



BIOLOGY

BOOKS - CENGAGE BIOLOGY

CEL: THE BASIC UNIT OF LIFE

Mandatory Exercise Exercise Set Iii One Mark Questions

1. Fill in the blanks:

_____ is the cytoplasmic connection

between two plant cells.



Watch Video Solution

2. Fill in the blanks:

_____ is the basic unit of nucleic acid.



Watch Video Solution

3. Fill in the blanks:

Nucleotide = Nitrogenous base + _____ +

Phosphoric acid



[Watch Video Solution](#)

4. Fill in the blanks:

Nucleoside = _____ + Pentose sugar



[Watch Video Solution](#)

5. Fill in the blanks:

Adenine pairs with _____



[Watch Video Solution](#)

6. Fill in the blanks:

Guanine pairs with _____ .



[Watch Video Solution](#)

7. Fill in the blanks:

_____ is a genetic material of living organism.



[Watch Video Solution](#)

8. Fill in the blanks:

_____ is an exception to cell theory.



Watch Video Solution

9. The nuclear region of prokaryotic cells is called.....



Watch Video Solution

10. Fill in the blanks:

An _____ egg is the largest animal cell.



Watch Video Solution

11. Fill in the blanks:

Cell is the _____ and _____ unit of life.



Watch Video Solution

12. Fill in the blanks:

Chromosomes are made up of _____ and



Watch Video Solution

13. Plant cell wall is mainly composed of

.....



Watch Video Solution

14. Fill in the blanks:

Robert Hooke published his work in a book titled _____



Watch Video Solution

15. Fill in the blanks:

Electron transport system takes place within mitochondrial _____ .



View Text Solution

16. Fill in the blanks:

_____ acts similar to mitochondria of eukaryotic cell in bacteria.



Watch Video Solution

17. Fill in the blanks:

_____ acts similar to lysosome of eukaryotic cell in bacteria



Watch Video Solution

18. Fill in the blanks:

50S + 30S form _____ ribosome.



[Watch Video Solution](#)

19. Fill in the blanks:

_____ + _____ = 80S ribosome



[Watch Video Solution](#)

20. The additional protective layer in plants present outside the plasma membrane is

called



Watch Video Solution

21. Fill in the blanks:

Dark reaction takes place in _____ of chloroplast.



Watch Video Solution

22. Fill in the blanks:

Light reaction takes place in _____ of

chloroplast



[Watch Video Solution](#)

23. Fill in the blanks:

During glyoxylate cycle, fat changes into

_____.



[Watch Video Solution](#)

24. Lysosomes keeps the cells clean by digesting foreign materials and worn out cell

organelles.

True or False.



[Watch Video Solution](#)

25. Write True or False for the following.

Smooth endoplasmic reticulum detoxifies
many poisons and drugs



[Watch Video Solution](#)

26. Write True or False for the following.

Middle lamella is made up of calcium pectate and magnesium pectate.



Watch Video Solution

27. Write True or False for the following.

Smaller ribosomal subunits and larger ribosomal subunits are attached together with the help of Mg^{2+} ions.



Watch Video Solution

28. Write True or False for the following.

Plant cells are bounded by a cell wall component of chitin.



Watch Video Solution

29. Write True or False for the following.

Virus is a connecting link between living and non-living organism.



Watch Video Solution

30. Write True or False for the following.

The cell was first discovered within a cork cell.



Watch Video Solution

31. Cell wall of plant cell is a living structure.

True or False.



Watch Video Solution

32. Plasma membrane is present in all cells.

True or False.



Watch Video Solution

33. Write True or False for the following.

Lysozyme enzyme removes bacterial cell wall.



Watch Video Solution

34. Write True or False for the following.

Chitinase enzyme removes plant cell wall.



Watch Video Solution

35. Write True or False for the following.

Chargaff's rule is applicable for single stranded DNA.



Watch Video Solution

36. Write True or False for the following.

All kinds of plastids have pigments.



Watch Video Solution

37. Write True or False for the following.

Plastids are called the kitchen of a plant cell.



Watch Video Solution

38. Write True or False for the following.

Ribosomes are made up of ribonucleic acid and protein.



Watch Video Solution

39. Write True or False for the following.

Outer membrane of chloroplast and mitochondria have porin proteins.



Watch Video Solution

40. Match the following.

Column-I	Column-II
a. Cell wall	1. Single membrane
b. Peroxisome	2. Histone protein
c. Mitochondria	3. Without membrane
d. Chromosome	4. Power horse
e. Chloroplast	5. Cellulose
f. Flagella	6. Photosynthesis
g. Lysosome	7. Cell sap
h. Phagosome	8. Suicidal bag
i. Ribosome	9. Endocytosis
j. Vacuole	10. (9+ 0)
k. Centriole	11. (9 + 2)



[View Text Solution](#)

Consolidated Exercise Comprehension

1. Cell-city analogy

In a far away city, called Grant, the main export and production product is the steel widget. Everyone in the city has something to do with steel widget making, and the entire city is designed to build and export widgets. The town hall has the instructions for widget making. Widgets come in all shapes and sizes and any citizen of Grant can get the instruction and begin making their own widgets. Widgets are generally produced in the small shop around the city, and these

small shops can be built by the carpenter's union (whose headquarters are in town hall). After the widget is constructed, they are placed on special carts which can deliver the widget anywhere in the city. In order for a widget to be exported, the carts take the widget to the postal office, where the widgets are packaged and labelled for export. Sometimes widgets do not turn out right, and the 'rejects are sent to the scrap yard where they are broken down for parts or destroyed altogether. The town powers the widget shops and carts from a hydraulic dam in the city. The

entire city is enclosed by a large wooden fence. Only the postal trucks (and citizens with proper passports) are allowed outside the city.

Match the parts of the city printed in bold with the parts of the cell:

(a) Mitochondria _____

(b) Ribosomes _____

(c) Nucleus _____

(d) Endoplasmic reticulum _____

(e) Golgi apparatus _____

(f) Protein _____

(g) Cell membrane _____

(h) Lysosomes _____

(i) Nucleolus _____



Watch Video Solution

2. Name the scientist(s) responsible for each of the following discoveries:

The base-pair rule _____



Watch Video Solution

3. Name the scientist(s) responsible for each of the following discoveries:

Nucleus _____



Watch Video Solution

4. Name the scientist(s) responsible for each of the following discoveries:

Helical shape of DNA _____



Watch Video Solution

5. Name the scientist(s) responsible for each of the following discoveries:

The term 'mitochondria' _____



Watch Video Solution

6. Name the scientist(s) responsible for each of the following discoveries:

Suicidal bags _____



Watch Video Solution

7. Name the scientist(s) responsible for each of the following discoveries:

Double helical structure of DNA _____



Watch Video Solution

8. Name the scientist(s) responsible for each of the following discoveries:

Omnis cellula e cellula _____



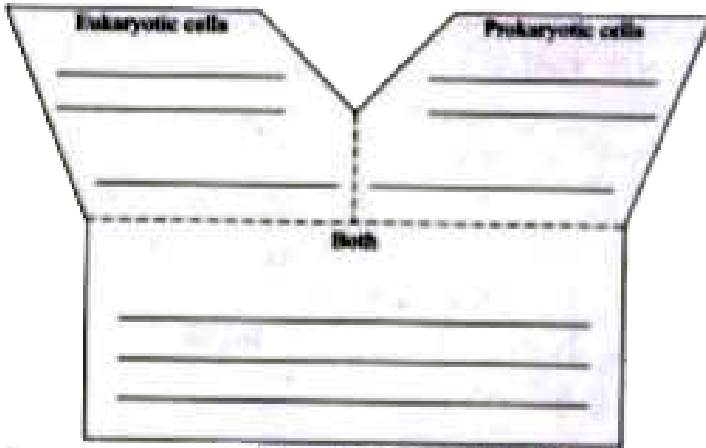
Watch Video Solution

9. Differentiate between prokaryotic and eukaryotic cells.

In the top left side of the Y shape below, write the characteristics of eukaryotic cells. In the top right side of the Y shape below, write the characteristics of prokaryotic cells.

At the bottom of the Y shape below, write the characteristics that both kinds of cells have in

common.



[Watch Video Solution](#)

10. Five potato cylinders each measuring 40 mm were placed in concentrated salt solution for 24 hours. When they were re-measured

their average length was 37 mm. Explain the reason.



[Watch Video Solution](#)

11. Name the three types of RNA.



[Watch Video Solution](#)

12. Unscramble the following vocabulary words and match each word in column A with its

correct definition in column B

A	B
(i) seomcmshroo	(p) Fluid that is present in the cell with large amount of water, many chemicals and structures
(ii) tmsaoyclp	(q) A strong and tough material that makes up a cell wall
(iii) sovaluce	(r) Network of tubular passage ways that transport materials throughout the cell
(iv) sodacielnmp urtmiueci	(s) Found inside the nucleus; these dark, rod-like structures contain proteins and DNA
(v) slceuleol	(t) Membrane covered sacs that package and transport protein to the outside the cell (u) Parts of the cell where materials are stored



[View Text Solution](#)

**Consolidated Exercise Multiple Choice Questions
With More Than One Correct Answer**

1. The cell theory states which of the following?

A. Cells are produced from pre-existing cells.

B. Cells are the basic unit of structure and function in organisms.

C. Continuity is not maintained through the genetic material

D. All living things are composed of cells.

Answer:



Watch Video Solution

2. In the bonding of nitrogenous bases in DNA,

- A. adenine is paired with thymine
- B. cytosine is paired with thymine
- C. uracil is paired with adenine
- D. guanine is paired with cytosine

Answer:



Watch Video Solution

3. Which of the following is/are true for both RNA and DNA?

A. RNA is double-stranded, DNA single stranded

B. RNA has the base uracil in place of the thymine in DNA.

C. RNA contains the sugar deoxyribose, while DNA contains the sugar ribose.

D. DNA is hereditary material, but when it is absent, RNA can function as hereditary material.

Answer:



Watch Video Solution

4. The undefined nuclear region of prokaryotes are also known as

A. nucleus

B. nucleolus

C. nucleic acid

D. nucleoid

Answer: D



Watch Video Solution

5. Living cells were discovered by

A. Robert Hooke

B. Purkinje

C. Leeuwenhoek

D. Robert Brown

Answer: B



Watch Video Solution

6. Cell theory was given by

A. Schleiden and Schwann

B. Virchow

C. Robert Hooke

D. Haeckel

Answer: A



Watch Video Solution

7. Cell arises from pre-existing cell was states
by

A. Haeckel

B. Virchow

C. Hooke

D. Haeckel

Answer: B



Watch Video Solution

8. Organelle without a cell membrane is

A. Ribosome

B. Nucleus

C. Mitochondrion

D. Chloroplast

Answer: A



Watch Video Solution

9. Which of the following are covered by a single membrane?

A. Mitochondria

B. Vacuole

C. Nucleus

D. Plastid

Answer: B



Watch Video Solution

10. Silver nitrate solution is used to study

A. Endoplasmic reticulum

B. Golgi apparatus

C. Nucleus

D. Mitochondria

Answer: B



Watch Video Solution

11. Lipid molecules in the cell are synthesized by

A. Smooth endoplasmic reticulum

B. Rough endoplasmic reticulum

C. Golgi apparatus

D. Plastids

Answer: A



12. The proteins and lipids, essential for building the cell membrane, are manufactured by

- A. Endoplasmic reticulum
- B. Golgi apparatus
- C. Mitochondria
- D. Peroxisomes

Answer: A





[Watch Video Solution](#)

13. Lysosome arises from

A. Endoplasmic reticulum

B. Golgi apparatus

C. Nucleus

D. Mitochondria

Answer: B



[Watch Video Solution](#)

14. Amoeba acquires its food through a process termed as

A. Exocytosis

B. Endocytosis

C. Plasmolysis

D. Both exocytosis and endocytosis

Answer: B



Watch Video Solution

15. Which cell organelle plays a crucial role in detoxifying many poisons and drugs in a cell ?

A. Golgi apparatus

B. Lysosomes

C. Smooth endoplasmic reticulum

D. Vacuoles

Answer: B



Watch Video Solution

16. Chromosomes are made up of

A. DNA

B. Protein

C. DNA and protein

D. RNA

Answer: C



Watch Video Solution

17. Which out of the following is not a function of vacuole ?

A. Storage

B. Providing turgidity and rigidity to the cell

C. Waste excretion

D. Locomotion

Answer: D



Watch Video Solution

18. The cell wall of which of these is not made up of cellulose

A. Algae

B. Hydrilla

C. Mango tree

D. Cactus

Answer: B



Watch Video Solution

19. Which of the following can be made into crystal?

A. Bacterium

B. Amoeba

C. Virus

D. Sperm

Answer: C



Watch Video Solution

20. Fluid mosaic model of plasma membrane was given by

- A. Robertson
- B. Gorter and Grendel
- C. Singer and Nicolson
- D. Danielli and Davson

Answer: C



Watch Video Solution

21. Cell membrane is

A. Semipermeable

B. Permeable

C. Selectively permeable

D. Impermeable

Answer: C



Watch Video Solution

22. Grana and stroma lamella occur in

A. Ribosome

B. Chloroplast

C. Mitochondria

D. Golgi body

Answer: B



Watch Video Solution

23. Rough endoplasmic reticulum differs from smooth endoplasmic reticulum due to the presence of

A. DNA

B. Nucleus

C. Ribosomes

D. Ergastic substance

Answer: C



Watch Video Solution

24. Golgi bodies takes part in

A. Lipid synthesis

B. Protein synthesis

C. Carbohydrate synthesis

D. Oxidative phosphorylation

Answer: C



Watch Video Solution

25. Protein synthesis occurs on :

A. Ribosome

B. Nucleus

C. Lysosome

D. Centrosome

Answer: A



Watch Video Solution

26. Microfilaments are mainly composed of

A. Actin

B. Myosin

C. Tubulin

D. Keratin

Answer: A



Watch Video Solution

27. Basic component of cell membrane is

A. Protein

B. Carbohydrates

C. Proteins and lipids

D. Carbohydrates and lipids

Answer: C



Watch Video Solution

28. The structure of DNA was proposed by

A. Schleiden and Schwann

B. Watson and Crick

C. Darwin and Wallace

D. Mendel and Morgan

Answer: B



Watch Video Solution

29. Centrosome is found in

A. Cytoplasm

B. Nucleus

C. Chromosomes

D. Nucleolus

Answer: A



Watch Video Solution

30. Site of oxidative phosphorylation is

A. Ribosomes

B. Golgi apparatus

C. Mitochondria

D. Endoplasmic reticulum

Answer: C



Watch Video Solution

31. Which one is called the "digestive bags"?

A. Centrosome

B. Lysosome

C. Mesosome

D. Chromosome

Answer: B



Watch Video Solution

32. Ribosomes are the centre for

A. Respiration

B. Photosynthesis

C. Protein Synthesis

D. Fat Synthesis

Answer: C



Watch Video Solution

33. The endoplasmic reticulum is present in:-

A. Nucleus

B. Nucleolus

C. Cytoplasm

D. Chromosomes

Answer: C



Watch Video Solution

34. The membrane surrounding the vacuole of a plant cell is called

- A. Tonoplast
- B. Plasma membrane
- C. Nuclear membrane
- D. Cell wall

Answer: A



Watch Video Solution

35. The centriole is associated with

- A. DNA Synthesis
- B. Reproduction
- C. Spindle formation
- D. Respiration

Answer: C



Watch Video Solution

36. Polymorphic cell organelle is

A. Lysosome

B. Ribosome

C. Centrosome

D. Chromosome

Answer: A



Watch Video Solution

37. Bacteria do not possess

A. DNA

B. RNA

C. Nucleus

D. Lipids

Answer: C



Watch Video Solution

38. A non-living structure of cell is

A. Cell wall

B. Plasma membrane

C. Cytoplasm

D. Nucleus

Answer: A



Watch Video Solution

39. Protoplast excluding nucleus is called

A. Cytoplasm

B. Endoplasm

C. Ectoplasm

D. Protoplasm

Answer: A



Watch Video Solution

40. Eucaryotic cells devoid of E.R. are

A. Liver cells

B. Kidney cells

C. Leucocytes

D. Mature erythrocytes

Answer: D



Watch Video Solution

41. Sarcoplasmic reticulum is endoplasmic reticulum found in

A. Adipose cell

B. Muscle cell

C. Nerve cell

D. Leucocyte

Answer: B



Watch Video Solution

42. Besides proteins, ribosomes contain

A. DNA

B. RNA

C. Both DNA and RNA

D. Lipids

Answer: B



[Watch Video Solution](#)

43. Golgi apparatus is associated with

- A. Excretion
- B. Secretion
- C. ATP synthesis
- D. RNA synthesis

Answer: B



[Watch Video Solution](#)

44. Main function of lysosomes is

A. Secretion

B. Respiration

C. Extracellular digestion

D. Intracellular digestion

Answer: D



Watch Video Solution

45. Mitochondrial matrix contains

A. Enzymes

B. DNA and RNA

C. Ribosome

D. All of the above

Answer: D



Watch Video Solution

46. Organelle covered by double membrane is

A. Nucleus

B. Mitochondria

C. Plastids

D. All of the above

Answer: D



Watch Video Solution

47. Structural elements of chloroplasts are

A. Plastids

B. Photosynthetic pigments

C. Thylakoids

D. Quantasomes

Answer: C



Watch Video Solution

48. Centrioles are found

A. Singly

B. In pairs

C. In Triplets

D. In Quadruplets

Answer: B



Watch Video Solution

49. Liquid content of a vacuole is called

A. Cell sap

B. Matrix

C. Nucleoid

D. Core

Answer: A



Watch Video Solution

50. A bio-membrane is made up of

A. Protein, lipids and carbohydrates

B. Protein, lipids and RNA

C. Protein, lipids and DNA

D. Protein, lipids and hormones

Answer: A



Watch Video Solution

51. *Vibrio cholerae* is a cholera causing organism. It is

- A. A bacterial cell
- B. A prokaryotic organism
- C. Pathogen
- D. All of these

Answer: D



Watch Video Solution

52. Grapes kept in a solution swell as the

A. solution is hypotonic

B. solution is more concentrated

C. grapes are having less concentrated cell
sap

D. All of the above

Answer: A



Watch Video Solution

53. Keratin is a type of

A. Protein

B. Cytoskeleton

C. Lipid

D. All of these

Answer: A



Watch Video Solution

54. Which of the following are not correct regarding plasmalemma?

- A. It forms pseudopodia
- B. It is semipermeable
- C. It appears to be fluid.
- D. It is only present in animal.

Answer: D



Watch Video Solution

55. Lysosomes are called "Suicidal bags" because they contain

- A. Catabolic enzyme
- B. Hydrolytic enzymes
- C. Food synthesiser
- D. Acidic enzyme

Answer: B



Watch Video Solution

56. Organelle with in an organelle is

A. Ribosome

B. Lysosome

C. Chloroplast

D. DNA

Answer: A



Watch Video Solution

57. Which one of the following has a single membrane?

A. Nucleus

B. Ribosome

C. Sphaerosome

D. Mitochondria

Answer: C



Watch Video Solution

58. The nucleoprotein present in nucleus is

A. Ribosome

B. Histone

C. Insulin

D. None of these

Answer: B



Watch Video Solution

59. DNA is

- A. Deoxyribose acid
- B. Deoxyribose Sugar
- C. Deoxyribonucleic acid
- D. Deoxynucleic acid

Answer: C



Watch Video Solution

60. Proteins are the polymer of

- A. Fatty acid

B. Nucleic acid

C. Amino acid

D. Citric acid

Answer: C



Watch Video Solution

61. Cells was discovered by

A. Robert Hooke

B. Gregor Mendel

C. Robert Brown

D. A. Fleming

Answer: A



Watch Video Solution

62. Micrographia is written by

A. Mendel

B. Robert Brown

C. Robert Hooke

D. Farmer and Moore

Answer: C



Watch Video Solution

63. Largest cell is

A. Ostrich egg

B. Mycoplasma cell

C. Bacterial cell

D. All of these

Answer: A



Watch Video Solution

64. Which of the following is a ribosomal factory?

A. Chloroplast

B. Centriole

C. Nucleolus

D. Vacuole

Answer: C



Watch Video Solution

Olympiad And Ntse Level Exercises

1. Chromosome must condense to approximately $1/500$ th of their length for cell division. The first reduction is

A. coiling around nucleosomes

B. looping of solenoid fibres to form 300 nm fibres

C. forming of coiled solenoid fibre

D. looping of 300 nm fibre

Answer: A



Watch Video Solution

2. Assertion. The two chains of DNA molecule are antiparallel.

Reason. The 5 prime $\sim\{$ symbol $\rightarrow\}$ $\sim 3'$
directions of the two DNA chains are opposite.

A. If both A and R are true and R is the
correct explanation of A

B. If both A and R are true, but R is not the
correct explanation of A

C. If A is true but R is false

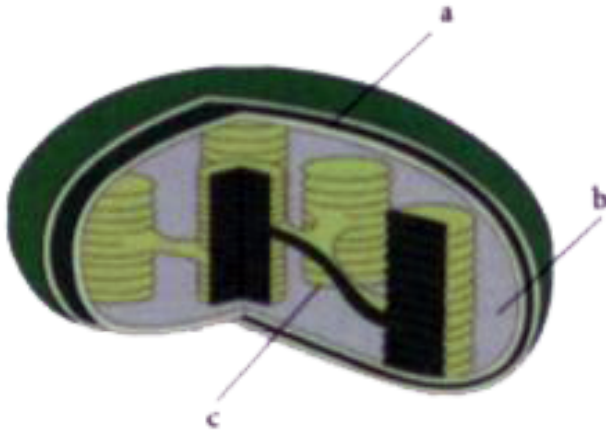
D. If both A and R are false

Answer: A



Watch Video Solution

3. Which of the following is correct for the given figure?



- A. The part labelled a' is called the stroma.
- B. The part labelled 'B' is called the granum
- C. The part labelled 2 is called the frets.

D. All the above are incorrect.

Answer: B



Watch Video Solution

4. Check each of the following statements that are true with regard to chromosomes. Also make the necessary correction

A. The chromosomes were discovered by Rudolf Virchow, studied by W. Fleming,

and given the present name by Camillo Golgi in 1888.

B. In the structure of a chromosome, DNA binds to the lipid octamer by 10. turns and 1 mm in diameter. This part of DNA consists of 206 nucleotides.

C. Depending on the position of chromatin fibres, chromosomes are of four types: centric, acentric, metacentric, and telocentric chromosomes

D. None of these

Answer: D



View Text Solution

5. Refer to the given keys and answer the following question.

P. membranes surrounding vacuoles

Q. shelves produced by the folding of inner mitochondrial membrane

R. stacks of membrane bound discs with

chlorophyll and carotenoids

S. develops between two adjacent plant cells

Which of the following is not correctly matched?

A. Cristae-Q

B. Middle lamella-S

C. Grana-R

D. Plasmodesmata-P

Answer: D



Watch Video Solution

6. There is a garden which requires water supply. Here is a pipe which is folded in nature. This pipe is inside the water which contains salts. This pipe is connected to the centralised tank from which the water is supplied. (i) What does the folded pipe refer to? (ii) What does the water with ions refer to? (iii) What does the centralised tank refer to?

A. (i)-Nucleus, (ii)-Golgi bodies, (iii)-
Endoplasmic Reticulum

B. (i)-Endoplasmic Reticulum, (ii) — Vacuole,
(iii)-Chloroplasts

C. (i)-Endoplasmic Reticulum, (ii) —
Cytoplasm, (iii) — Nucleus

D. (i)-Mitochondria, (ii)—Vacuole, (iii)-
Endoplasmic Reticulum

Answer: C



View Text Solution

7. Keeping in view the fluid mosaic model for the structure of cell membrane, which one of the following statements is correct with respect to the movement of lipids and proteins from one lipid mono layer to the other (described as flip flop movement)

- A. Neither lipids nor proteins can flip-flop.
- B. Both lipids and proteins can flip-flop.
- C. While lipids can rarely flip-flop, proteins cannot.

D. While proteins can flip-flop, lipids cannot.

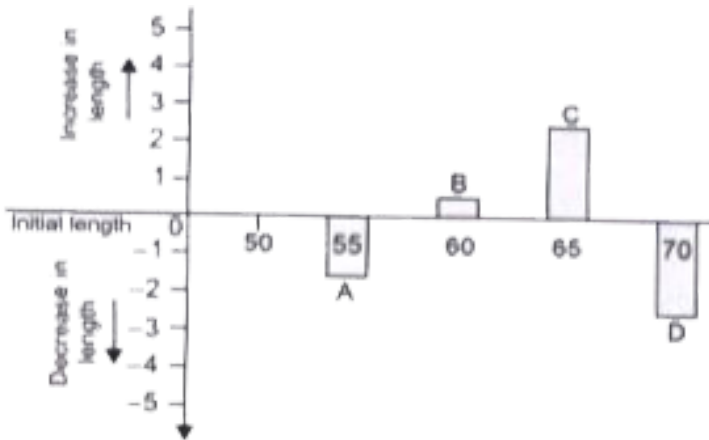
Answer: C



Watch Video Solution

8. A graph was plotted between the initial length of strips and the change in length after osmosis after immersing four fresh strips of fresh potato A, B, C and D in solutions with varying concentrations. As the concentration

was varying between cell sap and the ambient solution, osmosis occurred. Looking at the graph, determine which of the strips was placed in the most diluted solution.



A. B

B. C

C. A

D. D

Answer: C



Watch Video Solution

9. In Column I, names of eminent scientists have been given while in Column II work related to them has been mentioned. Match

the columns correctly.

Column I

Column II

(a) Leeuwenhoek

(i) Bacteria

(b) Robert Brown

(ii) Cell

(c) Robert Hooke

(iii) Nucleus

(d) Purkinje

(iv) Electron microscope

(e) Knoll and Ruska

(v) Protoplasm

A. (a)–(i), (b)(iii), (c)-(ii), (d)-(iv), (e)-(v)

B. (a)–(i), (b)-(iii), (c)—(ii), (d)—(v), (e)—(iv)

C. (a)–(iv), (b)–(ii), (c)–(i), (d)—(v), (e)-(iii)

D. (a)–(i), (b)–(ii), (c)–(iii), (d)–(iv), (e)-(v)

Answer: B



Watch Video Solution

Challenging Exercise

1. Give scientific reason for the following statement: The fluid mosaic model of a biomembrane is considered better than the sandwich model.



[Watch Video Solution](#)

2. Arrange the following in order of increasing diameter, giving the approximate maximum diameter of each in appropriate units. An E. coli cell, a human red blood cell, a ribosome, an amoeba, a microtubule



[Watch Video Solution](#)

3. When a potassium ion (K^+) passes from the soil into the vacuole of a root cell, it encounters some cellular barriers. Which of

the following is the most direct path the K^+ would take through these barriers?

A. Primary cell wall → secondary cell wall

→ tonoplast

B. Secondary cell wall → plasma

membrane → thylakoid

C. Primary cell wall → plasma membrane

→ tonoplast

D. Cell wallplasma → plasma membrane

→ tonoplast → grana

Answer: C



Watch Video Solution

4. Machines operate through electricity which is a form of energy. For a biological machine to work, ATP functions as the energy currency of the cell. What is this short-term energy carrier? Why do we use ATP for restoring energy but not another molecule?



Watch Video Solution

