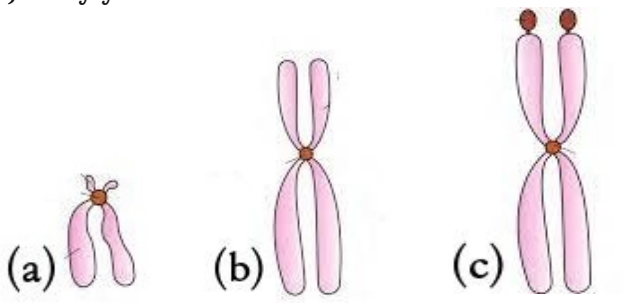
1Mark Questions

1. (a) Identify the cell organelle found both in eukaryotic and prokaryotic cells.
(b) Justify its presence in both types of cells.
2012 March

2. The diagrams a,b,c given below show three kinds of chromosomes. Of these, which is metacentric non-satellite chromosome? Justify your answer.



2013 Imp.

3. Prokaryotic cells possess a special membranous structure which is formed by the extensions of the plasma membrane in the form of vesicles, tubules and lamellae. Identify this structure and write any one of its functions
2014 March.

4. Name the membrane bound vesicles in which hydrolyse enzymes are present?
2014 Imp.

5. Several ribosomes may attach to a single mRNA and form a chain called.....
2015 Imp.

6. Identify the organelle known as 'powerhouse' of the cell from those given below.
a) Lysosome
b) Centrosome
c) Mitochondria
d) Plastid
2016 Imp.

7. Choose the correctly matched pair.
a) Telocentric chromosome - Middle centromere
b) Metacentric chromosome - Centromere slightly away from the middle
c) Acrocentric chromosome - Centromere close to its end
2018 Model

8. There are different types of leucoplasts in plant cells. Name the leucoplast that store proteins.
2018 March

9. Fill in the blank.
Small disc-shaped structures at the surface of the centromere are called.....
2018 Imp.

10. The non - membrane bound organelle found in all cells is....
a) ER
b) Centriole
c) Ribosome
d) Vacuole
2018 2nd term

11. Fill in the blank.
Vacuole is bound by a single membrane called...
2019 Model

12. Choose the CORRECT answer.
A structure seen in bacterial cell is.....
a) Nucleus
b) Lysosome
c) Plastid
d) Mesosome
2019 March

13. Who proposed the fluid mosaic model of plasma membrane ?
a) Camillo Golgi
b) Schleiden and Schwann
c) Singer and Nicolson
d) Robert Brown
2019 2nd term

14. Choose the correct answer. The organelle known as power house of the cell is .....
(a) Ribosome
(b) Vacuole
(c) Mitochondrion
(d) Chloroplast
2020 March

15. Who discovered Golgi apparatus?
(a) George Palade (b) Robert Brown
(c) Camillo Golgi (d) Robert Hooke
2020 Imp.

16. Several ribosome attach to a single mRNA and form a chain called.....
2022 2nd term

17. The cell organelle found both in eukaryotic and prokaryotic cells
a) Ribosome b) Vacuole
c) Lysosome d) Centrosome
2023 2nd term

18. Coloured plastids : Chromoplast
Colourless plastids : _____
2024 Model

2 Marks Questions

1. Match the following:

a) Synthesis and storage of energy	i) Golgi apparatus
b) Packaging and delivery of materials	ii) Mitochondria
c) Digestion of inter-cellular materials	iii) Centriole
d) Formation of basal body of cilia and flagella	iv) Lysosome
	v) Chloroplast

2012 March

2. State whether the statements are 'true' or 'false'. If 'false' correct the statements by changing the underlined words.
   a) Aleuroplasts store <u>carbohydrates</u>.
   b) <u>The centrioles</u> form the basal body of cilia and flagella.
   c) Ribosomes are <u>not surrounded by membranes.</u>
   d) <u>RER</u> is the major site for synthesis of lipids.

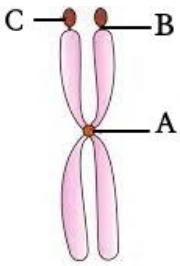
2014 March.

3. Distinguish between the characters of chloroplast and ribosomes from the given list and write them in appropriate columns.
   (**Double membrane, George Palade, sac-like thylakoid, 70S and 80S**)

Chloroplast	Ribosome

2014 Imp.

4. Name the type of chromosome based on the position of centromere in the figure and label the parts *A,B* and *C*



2015 Imp.

5. Ribosome is the cell organelle seen in both prokaryotes and eukaryotes. Mention how ribosomes differ in prokaryotes and eukaryotes. Also mention the function of ribosome.

2016 Imp.

6. Endoplasmic reticulum is of two types. Write their structural and functional differences.

2017 2nd term

7. Observe the figure given below. Identify the organelle and write its two functions.

2017 2nd term

8. Pili and fimbriae are surface structures seen in baeterial cells. Differentiate these structures.

2018 Model

9. Analyse the table and fill in the blanks.

Organelles	**Functions**
--------a----------	Packaging of materials
Centriole	----------b----------
Ribosome	----------c----------
---------d----------	Production of ATP

2018 Model

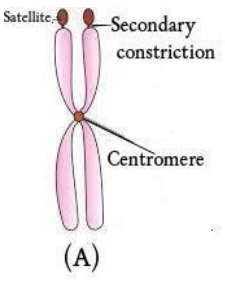
10. Ribosomes are organelles without a membrane found in all cells. Name another organelle devoid of membrane, seen in animal cells. Write its function.

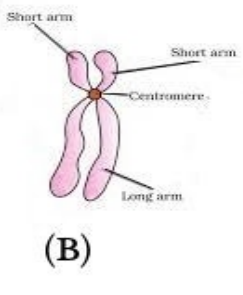
2018 March

11. Write any four functions of mesosomes present in prokaryotic cells.

2018 2nd term

12. Observe the figures of chromosomes given below :

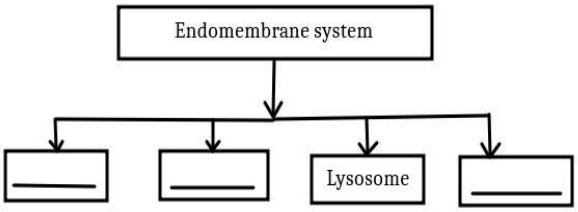




   a) Identify the types of chromosomes labelled as A, B.
   b) Name the chromosome which has a terminal centromere.

2019 Model

13.Fill in the blanks in the flowchart given below. Which organelle possesses hydrolytic enzymes.



2019 Imp.

14.a) Select the organells which are included in endomembrane system.

Lysosome, Vacuole
Nucleus, Ribosome
Endoplasmic reticulum,
Mitochondria plastids,
Golgi complex

b) Why these organells are called endomembrane system

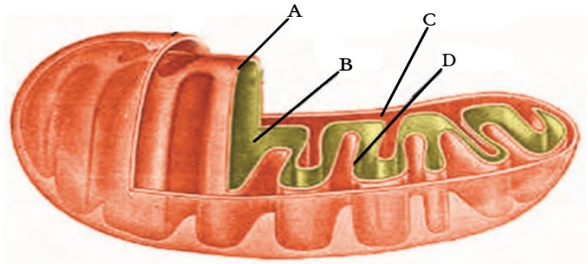
2019 2nd term

15.Special membranous structure formed by the membrane extension of plasma membrane into prokaryotic cell.

a) Write the different forms of mesosome.
b) Write one function of mesosome.

2019 2nd term

16.Identify the organelle and mark the parts labelled as A,B,C,D.



2019 2nd term

17.Cell theory was formulated by two scientists.

(a) Name the scientists.
(b) Write the two main points in cell theory.

2020 March

18.Peculiarities of certain cell organelles are given below.

a. Involved in protein synthesis
b. Made up of many flat, disc shaped sacs or cisternae
c. Bear ribosomes on their surface
d. Rich in hydrolytic enzymes
e. Membrane is absent

Copy the table given below and write the above peculiarities in appropriate column.

Lysosome	Golgi apparatus	Ribosome

2020 March

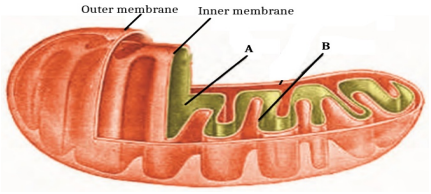
19.Based on the position of centromere classify chromosomes and write their name.

2020 Imp.

20.(a) What is the name of the model of Plasma membrane proposed by Singer and Nicolson.
(b) Write any one function of Plasma membrane.

2021 Model

21.(a) Identify and write the name of the organelle given in the figure.
(b) Label the parts marked as A, B.



2021 Model

22. Match the following :

Cell Organelle	Function
(a) Lysosomes	Lipid Synthesis
(b) Golgi apparatus	Store excretory products
(c) Endoplasmic reticulum	Store hydrolytic enzymes
(d) Vacuoles	Packaging of materials

2021 Model

23.Mitochondria is known as the power house of the cell. Why ?

2021 Sept.

24.Write any two functions of cell membrane.

2021 Sept.

25.Write any two functions of Mesosomes.

2021 Sept.

26.Match the following :

A	B
(i) Chloroplast	Store carbohydrate
(ii) Amyloplast	Contains carotenoids
(iii) Elaioplast	Contains chlorophyll
(iv) Chromoplast	Store oils and fats

2021 Imp.

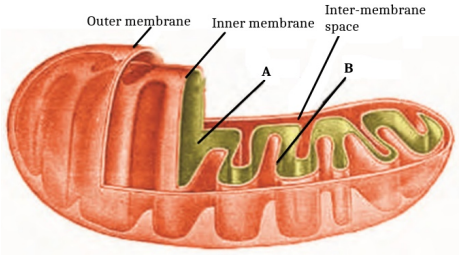
27. List any two functions of mesosomes in Prokaryotic cells. *2021 Imp.*

28. Write the name of any one type of chromosome classified based on the position of centromere. Mention its peculiarity. *2021 Imp.*

29. What is mesosome? Mention any two functions of mesosome. *2022 Model*

30. Differentiate Rough Endoplasmic Reticulum (RER) and Smooth Endoplasmic-Reticulum(SER) *2022 Model*

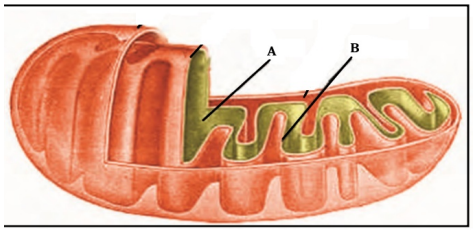
31.Observe the given diagram of Mitochondria.



(a) Identify and label parts A and B.
(b) Why Mitochondria is known as the power-house of the cell? *2022 June*

32. List any two functions of cell wall in plant cells. *2022 June*

33.Observe the given diagram of Mitochondria.



(a) Identify and write the name ofthe cell organelle given in the picture.
(b) Label the parts marked as A and B. *2022 Imp*

34. Which are the four cell organelles of endo-membrane system ? *2022 Imp*

35. a) Mitochondria are called as the 'power house' of cell. Why?
b) Name the infoldings of inner membrane of mitochondria. *2022 2nd term*

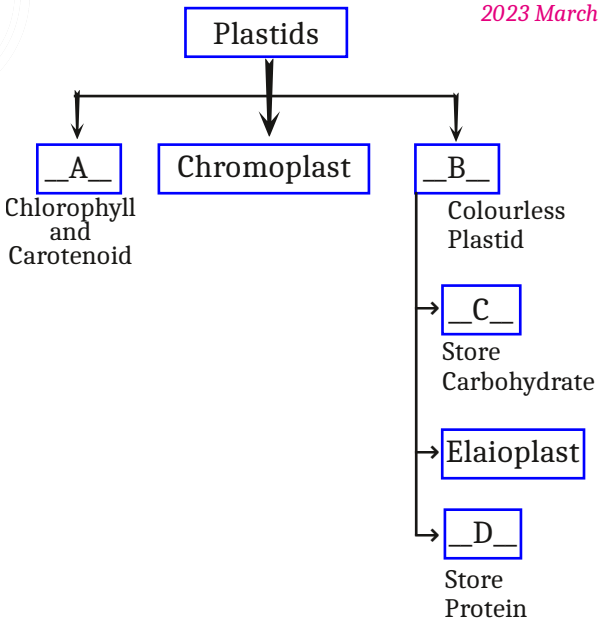
36. Differentiate between the following:
Smooth Endoplasmic Reticulum and Rough Endoplasmic Reticulum *2022 2nd term*

37. An important model of the structure of plasma-membrane was proposed by Singer and Nicolson.
a) What is this model called?
b) Which component forms bilayer?
c) Identify and write the two types of proteins present in plasma membrane. *2023 Model*

38. Rough Endoplasmic Reticulum (RER) and Smooth Endoplasmic Reticulum (SER) are morphologically and functionally different. Justify this statement. *2023 Model*

39. Expand the following:
(A) PPLO (B) SER *2023 March*

40. Fill in the blanks with appropriate terms given below:
Chloroplast, Amyloplasts, Leucoplast, Aleuroplast *2023 March*



41. (a) Write the name of the model of cell membrane proposed by Singer and Nicolson.
(b) Which are the two chemical components of cell membrane ? *2023 Imp*

42. Write two functions of Mesosomes. *2023 Imp*

43. Differentiate between Rough Endoplasmic Reticulum(RER) and Smooth Endoplasmic Reticulum(SER)

RER	SER
•	•
•	•

2023 2nd term

PREVIOUS QUESTIONS XI 2012-2024 : *Chapter 5 - Cell: The unit of life*

2½ Marks Questions

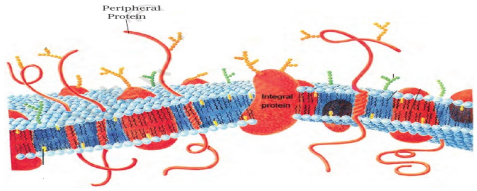
1. An accepted model of the structure of a cell membrane was proposed by Singer and Nicolson.
   a) Name the model.
   b) List the 2 major biomolecules which this membrane is composed of.
   c) Mention two important points of this model from the point of view of function
   2013 March

3 Marks Questions

1. The following is a list of cell organelles **(nucleus, endopasmic reticulam, lysosomes, chloroplast, Golgi complex, mitochondria, ribosome)**
   a) Identify the organelles with double membrane envelope.
   b) Mention the functions of these organelles. *2012 Imp.*

2. a) Due to the presence of a secondary-constriction a knob-like small fragment appears in some chromosomes called .....
      i) Kinetochore
      ii) Histone
      iii) Satellite
      iv) Chiasmata
   b) Classify chromosomes based on the position of centromere. *2015 March*

3. Observe the given diagram. Analyze this diagram and explain the structure of plasma-membrane.



2016 March

4. a) Identify a cell organelle which contains hydrolytic enzymes.
   b) Rough Endoplasmic Reticulam (RER) and Smooth Endoplasmic Reticulam (SER) are morphologically and functionally different. Justify this statement. *2017 March*

5. Position of centromere determine the shape of the chromosomes.
   a) Name the different types of chromosomes based on the position of the centromere.
   b) Draw any one chromosome among them. *2017 Imp.*

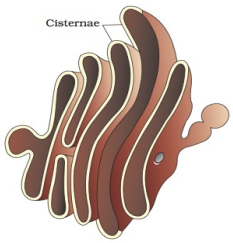
6. Name and explain the structure of cell organelle that is involved in photosynthesis.
   (Hint : Write four structural features)
   2018 Imp.

7. The nucleoplasm contains small spherical shaped structures
   a) Name the structures
   b) Name the openings seen in nuclear envelope and state their fuuction. *2018 Imp.*

8. Cell theory is the fundamental concept in cell biology.
   a) Who proposed cell theory?
   b) Write the two basic concepts in cell theory. *2018 2nd term*

9. An improved model of the structure of plasma-membrane was proposed by Singer and Nicolson.
   (a) What is this model called?
   (b) Which component forms bilayer?
   (c) Identify two types of proteins present in cell membrane *2019 Imp.*

10. Given below is the diagram of a cell organelle.
    (a) Identify the organelle.
    (b) Write any two functions of this organelle.

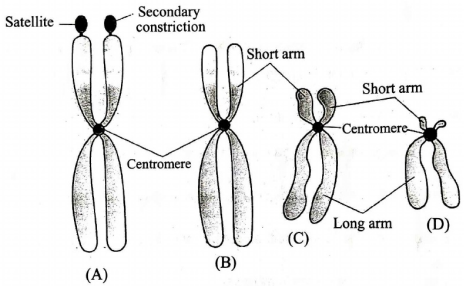


2020 Model

11. Based on the position of centromere, chromosomes can be classified into four types.
    a) Name the four types of chromosomes.
    b) What is a satellite? *2022 2nd term.*

12. Cell theory is the fundamental concept of cell biology.
    a) Who proposed cell theory?
    b) What does Omnis cellula e cellula mean?
    c) Write the two basic concepts in cell theory. *2023 2nd term.*

13. Given diagram shows different types of chromosomes. Observe the diagram and answer the following questions.
    a) Identify four types of chromosomes based on the position of centromere observed in figures A, B, C and D
    b) What is satellite? *2024 Model*



Answer key

1Mark Questions

1. (a) Ribosome
   (b) It is non-membrane bound organelle
2. (b) Centromere at the centre, only primary constriction present.
3. Mesosome
   cell wall formation/DNA replication and distribution to daughter cells/respiration/ secretion/increase the surface area of the plasma membrane ***(any 1)***
4. Lysosome
5. Polyribosome/Polysome
6. c) Mitochondria
7. c) Acrocentric chromosome - Centromere close to its end
8. Aleuroplast
9. Kinetochore
10. c) Ribosome
11. Tonoplast
12. d) Mesosome
13. c) Singer and Nicolson
14. (c) Mitochondrion
15. (c) Camillo Golgi
16. Polyribosome/Polysome
17. a) Ribosome
18. Leucoplast

2 Marks Questions

1.

a) Synthesis and storage of energy	ii) Mitochondria
b) Packaging and delivery of materials	i) Golgi apparatus
c) Digestion of inter-cellular materials	iv) Lysosome
d) Formation of basal body of cilia and flagella	iii) Centriole

2. a) False. Aleuroplasts store <u>proteins</u>.
   b) True
   c) True
   d) False. <u>SER</u> is the major site for synthesis of lipids.

3.

Chloroplast	Ribosome
Double membrane sac-like thylakoid	George Palade 70S and 80S

4. Metacentric
   A. Centromere B. Secondary constriction
   C. Satellite
5. The eukaryotic ribosomes are 80S while the prokaryotic ribosomes are 70S. In prokaryotes, ribosomes are associated with the plasma membrane. In eukaryotes they are seen on nuclear membrane, ER, Chloroplast, Mitochondria etc
   Ribosomes are the site of protein synthesis.
6. The endoplasmic reticulum bearing ribosomes on their surface is called rough endoplasmic reticulum (RER). It is involved in protein synthesis and secretion.
   The endoplasmic reticulum not bearing ribosomes on their surface is called smooth endoplasmic reticulum (SER). The smooth endoplasmic reticulum is the major site for synthesis of lipid and lipid-like steroidal hormones.
7. Golgi apparatus
   Packaging materials, important site of formation of glycoproteins and glycolipids.
8. The pili are elongated tubular structures made of a special protein. The fimbriae are small bristle like fibres sprouting out of the cell.
9. a) Golgi apparatus b) Formation of basal body of cilia and flagella c) Protein synthesis
   d) Mitochondria
10. Centrosome
    The centrioles in the centrosome form the basal body of cilia or flagella, and spindle fibres that give rise to spindle apparatus during cell division in animal cells.
11. Cell wall formation/DNA replication and distribution to daughter cells/respiration/ secretion/increase the surface area of the plasma membrane ***(any 4)***
12. a) A. Metacentric B. Acrocentric
    b) Telocentric
13. Endoplasmic Reticulum, Golgi apparatus, Lysosome, Vacuoles
    Lysosome
14. a) Lysosome, Vacuole, Endoplasmic Reticulum, Golgi complex

b) because their functions are coordinated.

15. a) vesicles, tubules and lamellae.
    b) Cell wall formation/DNA replication and distribution to daughter cells/respiration/ secretion/increase the surface area of the plasma membrane ***(any 1)***

16. A. Inner membrane B. Matrix
    C. Inter-membrane space D. Crista

17. (a) Schleiden and Schwann
    (b) (i) all living organisms are composed of cells and products of cells.
    (ii) all cells arise from pre-existing cells.

18.

Lysosome	Golgi apparatus	Ribosome
d. Rich in hydrolytic enzymes	b. Made up of many flat, disc shaped sacs or cisternae	a. Involved in protein synthesis e. Membrane is absent

19. Metacentric chromosome - has middle centromere forming two equal arms of the chromosome.
    Sub-metacentric chromosome - has centromere slightly away from the middle of the chromosome.
    Acrocentric chromosome - the centromere is situated close to its end
    Telocentric chromosome - has a terminal centromere.

20. (a) Fluid mosaic model
    (b) cell growth/formation of intercellular junctions/secretion/endocytosis/cell division/transport of the molecules ***(any 1)***

21. (a) Mitochondria
    (b) A. Matrix B. Crista

22.

Cell organelle	Function
(a) Lysosome	Store hydrolytic enzymes
(b) Golgi apparatus	Packaging of materials
(c) Endoplasmic reticulum	Lipid synthesis
(d)Vacuoles	Store excretory products

23. They produce cellular energy in the form of ATP.

24. Cell growth/formation of intercellular junctions/secretion/endocytosis/cell division/transport of the molecules ***(any 2)***

25. Cell wall formation/DNA replication and distribution to daughter cells/respiration/ secretion/increase the surface area of the plasma membrane ***(any 2)***

26.

A	B
(i) Chloroplast	Contain Chlorophyll
(ii) Amyloplast	Store carbohydrates
(iii) Elaioplast	Store oils and fats
(iv) Chromoplast	Contain carotenoids

27. Cell wall formation/DNA replication and distribution to daughter cells/respiration/ secretion/increase the surface area of the plasma membrane ***(any 2)***

28. Metacentric chromosome - has middle centromere forming two equal arms of the chromosome.
    Sub-metacentric chromosome - has centromere slightly away from the middle of the chromosome.
    Acrocentric chromosome - the centromere is situated close to its end
    Telocentric chromosome - has a terminal centromere. ***(any 1)***

29. Special membranous structure formed by the extensions of plasma membrane into the cell in prokaryotes.
    Cell wall formation/DNA replication and distribution to daughter cells/respiration/ secretion/increase the surface area of the plasma membrane ***(any 2)***

30. The endoplasmic reticulum bearing ribosomes on their surface is called rough endoplasmic reticulum (RER). It is involved in protein synthesis and secretion.
    The endoplasmic reticulum not bearing ribosomes on their surface is called smooth endoplasmic reticulum (SER). The smooth endoplasmic reticulum is the major site for synthesis of lipid and lipid-like steroidal hormones.

31. (a) A. Matrix B. Crista
    (b) They produce cellular energy in the form of ATP.

32. Gives shape to the cell/protects the cell from mechanical damage and infection/helps in cell -to-cell interaction/provides barrier to undesirable macromolecules.***(any 2)***

33. (a) Mitochondria
    (b) A. Matrix B. Crista

34. Endoplasmic Reticulum, Golgi apparatus, Lysosome, Vacuoles

35. a) They produce cellular energy in the form of ATP.
    b) Cristae
36. The endoplasmic reticulum bearing ribosomes on their surface is called rough endoplasmic reticulum (RER). It is involved in protein synthesis and secretion.
    The endoplasmic reticulum not bearing ribosomes on their surface is called smooth endoplasmic reticulum (SER). The smooth endoplasmic reticulum is the major site for synthesis of lipid and lipid-like steroidal hormones.
37. a) Fluid mosaic model
    b) Lipid
    c) Peripheral proteins and Integral proteins
38. The endoplasmic reticulum bearing ribosomes on their surface is called rough endoplasmic reticulum (RER). It is involved in protein synthesis and secretion.
    The endoplasmic reticulum not bearing ribosomes on their surface is called smooth endoplasmic reticulum (SER). The smooth endoplasmic reticulum is the major site for synthesis of lipid and lipid-like steroidal hormones.
39. (A) Pleuro Pneumonia Like Organisms
    (B) Smooth Endoplasmic Reticulum
40. A. Chloroplast B. Leucoplast
    C. Amyloplasts D. Aleuroplast
41. (a) Fluid mosaic model
    (b) Lipid, Protein, Carbohydrate.
42. Cell wall formation/DNA replication and distribution to daughter cells/respiration/ secretion/increase the surface area of the plasma membrane ***(any 2)***
43.

RER	SER
The endoplasmic reticulum bearing ribosomes on their surface is called rough endoplasmic reticulum (RER). It is involved in protein synthesis and secretion.	The endoplasmic reticulum not bearing ribosomes on their surface is called smooth endoplasmic reticulum (SER). The smooth endoplasmic reticulum is the major site for synthesis of lipid and lipid-like steroidal hormones.

$2^1/_2$ Marks Questions

1. a) Fluid mosaic model
   b) Lipid and Protein
   c) cell growth/formation of intercellular junctions/secretion/endocytosis/cell division ***(any 2)***

3 Marks Questions

1. a) Nucleus, Endopasmic reticulam, Chloroplast, Golgi complex, Mitochondria
   b) Nucleus - Contains DNA
   Endopasmic reticulam - protein/lipid synthesis
   Chloroplast - photosynthesis
   Golgi complex - Packaging of materials
   Mitochondria - production and storage of energy
2. a) iii) Satellite
   b) Metacentric, Sub-metacentric, Arocentric, Telocentric
3. Cell membrane is mainly composed of lipids and proteins. The major lipids are phospholipids that are arranged in a bilayer. The lipids are arranged within the membrane with the polar head towards the outer sides and the hydrophobic tails towards the inner part.This ensures that the nonpolar tail of saturated hydrocarbons is protected from the aqueous environment
4. a) Lysosome
   b) The endoplasmic reticulum bearing ribosomes on their surface is called rough endoplasmic reticulum (RER). It is involved in protein synthesis and secretion.
   The endoplasmic reticulum not bearing ribosomes on their surface is called smooth endoplasmic reticulum (SER). The smooth endoplasmic reticulum is the major site for synthesis of lipid and lipid-like steroidal hormones.
5. a) Metacentric, Sub-metacentric, Arocentric, Telocentric
6. Chloroplast
   Chloroplasts are double membrane bound. The space inner to the inner membrane of the chloroplast is called the stroma. A number of organised flattened membranous sacs called the thylakoids, are present in the stroma. Thylakoids are arranged in stacks like the piles of coins called grana or the intergranal thylakoids. there are flat membranous tubules called the stroma lamellae connecting the thylakoids of the different grana. The membrane of the thylakoids enclose a space called a lumen.The stroma also contains small, double-stranded circular DNA molecules and ribosomes. Chlorophyll pigments are present in the thylakoids. ***(any 4)***

7. a) Nucleolus b) Nuclear pores-passages through which movement of RNA and protein molecules takes place in both directions between the nucleus and the cytoplasm.
8. a) Schleiden and Schwann
   b) (i) all living organisms are composed of cells and products of cells.
   (ii) all cells arise from pre-existing cells.
9. (a) Fluid mosaic model
   (b) Lipid
   (c) Peripheral proteins and Integral proteins
10. (a) Golgi apparatus
    (b) Packaging materials, important site of formation of glycoproteins and glycolipids.
11. a) Metacentric, Sub-metacentric, Arocentric, Telocentric
    b) Small fragment of chromosome found beyond secondary constriction in some chromosomes.
12. a) Schleiden and Schwann
    b) New cells are formed from pre-existing cells
    c) (i) all living organisms are composed of cells and products of cells.
    (ii) all cells arise from pre-existing cells.
13. a) A. Metacentric B. Metacentric
    C. Sub-metacentric D. Acrocentric
    b) Small fragment of chromosome found beyond secondary constriction in some chromosomes.