

**Chapter 19****Short questions:****1. What do you mean by open growth? (LB-2011, 2012)**

A plant has a growth pattern called open growth. Throughout life, the plant adds new organs such as branches, leaves and roots, enlarging from the tips of roots and shoot but the rate of growth is not uniform throughout the plant body.

**2. What is blastoderm?**

Blastula is characterized by the presence of a segmentation cavity or blastocoele. The discoidal cap of cells above the blastocoele is called blastoderm.

**3. What is a cleft palate?**

Individuals with cleft palate have their upper lip folded or the individual has harelip.

**4. What is microcephaly?**

In microcephaly, the individuals are born with a small skull.

**5. What is neurula? (OR) What is neurocoele? (LB-2015)**

In 24 hour-embryos, the folding of neural plate is clearly visible. The embryo is now termed neurula. With the formation of neural tube, there is formation of central nervous system and the cavity enclosed is known as neurocoele.

**6. What is the present goal of gerontology? (LB-2010)**

The present goal of gerontology is not necessarily to increase life span but to increase health span.

**7. What is gastrocoel and from which germ layer it is originated? (LB-2013)**

In an 18-20 hours embryo, the cavity between the yolk and the endoderm has been called gastrocoele. It is formed by invagination of mesoderm and endoderm cells.

**8. What is Henson's node? Give its role. (LB-2012)**

At the cephalic end of primitive streak, closely packed cells form a local thickening known as Hensen's node. From Hensen's node, dorsal mesoderm is formed and is organized into somites.

**9. What is meant by discoidal cleavage? (LB-2016)**

In bird's egg the process of cell division is confined to the small disc of protoplasm lying on the surface of the yolk at the animal pole. This type of cleavage is referred to as discoidal cleavage.



**10. What is meristem? (OR) Define meristem. Name its types based on position. (OR) Describe various types of meristems. (OR) What is apical meristem? (OR) What are intercalary meristems. Give their role. (OR) What do you mean by lateral meristem. (LB-2013, 2015, 2016, 2017, 2018)**

**Apical meristems** are found at the tips of roots and shoots and are primarily concerned with the extension of plant body. These are perpetual growth zones found at the apices of roots and stems. They are responsible for the increase in the number of cells at the tips of roots and stem, so they play an important role in primary growth.

**Intercalary meristem:** These are the parts of apical meristem which get separated from apex by permanent tissues. They are situated at the bases of internodes in many plants. They play an important role in the production of leaves and flowers. These are of a temporary nature.

**Lateral meristems** are cylinders of dividing cells. They are present in dicots and gymnosperms. Vascular and cork cambium are the examples of lateral meristem. T

**11. What is the difference between epiblast and hypoblast? (LB-2017)**

During gastrulation, the blastoderm splits into two layers: an upper layer of cells called epiblast, and a lower layer of cells called hypoblast.

**12. What is the difference between inhibitory effect and compensatory effect?**

Apical dominance is caused by auxin diffusing from the apical bud which inhibited the growth of lateral shoots is called inhibitory effect. The removal of apex releases the lateral buds from apical dominance. It is called the compensatory effect.

**13. Write down the names of different kinds of cytoplasm's with their functions.**

1. Clear cytoplasm. It produces larval epidermis.
2. Yellow cytoplasm. It gives rise to muscle cells.
3. Gray vegetal cytoplasm. It gives rise to gut.
4. Grey equatorial cytoplasm. It produces notochord and neural tube.

**14. Briefly describe the external and internal factors that affect growth in plants. (LB-2009)**

External	Internal
Temperature Light Oxygen Carbon dioxide Water Nutrition	Hormones Vitamins



**15. Define aging and write its symptoms. (OR) Give symptoms of aging. (OR) What are important signs of aging in human beings? (OR) What are the causes of aging and how aging can be slowed down? (LB-2014) 16. Define gastrulation in chick. (LB-2013)**

Aging is an inevitable process and despite all the efforts to inhibit or stop it the aging process goes on . It can be defined as negative physiological changes in our body . We identify the adult individual by the following signs of old age , all of them need not be present e.g., loss of hair pigment , development of small, pigmented areas in the skin of face and arms , dryness and wrinkling of skin , loss of agility , increased weight due to fat poor vision and forgetfulness , general weakness, and decreased body immunity.

**17. Define growth correlations. (LB-2018)**

The development of a plant is usually correlated with its growth and different organs growing at different rates in different directions and the development of different parts takes place. Such reciprocal relationship is known as correlation.

**18. Define neurocoel, blastocoel and gastrocoel.**

- With the formation of neural tube, there is formation of central nervous system and the cavity enclosed is known as **neurocoel**.
- The morula stage is short-lived and soon changes into blastula and is characterized by the presence of a segmentation cavity or **blastocoele**.
- The cavity between the yolk and the endoderm, which is called **gastrocoele**.

**19. Define organizer and inducer substance. (OR) What are primary organizer and inducer substances? (LB-2009, 2013)**

It was seen that only cells from the dorsal lip of blastopore could induce a complete embryo. The dorsal lip area was called the **primary organizer** because it was the only tissue capable of inducing development of secondary embryo in the host.

**20. Define regeneration with examples. (LB-2011)**

The ability to regain or recover the lost or injured part of the body is called regeneration.

**Examples:**

- In sponges, due to simple organization sponges possess greater power of regeneration. These not only replace the parts lost during injury , but any piece of the body is capable of growing into a complete sponge.
- A lizard can easily discard its tail, but tail can be regenerated by special features of its tail.

**21. Define teratology and teratogens? (OR) Define teratology. (LB-2018)**



Teratology is the branch of biology, which deals with these abnormal developments and causes for such developments. Environmental factors causing or contributing to abnormal development are grouped together as teratogens.

**22. Differentiate between area pellucida and area opaca.**

At gastrula stage, the central cells of blastoderm can be separated from the yolk, under these central cells a pool of fluid develops, raising them off the yolk and giving the area a translucent appearance - the **area pellucida**.

The peripheral part of the blastoderm where the cells lie unseparated from the yolk is termed **area opaca**.

**23. Differentiate between gerontology and teratology. (LB-2010)**

**Gerontology** is the study of aging.

**Teratology** is the branch of biology, which deals with these abnormal developments and causes for such developments.

**24. Differentiate between growth and development. (OR) Define growth. (LB-2010, 2016, 2017)**

**Growth:** The permanent and irreversible increase in size that occurs as an organism matures.

**Development:** The progressive changes which are undergone before an organism acquires its adult form constitute embryonic **development**.

**25. Differentiate between morula and blastula.**

In Chick embryo development, Cleavage results in the formation of a rounded closely packed mass of blastomeres. This is morula, it consists of a disc shaped mass of cells two or more layers in thickness (blastoderm) lying close to the yolk. The **morula stage** is short-lived and soon changes into blastula.

**Blastula** stage is characterized by the presence of a segmentation cavity or blastocoele.

**26. Differentiate between primary and secondary growth. (LB-2018)**

(i) **Primary Growth:** Primary' tissue is added by the apical meristem

(ii) **Secondary Growth:** Secondary tissue is added by the intercalary or vascular cambium leading to increase in thickness

**27. Give the name of the two sheets like layers into which mesoderm splits and name the cavity formed between these. (OR)**

**Differentiate between somatic and splanchnic mesoderm. (LB-2012, 2013)**



Mesoderm is split into two sheet like layers viz somatic mesoderm and splanchnic mesoderm, with a space between them. The cavity formed between somatic and splanchnic mesoderm is coelom.

**28. How is final size of cells of cortex and tracheids is attained in zone of maturation? (LB-2013)**

The cells which develop into pith, cortex and certain other tissues do not elongate further along the axis, while other cells like fibers and tracheids elongate lengthwise more than in other direction. This results in maturation.

**29. How notochord is formed in chick embryo? (LB-2011)**

Shortly, after the primitive streak has been formed and the endoderm is well established, cells begin to push in from the region of Hensen's node to form the rod like notochord in the midline beneath the ectoderm.

**30. How primitive streak is formed? (LB-2008)**

The mesodermal cells migrate medially and caudally from both sides and create a mid-line thickening called primitive streak. In chick embryo of about 18 hours, notochord is one of the few prominent structural features.

**31. State dedifferentiation of cells. (LB-2012)**

Dedifferentiation of cells means that become less specialized, during regeneration, so that they can then proceed to differentiate into the same and probably different types of cells.

**32. State the role of gray vegetal and grey equatorial cytoplasm. (LB-2012)**

- Gray vegetal cytoplasm: It gives rise to gut.
- Grey equatorial cytoplasm: It produces notochord and neural tube.