abundant in liver cells, cells in brain and the cells in the muscles of limbs. What are the functions performed by it in the respective cells?



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3. Sarcoplasmic reticulum is the modified form of smooth ER. What is its significance?



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4. Diseases related to mitochondria are inherited from female parent only. Give reason.



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5. In what way the totipotent cells, pluripotent cells and multi potent cells differ from each other?



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6. What are stem cells? Where are they located in human body? What is their importance?



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7. RBCs are biconcave in shape and do not possess nucleus. How are these characteristics helpful in metabolism?



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**8.** Different cells possess different shapes.

These shapes are mostly related to the functions performed by the respective cells.

With reference to this statement, justify the shapes of the following cells.

(a) Sperm cell

(b) WBC

(c) Guard cells of stomata



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**9.** What is the difference between the genetic material of prokaryotes and eukaryotes?



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**10.** Explain the role of Golgi apparatus in the processing of proteins synthesized in rough ER.



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**11.** How are lysosomes formed? In which cells of human body they are found abundantly?



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**12.** The following cells are observed under a microscope. How do you distinguish them with respect to the position of nucleus?

(a) Mature plant cell

(b) Cells of adipose tissue

(c) Gland cells







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**13.** What is meant by enucleate condition? In which cells this condition is seen? How does it affect the metabolism of those cells?



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**14.** A person who is on antibiotics for long time tends to feel weak. Give reason with respect to cellular metabolism.



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## Mastering The Concepts Assertion And Reasons Choose The Correct Option

1. Assertion (A): Rough ER is in continuation with nuclear membrane.

Reason (R ): DNA controls the protein synthesis in rough ER.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

**Answer: A**



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2. Assertion (A): Nucleic acids are macromolecules.

Reason (R ): Polynucleotide strand is the backbone of nucleic acid.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

**Answer: A**



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**3. Assertion (A):** The two chromosomes of a homologous pair possess the same structure.

**Reason (R ):** The two chromosomes are derived from the same parent.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

**Answer:**



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**4. Assertion (A):** Nucleus is not located in the centre of a plant cell unlike an animal cell.

**Reason (R ):** Plant cells possess chloroplasts that are not present in an animal cell.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

**Answer:**



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5. Assertion (A): Lysosomes are called demolition squads of the cell.

Reason (R): Lysosomes participate in the process of digestion of food under diseased condition.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true but R is not the correct explanation for A.

C. A is true and R is false.



D. A is false and R is true.

**Answer:**



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