



Chapter

19

Growth and Development

TOPIC WISE MULTIPLE CHOICE QUESTIONS Growth & Development In Plants

KIPS MCQs

- (1) The open growth is found in plants due to growing point:
 - (a) Shoot Apical Meristem
 - (b) Root Apical Meristem
 - (c) Vascular cambium
 - (d) All of the above
- (2) Which of the following meristem is of a temporary nature?
 - (a) Lateral Meristem
 - (b) Apical Meristem
 - (c) Intercalary Meristem
 - (d) Short Meristem
- (3) In lower plant _____ takes part in growth.
 - (a) Only apical meristem
 - (b) Entire plant body
 - (c) Only growing points
 - (d) None of these
- (4) _____ meristem plays important role in primary growth.
 - (a) Lateral Meristem
 - (b) Apical Meristem
 - (c) Intercalary Meristem
 - (d) Cambium
- (5) Lateral root emerges from:
 - (a) Pericycle
 - (b) Root Apical Meristem
 - (c) Endodermis
 - (d) Upper layer of cortex.
- (6) The progressive changes which are undergone before an organism acquires its adult form constitute:
 - (a) Growth
 - (b) Embryonic Development
 - (c) Pro-Embryonic
 - (d) Post embryonic development

PAST PAPER MCQs

- (7) Secondary growth leads to an increase in the diameter of the: (DGK 2018)
 - (a) Stem
 - (b) Root
 - (c) Leaf
 - (d) Stem and Root
- (8) The sclerenchyma has thick secondary walls usually impregnated with: (LHR-2018)
 - (a) Chitin
 - (b) Pectin
 - (c) Silica
 - (d) Lignin
- (9) The angular thickening in primary wall of cell is present in: (MLT 2019)
 - (a) Parenchyma
 - (b) Collenchyma
 - (c) Sclerenchyma
 - (d) Sieve tubes
- (10) An increase in the plant girth due to the activity of Vascular Cambium is called: (BWL-2019)
 - (a) Primary Growth
 - (b) Secondary Growth
 - (c) Sap Wood
 - (d) Heart Wood
- (11) Which of the following cells lack of secondary walls? (MLT-2021)
 - (a) Sclerenchyma
 - (b) Collenchyma
 - (c) Mesophyll
 - (d) Vessels

- (12) Angular thickenings in the primary walls are present in: (MLT-2021)
 (a) Parenchyma cells (b) Sclerenchyma cells
 (c) Collenchyma cells (d) Tracheids
- (13) Primary growth in plants is caused by: (GRW-2021)
 (a) Lateral meristem (b) Intercalary meristem
 (c) Apical meristem (d) Secondary meristem
- (14) A little distance from apex of root and shoot lies the zone of _____ (SWL-2021)
 (a) Cell differentiation (b) Cell division
 (c) Maturation (d) Elongation
- (15) A plant has a growth pattern called: (GRW-2018, LHR-2022)
 (a) Closed growth (b) Open growth
 (c) Primary growth (d) Secondary growth

CONDITIONS OF GROWTH

KIPS MCQs

- (16) How much volume of each cell is increased in the zone of elongation due to uptake of water?
 (a) 50 fold (b) 100 fold
 (c) 150 fold (d) 200 fold
- (17) At what stage the cell wall of tracheids become thicker in spatial dimensions?
 (a) Cell Division (b) Cell elongation
 (c) Cell Maturation (d) Cellular differentiation
- (18) Of all environmental factors controlling growth, the most important ones are:
 (a) Light and CO₂ (b) Vitamins and water
 (c) Temperature and Light (d) Oxygen and CO₂
- (19) Formation of cambium is _____ stage of differentiation.
 (a) 1st (b) 2nd
 (c) 3rd (d) 4th
- (20) Which type of light can enhance the cell elongation in plants?
 (a) Blue Light (b) Red Light
 (c) Green Light (d) Ultraviolet rays
- (21) For maximum growth of plants, the optimum temperature is:
 (a) 0-35^oC (b) 5-10^oC
 (c) 25-30^oC (d) 35-40^oC
- (22) Which one is not the feature of Zone of cell division?
 (a) Non vacuolated cells (b) Synthesis of cytoplasm
 (c) Formation of root hairs (d) Synthesis of cell wall material
- (23) Point out one of the following pairs which is incorrect:
 (a) Cork Cambium & Bark (b) Vascular Cambium & Xylem
 (c) Root Apical Meristem & Tap Root (d) None of these
- (24) Which is the condition that will inhibit the synthesis of vitamins in plants?
 (a) Light (b) Dark
 (c) Shortage of Water (d) Both a & b
- (25) What is the alternative name of root cambium?
 (a) Endodermis (b) Pericycle
 (c) Pith (d) Cortex
- (26) Which types of hormones are responsible for apical dominance in plants?
 (a) Cytokinins (b) Gibberellins
 (c) Auxins (d) None of these

- (27) **The removal of apex releases the lateral buds from apical dominance. It is called:**
 (a) Inhibitory Effects (b) **Compensatory Effects**
 (c) Temporary Effect (d) Enzymatic Effect
- (28) **Which phenomenon is involved in plants due to the duration of light?**
 (a) Photosynthesis (b) Phototropism
 (c) **Photoperiodism** (d) Photonasty
- (29) **At what range of temperature, the rate of growth stops and the plant may die?**
 (a) 0-35°C (b) 5-10°C
 (c) 25-30°C (d) **35-40°C**
- (30) **Growth rate is influenced by:**
 (a) Hormones (b) Water
 (c) Vitamins (d) **All of the above**
- (31) **The growth of plant is least at:**
 (a) 0-35°C (b) **5-10°C**
 (c) 25-30°C (d) 35-40°C
- (32) **The walls of cells become pitted in _____ phase of growth.**
 (a) Cell Division (b) Cell elongation
 (c) Cell Maturation (d) **Cellular differentiation**

PAST PAPER MCQs

- (33) **Vitamins are the organic compounds synthesized within the plant bodies in the presence of:** (LHR 2017)
 (a) Water (b) Nutrients
 (c) **Light** (d) Oxygen
- (34) **In the zone of elongation, the volume of the cells increases upto:** (SGD 2017)
 (a) 100 folds (b) **150 folds**
 (c) 200 folds (d) 250 folds
- (35) **In plants which light enhances cell division:** (DGK 2018)
 (a) Infrared (b) **Blue**
 (c) Red (d) Ultra violet
- (36) **Meristems are young tissue or group of cells that retain the potential to ____.** (RWP-2022)
 (a) Penetrate (b) Regenerate
 (c) **Divide** (d) Survive

GROWTH CORRELATIONS

KIPS MCQs

- (37) **Which types of hormones are responsible for apical dominance in plants?**
 (a) Cytokinins (b) Gibberellins
 (c) **Auxins** (d) None of these

PAST PAPER MCQs

- (38) **Apical dominance is caused by:** (SWL 2017)
 (a) **Auxin** (b) Methene
 (c) Cytokinin (d) Gibberellins
- (39) **Apical Dominance is caused by:**
 (a) Gibberellins (b) Cytokinins
 (c) Ethene (d) **Auxin**

- (40) Vitamins are the organic compounds synthesized within the plant bodies in the presence of: (LHR 2017)
- (a) Water (b) Nutrients
(c) Light (d) Oxygen

GROWTH & DEVELOPMENT IN ANIMALS

KIPS MCQs

- (41) What type of process is responsible for the development of germinal layers in the developing embryo?
- (a) Gametogenesis (b) Cleavage Formation
(c) Gastrulation (d) Organogenesis
- (42) Name the embryonic stage that is the result of cleavages to form a rounded closely packed mass of Blastomere:
- (a) Gastrula (b) Blastula
(c) Morula (d) Neurula
- (43) Discoidal cap of cells above the blastocoel is called:
- (a) Blastoderm (b) Blastomere
(c) Blastula (d) Epiblast
- (44) Which process is responsible to split blastoderm into epiblast and hypoblast?
- (a) Gastrulation (b) Blastulation
(c) Cleavage Formation (d) None of these
- (45) At what end of primitive streak, the Hensen's node will appear?
- (a) Caudal End (b) Cephalic End
(c) Intercalary (d) Both terminals.
- (46) The peripheral white area of blastoderm that transmits light is:
- (a) Area opaca (b) Area pellucida
(c) Blastomere (d) None of these
- (47) The incubation temperature for chick development is:
- (a) 30-35°C (b) 40-41°C
(c) 25-30°C (d) 36-38°C
- (48) The first two cleavages of hen's egg are vertical and 3rd one is:
- (a) Also vertical (b) At vegetal pole
(c) Parallel to the surface (d) Diagonal to first one
- (49) From Hensen's node _____ mesoderm is formed and organized into somites.
- (a) Dorsal (b) Lateral
(c) Ventral (d) Both b and c
- (50) Name the embryonic stage that is the result of cleavages to form a rounded closely packed mass of Blastomere:
- (a) Gastrula (b) Blastula
(c) Morula (d) Neurula
- (51) Discoidal cap of cells above the blastocoel is called:
- (a) Blastoderm (b) Blastomere
(c) Blastula (d) Epiblast
- (52) The mesodermal cells do not invaginate but migrate medially and caudally from both sides and create a midline thickening called:
- (a) Hensen's node (b) Primitive Streak
(c) Epiblast (d) Hypoblast

- (53) **The incubation temperature for chick development is:**
 (a) 30-35°C (b) 40-41°C
 (c) 25-30°C (d) 36-38°C
- (54) **The influence of notochordal cells on the ectodermal cells to become nervous system is called:**
 (a) Development (b) Embryonic induction
 (c) Differentiation (d) Abnormal development

PAST PAPER MCQs

- (55) **The shell over chick egg is secreted as it passes through:** (MTN 2017)
 (a) Ovary (b) Oviduct
 (c) Cloaca (d) Uterus
- (56) **The cavity formed between Somatic and Splanchnic Mesoderm is:** (BWP 2017)
 (a) Primitive Gut (b) Blastocoel
 (c) Seminiferous (d) Coelom
- (57) **The neurula is the stage in which embryo has:** (RWP 2017)
 (a) Blastocoel (b) The germ layers
 (c) Neural tube (d) Archenteron
- (58) **Gray vegetal cytoplasm gives rise to** (GRW-2017)
 (a) Larval epidermis (b) Notochord
 (c) Muscle cells (d) Gut
- (59) **The discoidal cap of cells above the blastocoel is called:** (SWL, MTN 2018)
 (a) Blastoderm (b) Ectoderm
 (c) Mesoderm (d) Endoderm
- (60) **The formation of rounded closely packed mass of blastomeres is called:** (SWL-2021)
 (a) Cleavage (b) Morula
 (c) Blastula (d) Gastrula
- (61) **Notochord is one of the few prominent structures seen in the embryo of:** (MLT-2021)
 (a) 24 hours (b) 22 hours
 (c) 20 hours (d) 18 hours
- (62) **Cleavage in fertilized egg results in the formation of:** (BWL-2021)
 (a) Gastrula (b) Blastula
 (c) Morulla (d) Neurula
- (63) **The peripheral part of the blastoderm where the cells lie unseparated from the yolk is called:** (FSD-2021)
 (a) Hypoblast (b) Epiblast
 (c) Area pellucida (d) Area opaca
- (64) **In which developmental stage, germs layers are formed:** (RWP-2021)
 (a) Morula (b) Blastulation
 (c) Gastrulation (d) Neurolation
- (65) **The discoidal cap of cells above the blastocoels is called.** (D.G.K-2022)
 (a) Ectoderm (b) Endoderm
 (c) Mesoderm (d) Blastoderm
- (66) **Notochord is seen in the chick embryo of:** (SWL-2022)
 (a) 24 hrs. (b) 22 hrs.
 (c) 20 hrs. (d) 18 hrs.

ROLE OF CYTOPLASM & NUCLEUS IN DEVELOPMENT**KIPS MCQs**

- (67) The gray vegetal cytoplasm of ascidian fertilized egg gives rise to:
 (a) Notochord (b) Neural tube
 (c) Muscles cells (d) Gut
- (68) *Acetabularia* is _____ alga.
 (a) Unicellular (b) Multicellular
 (c) Colonial (d) Filamentous
- (69) Most gene controlled substances are present in:
 (a) Nucleus (b) Cytoplasm
 (c) Both of these (d) None of these
- (70) In *Acetabularia*, the cap development is controlled by:
 (a) Nucleus (b) Cytoplasm
 (c) Both of these (d) None of these
- (71) In ascidian egg clear cytoplasm give rise to:
 (a) Larval epidermis (b) Gut
 (c) Muscles (d) Notochord
- (72) Spemann designated the _____ area, the primary organizer.
 (a) Lateral lip (b) Dorsal lip
 (c) Ventral lip (d) All of the above
- (73) The influence of notochordal cells on the ectodermal cells to become nervous system is called:
 (a) Development (b) Embryonic induction
 (c) Differentiation (d) Abnormal development
- (74) Salamander belongs to class:
 (a) Amphibia (b) Reptilia
 (c) Pisces (d) Aves
- (75) The gray vegetal cytoplasm of ascidian fertilized egg gives rise to:
 (a) Notochord (b) Neural tube
 (c) Muscles cells (d) Gut
- (76) Salamander belongs to class:
 (a) Amphibia (b) Reptilia
 (c) Pisces (d) Aves

PAST PAPER MCQs

- (77) Gray vegetal cytoplasm gives rise to (GRW 2017)
 (a) Larval epidermis (b) Notochord
 (c) Muscle cells (d) Gut
- (78) Clear cytoplasm produces: (SGD 2018)
 (a) Larval epidermis (b) Muscle cell
 (c) Gut (d) Neural tube
- (79) Clear Cytoplasm in an ascidian zygote produces: (LHR 2019)
 (a) Muscle (b) Gut
 (c) Larval epidermis (d) Notochord
- (80) Gray equatorial cytoplasm gives rise to: (MLT 2019)
 (a) Neural tube (b) Gut
 (c) Muscle cells (d) Larval epidermis
- (81) Pigment free area that appear at the time of fertilization in amphibians is (SRG 2019)
 (a) Animal pole (b) Vegetal pole
 (c) Yolk (d) Grey crescent

- (82) **Pigment free area that appear at the time of fertilization in amphibians is** (SRG 2021)
 (a) Animal pole (b) Vegetal pole
 (c) Yolk (d) Grey crescent
- (83) **Multicellular alga, Acetabularia is attached to the ground by** (GRV 2021)
 (a) Roots (b) Hold fast
 (c) Rhizoid (d) Base
- (84) **Which colour cytoplasm of an ascidian fertilized eggs gives rise to gut?** (MLT 2021)
 (A) Yellow cytoplasm (b) Grey equatorial cytoplasm
 (c) Grey vegetal cytoplasm (d) Yellow cytoplasm
- (85) **Acetabularia is unicellular:** (LHR 2022)
 (a) Fungus (b) Alga
 (c) Yeast (d) Protozoa
- (86) **Yellow cytoplasm gives rise to:** (BWL 2022)
 (a) Muscular cells (b) Larval epidermis
 (c) Gut (d) Notochord and neural tube

EMBRYONIC INDUCTION & AGING

KIPS MCQs

- (87) **The branch of Biology that deals with the study of aging is called:**
 (a) Teratology (b) Embryology
 (c) Gerontology (d) Phycology
- (88) **Which one is not the sign of aging?**
 (a) Loss of agility (b) Poor vision
 (c) Degeneration of cartilage (d) Loss of pigmented area on skin
- (89) **The negative physiological changes in our body are called:**
 (a) Degeneration (b) Abnormalities
 (c) Aging (d) Regeneration

PAST PAPER MCQs

- (90) **The negative physiological changes in our body are called:** (DGK 2017)
 (a) Maturation (b) Childhood
 (c) Aging (d) Displacement
- (91) **Anything which interferes with the normal process of development in the factor causing.** (LHR 2017)
 (a) Aging (b) Regeneration
 (c) Normalities (d) Abnormalities
- (92) **Anything which interferes with the normal process of development in the factor causing.** (LJR 2017)
 (a) Aging (b) Regeneration
 (c) Normalities (d) Abnormalities
- (93) **Rapid aging and low resistance to environmental stress and disease are limitations for:** (DGK 2018)
 (a) Fragmentation (b) Budding
 (c) Cloning (d) Regeneration
- (94) **The negative physiological changes in our body is called:** (FSD 2018)
 (a) Teratology (b) Degeneration
 (c) Aging (d) Abnormalities
- (95) **The human life span is judged to be maximum of:** (MTN 2018)
 (a) 60-70 years (b) 70-100 years
 (c) 120-125 years (d) 130-135 years
- (96) **The negative physiological changes in our body are called:** (GRW 2019)

- (a) Degeneration (b) Abnormalities
 (c) Aging (d) Regeneration
- (97) Negative physiological changes in our body is called: (SRG 2022)
 (a) Gerontology (b) Aging
 (c) Regeneration (d) Abnormal Development

REGENERATION**KIPS MCQs**

- (98) Unspecialized cells, the neoblasts, are present in:
 (a) Lobster (b) Planaria
 (c) Salamander (d) Both a and b
- (99) Earth worm can regenerate its:
 (a) Claws (b) Head
 (c) Tail (d) Skin

PAST PAPER MCQs

- (100) The unspecialized cells present in flatworms and planaria are: (LHR 2015)
 (a) Neoblast (b) Osteoblast
 (c) Osteoclast (d) Chondrocyte
- (101) The head can be regenerated in: (MTN 2017)
 (a) Earthworm (b) Frog
 (c) Leech (d) Grasshopper

ABNORMAL DEVELOPMENT**KIPS MCQs**

- (102) _____ is a condition in which individual have small skull.
 (a) Klinefelter's syndrome (b) Cleft palate
 (c) Microcephaly (d) Turner's syndrome
- (103) Nutritional deficiencies during development affect the:
 (a) Differentiation (b) Organogenesis
 (c) Metabolism (d) Both a and b
- (104) Which one is the cause of Klinefelter's syndrome?
 (a) Metabolic defect (b) Environmental factor
 (c) Defective single gene (d) Abnormal number of Chromosome
- (105) Point out one of the following which is not Trisomy:
 (a) Turner's syndrome (b) Down's syndrome
 (c) Klinefelter's Syndrome (d) All of the above
- (106) The man with XYY has the following characters except one. What is that?
 (a) Tallness (b) Aggressiveness
 (c) Antisocial behaviour (d) Sterility
- (107) Which one is the cause of Klinefelter's syndrome?
 (a) Metabolic defect (b) Environmental factor
 (c) Defective single gene (d) Abnormal number of Chromosome
- (108) Metabolic defects during development affect the:
 (a) Differentiation (b) Organogenesis
 (c) Metabolism (d) Both a and b

PAST PAPER MCQs

- (109) The branch of biology which deals with abnormal development is called: (DGK 2017)
 (a) Teratology (b) Palaeontology
 (c) Gerontology (d) Mythology

- (110) Which of the following chromosomal abnormalities lead to tallness aggressiveness mental defect and anti-social behaviour. (LHR-2018)
- (a) XXY (b) XO
(c) XXXY (d) XYY
- (111) The individuals who born with abnormal organs or body parts is called: (LHR 2018)
- (a) Malformed (b) Malignant
(c) Falignant (d) Malfunction
- (112) Immediately after fertilization, the egg under goes some series of mitotic divisions called: (LHR-2021)
- (a) Morulla (b) Blastula
(c) Castulation (d) Cleavage
- (113) in the development of chick the 24 hour embryo is called: (LHR-2021)
- (a) Morulla (b) Gastrula
(c) Blastula (d) Neurula
- (114) The branch of biology which deals with the study of abnormal development is: (RWP-2019)
- (a) Morphology (b) Embryology
(c) Teratology (d) Peratology
- (115) Environment factors causing abnormal development are called: (FSD-2021)
- (a) Toxins (b) Carcinogens
(c) Teratogens (d) Mutagens

ANSWER KEY

(Topic Wise Multiple Choice Questions)

1	d	26	c	51	d	76	a	101	a
2	c	27	b	52	b	77	a	102	a
3	b	28	c	53	d	78	a	103	a
4	b	29	d	54	b	79	0	104	d
5	a	30	d	55	d	80	0	105	a
6	b	31	b	56	d	81	0	106	d
7	d	32	d	57	c	82	0	107	d
8	d	33	c	58	0	83	c	108	d
9	c	34	b	59	a	84	0	109	a
10	b	35	b	60	b	85	b	110	d
11	c	36	c	61	d	86	0	111	a
12	c	37	c	62	c	87	c	112	d
13	c	38	a	63	0	88	d	113	0
14	d	39	d	64	0	89	c	114	c
15	b	40	c	65	d	90	c	115	c
16	c	41	c	66	d	91	a	141	
17	d	42	c	67	d	92	d	142	
18	c	43	a	68	a	93	c	143	
19	c	44	a	69	b	94	c	144	
20	b	45	b	70	a	95	c	145	
21	c	46	a	71	a	96	c	146	
22	c	47	d	72	b	97	b	147	
23	d	48	c	73	b	98	b	148	
24	b	49	a	74	a	99	b	149	
25	b	50	c	75	d	100	a	150	

GROWTH & DEVELOPMENT IN PLANTS

KIPS QUESTIONS

Q: 1 What is meant by open growth pattern in plants?

Ans: Plant has a growth pattern called as open growth. Throughout life plant adds new organs such as branches, leaves and roots enlarging from tips of roots and shoot.

Q: 2 Name the groups of Plant that have Lateral meristems.

Ans: Vascular and cork cambium are the examples of lateral meristems. They are found in dicots and gymnosperms.

Q: 3 Differentiate between the growth pattern in lower and higher plants.

Ans:

Lower Plants	Higher Plants
Entire plant body is capable of growing.	Growth is limited to certain regions only.
Meristem is not present.	Growing points of meristem are present.

Q: 4 Differentiate between determinate and indeterminate growth.

Ans:

Determinate Growth	Indeterminate Growth
They grow to certain size and then stop.	They grow by meristems that continually replenish themselves.
Leaves, flower and fruits show it.	Vegetative root and stem show it.

Q: 5 Make the list of different growth zones in apex growth.

Ans: (i) Zone of cell division (ii) Zone of cell elongation
(iii) Zone of cell maturation (iv) Zone of cell differentiation

Q: 6 Differentiate between primary and secondary growth.

Ans:

Primary Growth	Secondary Growth
Increase in plant length.	Increase in plant thickness.
Primary tissue is added.	Secondary tissue is added.

PAST PAPER QUESTIONS

- Q: 7** Differentiate between Primary and Secondary Growth. (BWP 2018)
- Q: 8** What are meristems? (RWP 2017)
- Q: 9** Define growth. (LHR 2017)
- Q: 10** What do you mean by lateral meristem? (LHR 2017)
- Q: 11** Differentiate between apical meristems and lateral meristems. (LHR 2017)
- Q: 12** Define apical meristems. (DGL 2017)
- Q: 13** What are Intercalary meristems? Give its function. (MTN 2017)
- Q: 14** Define growth. (LHR 2017)
- Q: 15** What do you mean by lateral meristem? (LHR 2017)
- Q: 16** Differentiate between apical meristems and lateral meristems. (LHR 2017)
- Q: 17** Differentiate between primary and secondary growth. (LHR 2018)
- Q: 18** What are intercalary meristems? Give their role. (LHR 2018)
- Q: 19** Differentiate between primary and secondary growth. (LHR 2018)
- Q: 20** What are intercalary meristems? Give their role. (LHR 2018)
- Q: 21** Differentiate between Primary Growth and Secondary Growth. (SWL 2017, MTN 2018)
- Q: 22** Differentiate maturation from differentiation. (SGD 2018)
- Q: 23** What is the difference between primary and secondary growth? (LHR 2019)
- Q: 24** Compare determinate with indeterminate growth. (SWL 2019)
- Q: 25** What are meristems? Give two examples. (SWL 2021)

- Q: 26 Differentiate between maturation and differentiation. (SWL 2021)
 Q: 27 What are Intercalary Meristems? (RWP 2021)
 Q: 28 What are collenchyma cells? Discuss. (SRG 2021)
 Q: 29 Differentiate between apical and lateral meristems (RWP 2021)
 Q: 30 Define apical meristem. (LHR 2021)
 Q: 31 Differentiate between maturation and differentiation. (GRW 2021)
 Q: 32 Differentiate between primary and secondary growth. (GRW 2022)

CONDITIONS OF GROWTH

KIPS QUESTIONS

Q: 33 List the names of internal and external factors that affect the growth of plant.

Ans: **Internal Factors:**

- (i) Hormones (ii) Water (iii) Nutrition (iv) Vitamins

External Factors:

- (i) Temperature (ii) Light (iii) Oxygen (iv) Carbon dioxide

Q: 34 How does light influence the growth of plants?

Ans: Light influences growth in three ways: intensity, quality and duration.

Intensity of light:

The increase in intensity of light increases the number of cell divisions.

Quality of light:

The red light favours elongation of cells. The blue light enhances cell division but it retards cell enlargement. Similarly, ultraviolet rays also retard cell elongation.

Duration of light:

Duration of light affects the growth of vegetative and reproductive structures. It also plays a role in inducing or suppressing flowering.

PAST PAPER QUESTIONS

- Q: 35 Write down the role of temperature as an external factor in plant growth. (RWP 2018)
 Q: 36 How temperature plays its role in the growth of plants? (BWL 2022)

GROWTH CORRELATIONS

KIPS QUESTIONS

Q: 37 What is the contribution of Thimann and Skoog to understand the growth correlation?

Ans: They performed experiments and showed that apical dominance was caused by auxins diffusing from the apical bud, which inhibited the growth of lateral shoots.

Q: 38 Define apical dominance.

Ans: Such plant growth correlation in which apical buds grow while growth is suppressed in lower axillary buds is called apical dominance.

Q: 39 What are the practical applications of apical dominance?

Ans: It plays an important role in tap root development and the inhibition of sprouting of lateral buds (eyes) in potatoes.

Q: 40 What is the difference between inhibitory effect and compensatory effect?

Ans:

Inhibitory effect	Compensatory effect
The auxin of the terminal bud is responsible for inhibiting the growth of lateral buds. The terminal bud produces auxin. Auxin diffuses from the apical bud to the lateral shoots and it produce inhibitory effect .	The removal of apex releases the lateral buds from apical dominance. It is called compensatory effect .

Q: 41 Define correlation.

Ans: The reciprocal relationship of growth between different parts of the plants in which one part affects the growth of the other part is called **growth correlations**.

PAST PAPER QUESTIONS

Q: 42 What is compensatory effect in plant growth? (SWL 2017)

Q: 43 Write practical applications of Apical dominance. (MTN 2018)

Q: 44 Differentiate between inhibitory and compensatory effect. (SWL 2018, GRW 2019)

Q: 45 Differentiate between growth and development. (MLT 2019)

Q: 46 What is the difference between inhibitory effect and compensatory effect? (DGK 2017, MLT-2019)

Q: 47 Define growth correlations. (GRW 2017, LHR 2018, MTN 2018, SWL 2019, BWP 2019, GRW 2021)

Q: 48 What is inhibitory effect? (LHR 2021)

Q: 49 How inhibitory effect and compensatory effect are caused? (LHR 2022)

Q: 50 What is apical dominance as a growth relation. (MLT 2022)

GROWTH & DEVELOPMENT IN ANIMALS

KIPS QUESTIONS

Q: 51 What is vegetal pole? What is its function?

Ans: The region of hen's egg where large quantity of yolk is present is called vegetal pole. It serves as a source of food for developing embryo.

Q: 52 What is the basic difference in development between chick embryo and amphibian embryo?

Ans.

Amphibians	Chick
Complete zygote divides, i.e. discoidal cleavage does not occur.	Division is confined only to small disc of cytoplasm i.e. discoidal cleavage.
Mesodermal cells invaginate into the blastocoel.	Mesodermal cells do not invaginate but migrate medially and caudally from both sides.

Q: 53 Differentiate between somatic mesoderm and splanchnic mesoderm of a developing chick embryo.

Ans.

Somatic mesoderm	Splanchnic mesoderm
It is the outer layer of the lateral mesoderm above the coelom.	It is the internal layer of the lateral mesoderm below the coelom
It underlies with the ectoderm.	It lines the endoderm.

Q: 54 What is Hensen's node? Give its location with respect to primitive streak.

Ans: At the cephalic end of primitive streak, closely packed cells form a local thickening known as Hensen's node. It is site of a somewhat special type of invagination. Notochord develops from it

Q: 55 Differentiate between area pellucida and area opaca.

Ans.

Area pellucida	Area opaca
It is the central area giving a translucent appearance.	It is the peripheral white area of the blastoderm.
It becomes separated from the yolk.	It is still attached to the yolk.

Q: 56 How coelom forms in chick's embryo?

Ans: The lateral plate mesoderm splits into two sheet like layers, the somatic and splanchnic mesoderms. The space between these layers is coelom.

Q: 57 What will happen to an embryo if its dorsal ectoderm is removed?

Ans: The embryo from which the piece of ectoderm is removed, will be unable to form normal nervous system but has a defective nervous system, while the isolated piece will not develop into any structure.

Q: 58 Define discoidal cleavage.

Ans: 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 called discoidal cleavage.

Q: 59 What is primitive streak?

Ans: During development of chick, mesodermal cells migrate medially and caudally from both sides and create a midline thickening called primitive streak.

PASSAGE QUESTIONS:

Q: 60 Describe morulla stage in the development of chick. (DGK 2017)

Q: 61 How neural plate is formed? (BWP -2017)

Q: 62 What is the difference between epiblast and hypoblast? (LHR 2017)

Q: 63 Differentiate between growth and embryonic development. (FSD 2017)

Q: 64 Define morula stage of development. (SGD 2017)

Q: 65 How area opaca differs from area pellucida? (DGK 2017-18)

Q: 66 What is blastoderm? (FSD 2018)

Q: 67 Give four names of key events in animal's development. (SWL 2018)

Q: 68 Write about cleavage and discoidal cleavage. (MTN 2018)

Q: 69 Define discoidal cleavage. (RWP 2017)

Q: 70 What happened during the organogenesis? (RWP 2017)

Q: 71 What is the difference between epiblast and hypoblast? (LHR-2017)

Q: 72 Define gray crescent. What role, it plays in development? (GRW-2017)

Q: 73 Differentiate between area of pellucida and area of opaca. (GRW 2017, 2017, 2018, DGK 2019)

Q: 74 Differentiate Epiblast from Hypoblast. (BWL 2019)

Q: 75 Differentiate between growth and development. (MLT 2021)

Q: 76 Compare epiblast and hypoblast in gastrulation stage of chick development. (MLT 2021)

Q: 77 Differentiate between neurula and neurulation. (MLT 2021)

Q: 78 What is "Discoidal Cleavage"? (DGK 2018, LHR 2019, GRW 2019, MLT 2021, RWP 2021)

Q: 79 What is blastoderm? (FSD 2019)

Q: 80 What is morula? (SRD 2019)

Q: 81 What is Hansen's node? (SRD 2019)

Q: 82 Define growth and development. (LHR 2021)

Q: 83 Compare morula and blastula. (FSD 2021)

Q: 84 How dose coelom develop in chick embryo. (FSD 2021)

Q: 85 Differentiate between primary and secondary growth. (FSD 2021)

Q: 86 Compare gastrulation and organogenesis. (LHR 2022)

Q: 87 How are area pellucida and area developed? (LHR 2022)

Q: 88 Write down the significant change that convert morula into blastula. (DGK 2022)

Q: 89 How blastoderm is formed and what is zone of junction? (MLT 2022)

Q: 90 Define blastula stage of chick development. (BWL 2022)

Q: 91 If all the cells contain same nuclear material, what cause the cells to differentiate? (RWL 2022)

Q: 92 Which type of cleavage is found in bird's egg? Discuss briefly. (RWP 2022)

Q: 93 How neural is formed during chick development. (SRD 2022)

Q: 94 Differentiate between growth and development. (SRD 2022)

ROLE OF CYTOPLASM AND NUCLEUS IN DEVELOPMENT**KIPS QUESTIONS**

Q: 95 What is the concluding result of experiments on embryo by Hans Driesch in 1892?

Ans: He studied sea urchin's egg at two cells stage, and concluded that both the cells contained all the genetic information of original zygote. These both cells separately are capable to develop into normal larvae.

Q: 96 Give the technology of "minute ligature" for dividing the zygote.

Ans: Spemann took salamander zygote, and with the help of minute ligature of human hair divided the zygote into two equal halves. The nucleus was present in one half, but the other half had no nucleus. Only that compartment having nucleus will undergo cleavage.

Q: 97 Name the different parts of *Acetabularia*.

Ans: *Acetabularia* is a green alga reaching a size of several centimeters. It has three parts i.e. rhizoid attached to ground containing nucleus in it, long cytoplasmic stalk and a cap on its top.

Q: 98 Name different cytoplasmic regions of ascidian zygote and the structures formed by each region.

Ans: **Clear Cytoplasm:** It produces larval epidermis.

Yellow Cytoplasm: It gives rise to muscle cells.

Gray Vegetal Cytoplasm: It gives rise to gut.

Grey Equatorial Cytoplasm: It produces notochord and neural tube.

PAST PAPER QUESTIONS:

Q: 99 Define gray crescent. What role, it plays in development? (GRW 2017)

Q: 100 Write down the names of different kinds of cytoplasm's with their functions. (SGD 2017)

Q: 101 Discuss the role of cytoplasm in development. (MTN 2017)

Q: 102 Write the names of cytoplasm found in ascidian zygote. (DGK 2018)

Q: 103 What role is played by clear cytoplasm and yellow cytoplasm in animal development? (RWP 2018)

Q: 104 Write the name of four types of cytoplasm contain in the fertilized egg of ascidian. (SWL 2019)

EMBRYONIC INDUCTION & AGING**KIPS QUESTIONS**

Q: 105 How can we slow down the process of aging?

Ans: Aging can be slowed down by better nutrition and improved living conditions e.g., regular meals, regular exercise, adequate sleeps abstinence from smoking and maintaining an ideal weight. This can prolong life by an average of 11 years.

Q: 106 Define gerontology and its basic aims.

Ans: **Gerontology:**

Study of aging is called gerontology.

Basic Aims:

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

PAST PAPER QUESTIONS

Q: 107 What is aging? How will you explain this process? (LHR 2017)

Q: 108 Differentiate between Gerontology and Teratology. (MTN 2017)

Q: 109 Define embryonic induction. (BWP 2017, DGK 2018)

Q: 110 What is primary organizer and primary induction? (D.G.K-2019)

Q: 111 Write any four causes of ageing. (LHR-2019)

Q: 112 Define aging. Give four signs of aging? (SWL-2019)

Q: 113 How aging can be slowed down? (RWP-2019)

REGENERATION**KIPS QUESTIONS**

Q: 114 What are neoblasts?

Ans: These are unspecialized cells present in *Planaria* and other flatworm that are involved in regeneration.

PAST PAPER QUESTIONS

Q: 115 Define Regeneration. Give one example. (BWP 2018)

Q: 116 The number of older individuals are expected to rise in humans, discuss. (LHR-2022)

Q: 117 What do you know about Neoblast cells? (MTN 2017)

Q: 118 What are neoblasts? Give their role. (GRW 2018)

Q: 119 What are neoblasts and what is their role in development? (LHR 2019)

Q: 120 How process of regeneration occurs in amphibians? (DGI 2022)

ABNORMAL DEVELOPMENT**KIPS QUESTIONS**

Q: 121 What do you mean by teratogens? Give examples.

Ans: Teratogens:

Environmental factors causing or contributing to abnormal development are grouped together as teratogens.

Examples: Ionizing radiations, Nutritional deficiencies.

Q: 122 Define teratology.

Ans: Teratology is the branch of Biology, which deals with the abnormal developments and their causes.

Q: 123 What is microcephaly?

Ans: In microcephaly, the individuals are produced with small skull. It is a genetic defect.

PAST PAPER QUESTIONS

Q: 124 Define teratology and teratogens. (LHR 2018)

Q: 125 What are teratogens? Give an example. (FSD 2018, SGD 2018, FSD 2019)

Q: 126 What are metabolic defects? Give one example. (RWP 2019)

Q: 127 Define teratology. (FSD 2021)

Q: 128 Define teratogens. Give two examples. (LHR 2021)

Q: 129 How development is affected by ionizing radiations and nutritional deficiency? (GRW 2021)