

Cell - The Unit of Life

- 1. Assertion (A):** Cell theory was unable to explain about continuity of cells.
Reason (R): Initial cell theory did not explain as to how new cells were formed.

 - (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
 - (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
 - (3) (A) is true but (R) is false
 - (4) Both (A) and (R) are false
- 2. Assertion (A):** Rudolf Virchow was the pioneer scientist to modified Schleiden and Schwann's hypothesis.
Reason (R): Rudolf Virchow proposed about cell lineage.

 - (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
 - (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
 - (3) (A) is true but (R) is false
 - (4) Both (A) and (R) are false
- 3. Assertion (A):** Cytoplasm is the main arena of cellular activities in both plants and animals.
Reason (R): Various chemical reactions occur in it to keep the cell in the living state.

 - (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
 - (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
 - (3) (A) is true but (R) is false
 - (4) Both (A) and (R) are false
- 4. Assertion (A):** All the organelles of eukaryotic cells are surrounded by either single or double membrane.
Reason (R): In eukaryotic cell none of cell organelle can work and exist without membrane.

 - (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
 - (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
 - (3) (A) is true but (R) is false
 - (4) Both (A) and (R) are false
- 5. Assertion (A):** Fluid nature of the membrane is not useful from the point of view of functions like cell growth.
Reason (R): Cell growth like function are dependent on cell division ability which is not associated with cell enlargement.

 - (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
 - (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
 - (3) (A) is true but (R) is false
 - (4) Both (A) and (R) are false
- 6. Assertion (A):** Polar molecules can not pass through non polar lipid bilayer.
Reason (R): Polar molecules require a carrier protein of the membrane to facilitate their transport across the membrane.

 - (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
 - (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
 - (3) (A) is true but (R) is false
 - (4) Both (A) and (R) are false
- 7. Assertion (A):** Cell wall is not only a structural component but also show dynamic role for cell.
Reason (R): Cell wall helps in cell to cell interaction and provides barrier to undesirable macromolecules.

 - (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
 - (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
 - (3) (A) is true but (R) is false
 - (4) Both (A) and (R) are false



8. **Assertion (A):** Endoplasmic reticulum, golgibody, lysosome and vacuoles are collectively considered as endomembrane system.

Reason (R): Because all of these arise from same source that is nuclear envelope.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

9. **Assertion (A):** Mitochondria, chloroplast and peroxisome are not involved in endomembrane system.

Reason (R): Their functions are not coordinated with constituents of endomembrane system.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

10. **Assertion (A):** Smooth endoplasmic reticulum is frequently observed in protein secretory cells.

Reason (R): Lumen of smooth endoplasmic reticulum is the only storage site of secretory proteins.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

11. **Assertion (A):** Mitochondria are the site of aerobic respiration.

Reason (R): In Mitochondria, complete breakdown of respiratory substrate takes place in presence of oxygen.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

12. **Assertion (A):** Content of nucleolus is continuous with rest of the nucleoplasm.

Reason (R): Nucleolus is not covered with any kind of membrane.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

13. **Assertion (A):** Larger and more numerous nucleoli are present in cells actively carrying out protein synthesis.

Reason (R): Nucleolus is the site for active ribosomal RNA synthesis.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

14. **Assertion (A):** A single human cell has approximately two meter long thread of DNA distributed in each chromosome.

Reason (R): During different stages of cell division cells show organized nucleus in place of chromosome.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

15. **Assertion (A):** Every chromosome essentially has a primary constriction or the centromere.

Reason (R): On sides of centromere disc shaped structure called kinetochore are present.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false



16. Assertion (A): Anton Von Leeuwenhoek first saw and described a live cell.

Reason (R): Robert Brown discovered nucleus.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

17. Assertion (A): Cell theory did not explain as to how new cells were formed.

Reason (R): Rudolf Virchow explained that new cells are formed from pre existing cells.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

18. Assertion (A): Cells vary greatly in their shape.

Reason (R): Shape may vary with the function the cell perform.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

19. Assertion (A): All eukaryotic cells are not identical.

Reason (R): Centrioles are found in animal cells, absent in almost all plant cell.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

20. Assertion (A): Primary wall is capable of growth.

Reason (R): It diminishes as cell matures.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

21. Assertion (A): The number of mitochondria per cell is variable.

Reason (R): It depends upon physiological activities of the cells.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

22. Assertion (A): Eukaryotic ribosome are 80s type.

Reason (R): 'S' indirectly measure of density and size.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

23. Assertion (A): The most extensive metabolic diversity is observed in organism having incipient nucleus.

Reason (R): Nucleus in multicellular organism inhibits some metabolic diversity.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false



24. Assertion (A): Mitochondria, ER are largest organelle in an animal's cell.

Reason (R): Mitochondria, Chloroplast are semiautonomous cell organelles.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

25. Assertion (A): Cell is the fundamental structural and functional unit of all living organisms.

Reason (R): Anything less than a complete structure of a cell does not ensure independent living.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

26. Assertion (A): Like mitochondria, the chloroplasts are also double membrane bound. Of the two, the inner chloroplast membrane is relatively less permeable

Reason (R): Porins are present on inner membrane.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

27. Assertion (A): Cell is the fundamental structural and functional unit of all living organisms.

Reason (R): Because unicellular organisms can show independent existence and perform all metabolic activities.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

28. Assertion (A): True chromatin is absent in prokaryotes.

Reason (R): Mitosis does not occur in prokaryotes.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

29. Assertion (A): Ribosomes are known as RNP particles.

Reason (R): Ribosomes are made of rRNA and proteins.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

30. Assertion (A): Lysosomes are called 'Sicidal bags'.

Reason (R): A large number of hydrolytic enzymes are present in lysosomes.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

31. Assertion (A): Basal bodies are formed from centrioles.

Reason (R): Both basal bodies and centrioles have 9+2 structural organization.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

32. Assertion (A): Microtubules are present in eukaryotic cells.

Reason (R): Centrioles, basal bodies, flagella, cilia, spindle fibres are formed by microtubules.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

33. Assertion (A): Mitochondria is known as power house of cell.

Reason (R): ATP production takes place here.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

34. Assertion (A): The cells of testes and ovaries have abundance of Smooth Endoplasmic Reticulum.

Reason (R): The cells of testes and ovaries secrete steroid hormones.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

35. Assertion (A): The Golgi apparatus remains in close association with the endoplasmic reticulum.

Reason (R): The cis and the trans faces of the organelle are entirely different, but interconnected.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

36. Assertion (A): In eukaryotic cells, there is an extensive compartmentalisation of cytoplasm.

Reason (R): Eukaryotic cells are characterised by the presence of membrane bound organelles.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false



Directions: In the following questions, a statement of assertion is followed by a statement of reason.

Mark the correct choice as:

- (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) If Assertion is true but Reason is false.
- (d) If both Assertion and Reason are false.

37. **Assertion:** Rudolf Virchow modified the hypothesis of cell theory given by Schleiden and Schwann.
Reason : Cell theory says that all cells arise from pre-existing cells.
38. **Assertion:** Ribosomes are non-membrane bound organelles found in the prokaryotic cells only.
Reason: These are present only in the cytoplasm.
39. **Assertion :** A cell membrane shows fluid behaviour.
Reason : A membrane is a mosaic or composite of diverse lipids and proteins.
40. **Assertion :** Cell wall is not found in animal cell.
Reason : Animal cells are covered by cell membrane.
41. **Assertion:** The endoplasmic reticulum which lacks ribosomes is called smooth endoplasmic reticulum (SER).
Reason: SER is mainly involved in protein synthesis.
42. **Assertion:** Sphaerosome are single membrane bound and are associated with synthesis and storage lipids.
Reason: Lysosomes are double membrane vesicles budded off from Golgi apparatus and contain digestive enzymes.

43. **Assertion:** Power house of cell is mitochondria.
Reason : ATP is produced in mitochondria.
44. **Assertion :** Mitochondria and chloroplasts are semi autonomous organelles.
Reason : They are formed by division of preexisting organelles as well as contain DNA but lack protein synthesizing machinery.
45. **Assertion :** Centrosomes and centrioles are related to each other.
Reason : Centrosome usually contains two cylindrical structures called centrioles.
46. **Assertion:** The number of cells in a multicellular organism is inversely proportional to size of body.
Reason: All cells of biological world are alive.
47. **Assertion:** Living organisms possess specific individuality with the definite shape and size.
Reason : Both living and non living entities resemble each other at the lower level of organisation.
48. **Assertion :** Lipids present in the outer and inner side of the bilayer membrane are commonly different.
Reason : Oligosaccharides are attached to external surface as well as inner surface of a biomembran.
49. **Assertion:** The chromoplastin contains fat soluble carotenoid pigments like carotene and xanthophylls etc.
Reason: These pigments give yellow, orange or red colour to some part of the plant.
50. **Assertion:** Lysosomes help in photorespiration.
Reason : Lysosome have basic enzyme.

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans.	1	1	1	4	4	2	1	3	1	4	1	1	1	4	2	2	2	1	2	2
Que.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36				
Ans.	1	2	3	2	1	1	1	2	1	1	3	2	1	1	2	1				

37.	38.	39.	40.	41.	42.	43.	44.	45.	46.	47.	48.	49.	50.			
b	d	a	a	c	c	b	c	a	d	b	c	b	d			