Chapter 16

Support and Movements

TOPIC WISE MULTIPLE CHOICE QUESTIONS
SUPPORT AND MOVEMENT IN PLANTS

KIPS MCQs

(1) The tissue which provides support to the baby plant is:
(a) Collenchyma **(b)** Sclerenchyma
(c) Parenchyma **(d)** Chlorenchyma

(2) The tissue involved in producing turgor pressure is:
(a) Chlorenchyma **(b) Parenchyma**
(c) Sclerenchyma **(d)** Collenchyma

(3) The cells which are the main source of protection in seed coats and nut shells are:
(a) Vessels **(b) Sclereides**
(c) Tracheid **(d)** Trachea

PAST PAPER MCQs

(4) The collenchyma and sclerenchyma are with heavily lignified cells present in: (BWP 2017)
(a) Cortex and Phloem **(b) Cortex and Xylem**
(c) Xylem and Phloem **(d)** Pericycle and Cortex

(5) Which of the following cells have angular thickening in their primary walls? (SWL 2018)
(a) Collenchyma **(b)** Sclerenchyma
(c) Fibers **(d)** Vessels

(6) The cell walls of sclerenchymatous cells are usually impregnated with: (DGK 2017, LHR 2018, FSD 2017, 2021,)
(a) Silica **(b)** Pectin
(c) Lignin **(d)** Suberin

(7) Angular thickness in their primary walls are present in: (MTN 2019)
(a) Parenchyma **(b) Collenchyma**
(c) Sclerenchyma **(d)** Tracheid

(8) The internal hydrostatic pressure in plants is: (LHR 2019)
(a) Osmotic **(b)** Root
(c) Turgor **(d)** Solute

(9) The inactive non conducting wood is called: (GRW 2019)
(a) primary wood **(b)** secondary wood
(c) heart wood **(d)** san wood

(10) The sclerenchyma cells found in seed coats and nutshells are called: (MTN 2019, LHR 2021)
(a) Fibers **(b)** Sclereides
(c) Tracheids **(d)** Vessels

(11) Bundle caps in sunflower stem are formed by: (GRW 2021)
(a) Parenchyma **(b)** Sclerencma
(c) Mesenchyme **(d)** Collenchyma

(12) Which of the following cells lack of secondary walls? (MTN 2021)
(a) Sclerenchyma **(b)** Collenchyma
(c) Mesophyll **(d)** Vessels

(13) Complete immobilization of muscle leads to muscle weakness and severe:
(a) Atrophy **(b)** Cramp
(c) Tetany **(d)** Trauma

(14) The structures that lack secondary wall are: (LHR 2022, MTN 2022)
(a) Fibers **(b)** Sclerenchyma
(c) Parenchyma **(d)** Collenchyma

(15) The membrane that bounds vacuole is called: (MTN 2017, 2018, SGD 2018, LHR 2022)
(a) Protoplast **(b) Tonoplast**
(c) Chloroplast **(d)** Leucoplast

SIGNIFICANCE OF SECONDARY GROWTH

KIPS MCQs

(16) An increase in plant girth due to the activity of vascular cambium is called:
(a) Development **(b)** Primary growth
(c) Secondary growth **(d)** Both b and c

(17) The soft wood tissue formed over the wound in plants is called:
(a) Gall **(b)** Tumors
(c) Callus **(d)** Growth galls

(18) Secondary growth occurs due to cell division in:
(a) Vascular cambium **(b)** Cork cambium
(c) Both a & b **(d)** Some other region

(19) The commercial cork is made from the bark of:
(a) ***Quercus suber*** **(b)** *Dalbergia sisoo*
(c) *Rosa indica* **(d)** *Accacia deodara*

(20) Chemicals providing resistance against decay and insect attack to the wood of cedar and conifer:
(a) Resins **(b)** Gums
(c) Tannins **(d) All of the above**

PAST PAPER MCQs

(21) Secondary growth leads to an increase in the diameter of the: (DGK 2018)
(a) Stem **(b)** Root
(c) Leaf **(d)** Stem and Root

(22) An increase in the plant girth due to the activity of Vascular Cambium is called: (BWP 2019)
(a) Primary Growth **(b)** Secondary Growth
(c) Sap Wood **(d)** Heart Wood

(23) The inactive and non-contacting wood is called: (SGD 2022)
(a) Sapwood **(b)** Heartwood
(c) Both A and B **(d)** None of these

MOVEMENTS IN PLANTS

KIPS MCQs

(24) Flowers of tulip close at night due to:
(a) Photonasty **(b)** Phototactic
(c) Epinasty **(d) Thermonasty**

(25) The movement of sperms of lower plants towards archegonia is in response to:

(a) Glucose **(b)** Nectar
(c) Nucleic acid **(d)** Proteins

(26) For photonasty the principal stimulus is:
(a) Heat **(b)** Dark
(c) Photoperiod **(d)** Dark period

(27) Closure of venus fly trap on sitting of insect is an example of:
(a) Thigmotropism **(b)** Hyponasty
(c) Haptonasty **(d)** Epinasty

(28) Auxins play a role in:
(a) Phototropism **(b)** Gravitropism
(c) Epinasty **(d) All of the above**

(29) In plant cell turgor pressure is generated:
(a) Cell wall **(b)** Cell membrane
(c) Mitochondria **(d) Vacuole**

PAST PAPERS MCQs

(30) The upper surface of leaves in bud condition shows: **(SWL 2017)**
(a) Photonasty **(b)** Hyponasty
(c) Haptonasty **(d) Epinasty**

(31) In plants movement in response to stimulus of touch is called: **(LHR 2018)**
(a) Phototactic **(b)** Chemotactic
(c) Nyctinasty **(d) Thigmotropism**

(32) The movement in response to stimulus of touch i-e climbing vines, is called: **(SGD 2018)**
(a) Phototropism **(b)** Geotropism
(c) Thigmotropism **(d)** Hydrotropism

(33) Opening of flower bud follows: **(BWP 2018)**
(a) Photonasty **(b)** Epinasty
(c) Hyponasty **(d)** Haptonasty

(34) Movements shown by sperms of liver – worts, ferns towards archegonia is a: **(BWP 2019)**
(a) Chemotactic **(b)** Phototactic
(c) Chemotrophic **(d)** Phototrophic

(35) For photonasty, the principal stimulus is: **(LHR 2021)**
(a) Light **(b)** Dark
(c) Photoperiod **(d)** Dark period

(36) Action of Venus Fly trap is: **(SGD 2019, 2021)**
(a) Nyctynasty **(b)** Photonasty
(c) Haptonasty **(d)** Thermonasty

SUPPORT AND MOVEMENTS IN ANIMALS: HYDROSTATIC SKELETON

PAST PAPER MCQs

(37) Which of the following animal has hydrostatic skeleton? **(RWP 2021)**
(a) Man **(b)** An insect
(c) Sea anemone **(d)** Fish

EXOSKELETON

KIPS MCQs

(38) The simplest example of exoskeleton is:
(a) Shell of tortoise **(b) Shell of molluscs**
(c) Feathers of birds **(d)** Scale of snakes

(39) The most complex exoskeleton is found in:
(a) Arthropods **(b)** Chordates
(c) Echinodermates **(d)** Molluscs

PAST PAPER MCQs

(40) A hardened outer surface to which internal muscles can be attached is: (DGK 2017)
(a) Endoskeleton **(b)** Hydrostatic skeleton
(c) Exoskeleton **(d)** Axial skeleton

(41) The process of moulting is controlled by the nervous system and a hormone called: (LHR 2017, LHR 2019, LHR 2021)
(a) Aldosteron **(b)** Androgen
(c) Ecdysone **(d)** Oxytocin

ENDOSKELETON

KIPS MCQs

(42) Both bone & cartilage are:
(a) Rigid connective tissues **(b)** Consist of living cells
(c) Have a matrix of protein collagen **(d) All of the above**

(43) Which of the following is right sequence of cells involved in bone repair?
(a) Osteoblast → osteoclast → osteocyte **(b)** Osteocyte→osteoblast →osteoclast
(c) Osteoblast → osteocyte → osteoclast **(d)** Osteoclast → osteoblast → osteocyte

(44) Living cells of cartilage:
(a) Osteocytes **(b)** Osteoclasts
(c) Chondrocytes **(d)** Osteoblasts

PAST PAPERS MCQs

(45) Collagen fibers of bone are hardened by the deposit of: (LHR 2017)
(a) Calcium phosphate **(b)** Sodium phosphate
(c) Sodium carbonate **(d)** Calcium carbonate

(46) Bone forming cells are known as: (FSD 2017)
(a) Osteoblasts **(b)** Osteocytes
(c) Osteoclasts **(d)** Chondroblasts

(47) Both bones and cartilage consist of living cells embedded in the matrix of protein known as: (LHR 2017)
(a) Collagen **(b)** Keratin
(c) Insulin **(d)** Fibrinogen

(48) The bone dissolving cells are called: (LHR 2022, MTN 2022)
(a) Stem cells **(b)** Osteoclast
(c) Osteoblast **(d)** Osteocytes

(49) The living cells of cartilage are called _____. (RWP 2022)
(a) Chondrocytes **(b)** Osteoblasts
(c) Osteocytes **(d)** Osteoclasts

(50) Mature bone cells are called: (BWP 2014, SWL 2015, LHR 2019, LHR 2021, BWP 2022)
(a) Osteocytes **(b)** Osteoclasts
(c) Chondrocytes **(d)** Blastocytes

ENTRY TEST BASED MCQs

(51) What is false about cartilage? (UHS 2022)

(a) There are many blood vessels in cartilage
(b) It is a form of connective tissue
(c) It covers ends of the bone at joints
(d) It is much softer than bone

HUMAN SKELETON

KIPS MCQs

(52) Number of paired bones in cranium is:

(a) 2 **(b)** 6
(c) 8 **(d)** 10

(53) Which of the following is unpaired facial bone?

(a) Vomer **(b)** Zygomatic
(c) Nasal **(d)** Maxilla

(54) Number of vertebrae found in thoracic region:

(a) 7 **(b) 12**
(c) 8 **(d)** 5

(55) Find out the odd one:

(a) Tibia **(b)** Fibula
(c) Patella **(d) Ulna**

(56) Rib cage is made up of number of ribs:

(a) 12 **(b)** 9
(c) 24 **(d)** 33

(57) Pelvic girdle does not contain:

(a) Ilium **(b) Coracoid**
(c) Ischium **(d)** Pubis

(58) The structure formed by the fusion of posterior four pelvic vertebrae is:

(a) Axis **(b)** Atlas
(c) Coccyx **(d)** Sacrum

PAST PAPERS MCQs

(59) Sacrum is formed by the fusion of anterior: (MTN 2017)

(a) Two bones **(b)** Three bones
(c) Four bones **(d) Five bones**

(60) The number of pelvic vertebrae in vertebral column of man is: (DGK 2017)

(a) 5 **(b)** 7
(c) 9 **(d)** 12

(61) The lower two pairs of ribs in humans are called: (RWP 2017)

(a) Free ribs **(b)** Fix ribs
(c) Floating ribs **(d)** Former ribs

(62) The vertebral column of human consist of vertebrae: (SWL 2018)

(a) 31 **(b)** 32
(c) 33 **(d)** 34

(63) The number of cervical vertebrae are: (FSD 2016)

(a) 7 **(b)** 12
(c) 33 **(d)** 22

(64) All of the following bones are associated with coxal bone, except:

(MTN 2019)

(a) Ilium **(b)** Ishium
(c) Pubis **(d) Clavicle**

(65) Seven vertebrae which lie in the neck region is called: (RWP 2016, MTN 2019)
(a) Lumber region **(b)** Thoracic region
(c) Pelvic region **(d) Cervical region**

(66) All of the following are associated with coxal bone except: (MTN 2019)
(a) Ilium **(b)** Ischium
(c) Pubis **(d)** Clavicle

(67) The fusion of four posterior vertebrae in pelvic region form:
(FSD 2018, 2019, 2021, BWP 2021)
(a) Sacrum **(b)** Lumbar
(c) Coccyx **(d)** Chest Cage

(68) Which one of the following is a facial bone: (LHR 2021)
(a) Frontal **(b)** Occipital
(c) Vomer **(d)** Sternum

(69) Which one of the given is paired bone in cranium? (SWL 2021)
(a) Frontal **(b)** Occipital
(c) Sphenoid **(d)** Temporal

(70) To which region of vertebral column, tetra's pelvic gridle is attached? (SWL 2022)
(a) Lumber region **(b)** Sacral region
(c) Pelvic region **(d)** Cervical region

JOINTS

KIPS EXERCISE

(71) Joint formed between ulna and humerus is:
(a) Hinge joint **(b)** Ball & socket joint
(c) Pivot joint **(d)** Some other type of joint

(72) Ligament is:
(a) Slightly elastic
(b) Holds the bones together
(c) Formed by modification of a part of fibrous capsule
(d) All of the above

PAST PAPERS MCQs

(73) The joint that allows the movements in two directions is called: (RWP 2016)
(a) Cartilaginous joints **(b)** Synovial joint
(c) Hinge joints **(d)** Ball and socket joint

(74) The synovial joint is surrounded by a layer of connective tissue called:
(LHR 2017, GRW 2018)
(a) Fibrous capsule **(b)** Hyaline cartilage
(c) Annulus Fibrosus **(d)** Hematoma

ENTRY BASED MCQs

(75) Hinge joint is present between which of the following bones: (UHS 2022)
(a) Humerus and radio-ulna **(b)** Femur and pectoral girdle
(c) Femur and acetabulum **(d)** Humerus and pectoral girdle

DEFORMITIES OF SKELETON

KIPS EXERCISE

(76) Which of the following is not relevant to osteoporosis?
(a) ERT **(b)** Aged women
(c) Mass of bones reduced **(d) Hypercalcemia**

(77) Which of the following is not a disorder of bone?
(a) Disc slip **(b)** Spondylosis
(c) Sciatica **(d)** Rickets

(78) Chronic arthritis includes:
(a) Osteoarthritis **(b)** Rheumatoid arthritis
(c) Gouty arthritis **(d) All of the above**

(79) Osteoporosis is caused by the decrease of the level of:
(a) Testosterone **(b)** Thyroxin hormone
(c) Estrogen **(d)** Progesterone

(80) The ring of annulus fibrosus is made up of:
(a) Hyaline cartilage **(b) Fibro cartilage**
(c) Both a and b **(d)** Not made up of cartilage

PAST PAPERS MCQs

(81) The inflammatory or degenerative disease that damages joints is called: (RWP 2017)
(a) Arthritis **(b)** Osteoporosis
(c) Meningitis **(d)** Spondylosis

(82) Rickets is a disease in children with bowed legs and deformed: (MTN 2018)
(a) Head **(b) Pelvis**
(c) Chest **(d)** Arms

(83) Rickets is caused by deficiency of: (BWP 2018)
(a) Vitamin A **(b)** Vitamin B
(c) Vitamin C **(d) Vitamin D**

(84) A condition in which palatine processes of maxilla and palatine fail to fuse is called:
(a) Cleft palate **(b)** Microcephaly
(c) Cretinism **(d)** Myxedema

(85) The disease which causes immobility and fusion of vertebral joints is called: (LHR 2019)
(a) Arthritis **(b)** Rickets
(c) Spondylosis **(d)** Sciatica

(86) The sclerenchyma cells found in seed coats and nutshells are called: (LHR 2019)
(a) Fibers **(b) Sclereides**
(c) Tracheids **(d)** vessels

(87) The stabbing pain in leg is: (LHR 2019)
(a) Arthritis **(b)** Herniation
(c) Sciatica **(d)** Spondylosis

(88) The most common chronic arthritis which is a degenerative joint disease, also caused by: (MTN 2019, RWP 2021)
(a) Hormonal defects **(b)** Genetic defects
(c) Nutritional defects **(d)** Neural defects

(89) Osteomalacia includes a number of disorders in which bones receive inadequate: (RWP 2019)

(a) Water (b) Oxygen
(c) Blood (d) Minerals

(90) A group of diseases in which bone resorption out paces deposit is known as: (FSD 2021)

(a) Osteoarthritis (b) osteoporosis
(c) Osteomalacia (d) Arthritis

(91) Rickets is a disease in children with _____.

(a) Soft bones (b) Herniation
(c) Bowed legs and deformed pelvis (d) Arthritis

REPAIR OF BROKEN BONES

PAST PAPERS MCQs

(92) A mass of clotted blood that forms at the fracture site is called: (DGK 2017)

(a) Haemahuma (b) Callus
(c) Haemoglobin (d) **Haematoma**

(93) The beginning of bone formation, starts after injury: (GRW 2021)

(a) 3-4 weeks (b) 2-3 weeks
(c) 8 weeks (d) 8-12 weeks

(94) Which of the following cells are involved in soft callus formations during repair of bones? (FSD 2022)

(a) Osteocytes (b) Chondrocytes
(c) **Osteoblast** (d) Osteoclast

MUSCLES

ENTERY TEST MCQs

(95) Which of the following is not a consequence of anaerobic respiration in human muscles cells? (UHS 2022)

(a) Cramps (b) **High consumption of energy**
(c) Pain (d) Tiredness

(96) Which of the following is a muscle component that acts as store for energy? (UHS 2022)

(a) ATP (b) **Creatine-PO_4**
(c) Myoglobin (d) Creatinine-PO_4

(97) Which of the following is not found in skeletal muscle fibers in human? (UHS 2022)

(a) Multiple nuclei (b) Multiple mitochondria
(c) Large amount of myoglobin (d) **Large amount of hemoglobin**

KIPS MCQs

(98) Muscles regarded as visceral, non-striated and involuntary:

(a) Cardiac (b) Skeletal
(c) **Smooth** (d) All of the above

(99) Tendon is not:

(a) Made up of collagen (b) Attaches bone and muscles
(c) Elastic (d) Bends the joint by muscle contraction

(100) Which of the following can polarize visible light?

(a) **A-band** (b) I-band
(c) Z-line (d) M-line

(101) Each muscle fiber is enclosed in a membrane called:

(a) Axolemma (b) **Sarcolemma**

(c) Synovial membrane **(d)** Tonoplast

(102) The smallest contractile unit of muscle fibre is:

(a) Actin **(b)** Myosin

(c) Z-line **(d) Sarcomere**

PAST PAPERS MCQs

(103) Skeletal muscles are called striated (stripped) because of presence of: (RWP 2017)

(a) Red and yellow band **(b)** White and yellow band

(c) Alternating dark and light band **(d)** Red and black band

(104) Skeletal muscle fibres have diameter: (GRW 2017, GRW 2018)

(a) 100–200 µm **(b) 10–100 µm**

(c) 10–100 mm **(d)** 100–1000 µm

(105) The earliest form of muscles to evolve is: (DGK 2018)

(a) Cardiac muscles **(b) Smooth muscles**

(c) Skeletal muscles **(d)** Involuntary muscles

(106) Proteins that bind to calcium in muscle contraction: (SGD 2019, 21)

(a) Actin **(b)** Myosin

(c) Tropomyosin **(d)** Troponin

(107) Long tubular structures join end to end: (FSD 2021)

(a) Fibers **(b)** Vessels

(c) Sclerids **(d)** Trachea

(108) Unstriped molecules are: (DGK 2022)

(a) Smooth muscles **(b)** Cardiac muscles

(c) Skeletal muscles **(d)** Brachialis

(109) Thin filament in composed chiefly of: (DGK 2022)

(a) Tropomyosin **(b)** Troponin

(c) Actin **(d)** All of these

(110) Myoglobin occurs in: (FSD 2022)

(a) Spleen **(b)** Muscles

(c) Blood **(d)** Liver

ENTRY TEST BASED MCQs

(111) Over lapping of thick filament occurs in: (UHS 2017-Retake)

(a) A-Band **(b)** M-line

(c) I-Band **(d)** Z-line

(112) Thin filaments of muscles contain _____ chains of actin molecules. (UHS 2019)

(a) Four **(b)** Three

(c) One **(d) Two**

(113) The thick filaments in a myofibril of muscles are made of _____. (UHS 2019)

(a) Haemoglobin **(b)** Actin

(c) Myoglobin **(d) Myosin**

(114) Which of the following is a muscle component that acts as store for energy? (UHS 2022)

(a) ATP **(b) Creatine-PO_4**

(c) Myoglobin **(d)** Creatinine-PO_4

(115) Which of the following is not found in skeletal muscle fibers in human? (UHS 2022)

(a) Multiple nuclei **(b)** Multiple mitochondria

(c) Large amount of myoglobin **(d)** Large amount of hemoglobin

SLIDING FILAMENT MODEL

KIPS MCQs

(116) In sliding filament model:
(a) Actin and myosin are shortened
(b) Only actin is shortened
(c) Both actin and myosin are not shortened
(d) Only myosin is shortened

PAST PAPERS MCQs

(117) Each A-band has a lighter stripe in its mid section called: **(RWP 2019)**
(a) A-Zone **(b)** H-Zone
(c) M-Line **(d)** Z-Line

ENTRY TEST BASED MCQs

(118) W.O.F changes occurs when skeletal muscles contract? **(UHS 2017)**
(a) I-band shortens only
(c) A-band shortens and Z-lines move apart
(b) I-band shortens and Z-lines come close to each other
(d) Actin filament contracts

CONTROLLING THE ACTIN-MYOSIN INTERACTION BY Ca++ IONS

KIPS MCQs

(119) Sarcoplasmic reticulum are like:
(a) RER **(b) SER**
(c) Golgi bodies **(d)** None of these

(120) The ions combining with troponin molecule to expose binding site:
(a) Sodium **(b)** Potassium
(c) Calcium **(d)** Zinc

PAST PAPERS MCQs

(121) Sarcoplasmic reticulum surround each:
(a) Myofilament **(b)** Myofibril
(c) Sarcomere **(d)** Both A and B

ENTRY TEST BASED MCQs

(122) The function of calcium ions in muscle contraction is to: **(UHS 2019)**
(a) Bind to troponin molecule and cause them to move
(c) Aid in the transmission of nerve impulse
(b) Polarize visible light
(d) Bind to tropomyosin molecule and cause them to form cross bridges

MUSCLE FATIGUE, TETANY & CRAMPS

KIPS MCQs

(123) The pH of a fatigued muscle is:
(a) Neutral **(b)** Basic
(c) Acidic **(d)** Variable

PAST PAPERS MCQs

(124) Muscle fatigue is caused by: **(SGD 2017, RWP 2021)**
(a) CO_2 **(b)** Fumaric acid
(c) Ethyl alcohol **(d) Lactic acid**

(125) Tetanus is caused by: **(GRW 2017)**
(a) Bacteria **(b)** Virus
(c) Fungi **(d)** Protists

(126) A disease caused by low level of calcium in the blood is called: **(MTN 2017)**
(a) Cramp **(b)** Paralysis

(c) Tetany **(d)** Tetanus

(127) Tetany is a disease caused by: **(GRW 2013, BWP 2022)**

(a) Low calcium in blood **(b)** Low vit. D in blood

(c) Low sugar in blood **(d)** High calcium in blood

ARRANGEMENT OF SKELETAL MUSCLES FOR MOVEMENT OF SKELETON

KIPS MCQs

(128) Starting from immovable bone which is right sequence of parts of muscles:

(a) Origin, insertion, belly **(b) Origin, belly, insertion**

(c) Origin, movable bone, insertion **(d)** Belly, origin, insertion

MOVEMENT OF BONES

KIPS MCQs

(129) What is the number of muscles in human body?

(a) 650 pairs **(b) 650**

(c) 210 pairs **(d)** 210

PAST PAPERS MCQs

(130) The muscles which work against each other by contractility are: **(SGD 2022)**

(a) Agonistic muscles **(b)** Antiparallel muscles

(c) Antagonistic **(d)** Both A and C

LOCOMOTION IN PROCTOCTISTA AND INVERTEBRATES

KIPS MCQs

(131) Myonemes are special proteins present in:

(a) Muscles **(b)** Amoeba

(c) Euglena **(d)** Earth worm

(132) When cilium bends or shortens it is called:

(a) Effective stroke **(b)** Recovery stroke

(c) Moving stroke **(d)** Stop codon

(133) Jelly fish has an umbrella like body called:

(a) Bell **(b)** Gel

(c) Bubble **(d)** Wheel

PAST PAPERS MCQs

(134) Jelly-fish has an umbrella-like body called: **(SGD 2017)**

(a) Bell **(b)** Jug

(c) Vase **(d)** Shoe-flower

(135) Euglena is able to change its direction by the active contraction of: **(DGK 2018)**

(a) Undulating membrane **(b) Myonemes**

(c) Flagella **(d)** Cilium

LOCOMOTION AND SKELETON IN VERTEBRATES

KIPS MCQs

(136) Which of the following are unpaired fins?

(a) Pelvic fins **(b)** Pectoral fins

(c) Ventral fins **(d)** None of these

(137) Which group shows swimming on Land?

(a) Reptiles **(b)** Fish

(c) Mammals **(d) Amphibians**

(138) In birds, for flight number of bones in limbs are:

(a) Reduced **(b)** Increased

(c) Not changed **(d)** In one part reduced and in other increased

(139) Which of the following is the most-swift type of locomotion?

(a) Plantigrade **(b) Unguligrade**

(c) Digitigrade **(d)** None of these

(140) Bipedals are included in:

(a) Plantigrade **(b)** Digitigrade

(c) Unguligrade **(d)** All of the above

(141) Power for upward stroke of flight is provided by:

(a) Pelvic muscles **(b) Pectoral muscles**

(c) Muscles of back **(d)** Both b and c

PAST PAPERS MCQs

(142) Which one of the following is a plantigrade? (SWL 2017)

(a) Rabbit **(b) Monkey**

(c) Goat **(d)** Deer

(143) _____ is unguligrade. (MTN 2017)

(a) Monkey **(b)** Apes

(c) Rabbit **(d) Goat**

(144) The plantigrade animals used to walk on their: (LHR 2018)

(a) Digits **(b)** Tips of toes

(c) Soles **(d)** Belly

(145) In birds, the sternum is modified to form:- (MTN 2018)

(a) Keel **(b)** Neck

(c) Rib **(d)** Clavicle

(146) Digitigrade mammals tend to walk on their: (DGK 2018)

(a) Soles **(b) Digits**

(c) Tips of the toes **(d)** Tips of the fingers

(147) Which animal shows digitigrade mode of locomotion? (DGK 2018)

(a) Bear **(b)** Dear

(c) Rabbit **(d)** Horse

ANSWER KEY

(Topic Wise Multiple Choice Questions)

1	a	26	d	51	d	76	c	101	b	126	b	151	b	176	d
2	b	27	c	52	c	77	c	102	d	127	d	152	a	177	c
3	b	28	c	53	c	78	d	103	a	128	b	153	b		
4	b	29	c	54	a	79	b	104	c	129	a	154	a		
5	c	30	d	55	a	80	a	105	b	130	d	155	c		
6	a	31	c	56	a	81	d	106	c	131	b	156	c		
7	b	32	c	57	b	82	a	107	b	132	a	157	a		
8	c	33	b	58	a	83	d	108	d	133	d	158	a		
9	b	34	a	59	a	84	a	109	b	134	d	159	a		
10	c	35	a	60	a	85	c	110	c	135	b	160	d		
11	c	36	a	61	a	86	a	111	d	136	d	161	a		
12	b	37	c	62	a	87	a	112	d	137	c	162	b		
13	b	38	a	63	b	88	d	113	c	138	b	163	c		
14	b	39	d	64	d	89	c	114	b	139	c	164	d		
15	a	40	d	65	c	90	d	115	b	140	b	165	a		
16	d	41	c	66	b	91	c	116	d	141	c	166	b		
17	b	42	a	67	c	92	b	117	c	142	b	167	a		
18	c	43	a	68	d	93	b	118	c	143	a	168	b		
19	c	44	c	69	c	94	d	119	a	144	c	169	d		
20	c	45	c	70	c	95	a	120	b	145	d	170	a		
21	d	46	c	71	c	96	c	121	d	146	a	171	b		
22	d	47	b	72	a	97	a	122	a	147	c	172	b		
23	c	48	a	73	d	98	b	123	b	148	a	173	d		
24	b	49	c	74	d	99	b	124	c	149	b	174	c		
25	b	50	c	75	d	100	a	125	b	150	a	175	a		

SUPPORT IN PLANTS

KIPS SHORT QUESTIONS

Q:1 Differentiate between vessels and tracheids.

Ans.

Vessels	Tracheids
Long, tubular structures, joined end to end to form long water conducting pipes.	Long and cylindrical, may exist in bundles.
Found in xylem	Found in xylem or in bundle cap

Q:2 Narrate main feature of collenchyma tissue.

Ans.

- They have protoplasts
- They are living cells
- They lack secondary walls
- They have angular thickening in primary walls

This tissue provides support to young herbaceous parts of plant

PAST PAPER SHORT QUESTIONS

Q:3 What is vascular cambium? Give its function. Which tissues arise from vascular cambium? **(2018 SWL 2017 FSD 2022)**

Q:4 How callus is formed? **(LHR 2019, GRW2021)**

Q:5 Differentiate between fibers and sclereides. **(MTN 2016, 2018 DGK 2022)**

Q:6 Compare sapwood and heartwood. **(DGK 2017, MTN 2018, FSD 2019, RWP 2021, LHR2022, SGD 2022)**

Q:7 Differentiate between vascular and cork cambium. **(DGK 2019)**

Q:8 What are characteristics and functions of sclerenchyma cells? **(SGD 2017, SWL 2021)**

Q:9 Define nastic movements. Give its types. **(RWP 2017)**

Q:10 Discuss the structure and function of collenchyma cells in plants. **(SWL 2019)**

Q:11 Write two characteristics of collenchyma tissue. **(LHR2019)**

Q:12 Define collenchyma cells. **(SGD 2022)**

SIGNIFICANCE OF SECONDARY GROWTH

KIPS SHORT QUESTIONS

Q:13 Differentiate between Heartwood and Sapwood.

Ans.

Heartwood	Sapwood
Inactive, non-conducting wood is termed as heartwood.	Active and conducting wood is known as sapwood.
Located on inner side (centre) of the stem	Located on outer side (younger portion of wood / xylem)
Store resins, oils, gums, and tannins Resistance to decay and insect attack.	Transport water and salts.

Q:14 What is a secondary growth?

Ans: An increase in plant girth due to activity of vascular cambium and cork cambium is called secondary growth. It causes increase in stem thickness.

PAST PAPER SHORT QUESTIONS

Q:15 Define secondary growth and give its significance. **(GRW2019, MTN 2019, DGK 2018, 22)**

TYPES OF MOVEMENTS IN PLANTS

KIPS SHORT QUESTIONS

Q:16 What is pulvinus? Give its function.

Ans. Pulvinus: It is swollen portion of the petiole composed of parenchymatous cells with relatively large intercellular spaces and central strand of vascular tissue.
Function: By changes in turgor pressure, it creates turgor movements.

Q:17 How do sleep movements in plants take place?

Ans: The sleep movements in plants take place due to daily change in the turgor pressure in the pulvinus. When turgor pressure on the lower side of pulvinus decreases, the leaves lower and go to "sleeping" position.

Q:18 Differentiate between phototactic movements and phototropism.

Ans:

Phototactic Movement	Phototropism
It is the movement in response to stimulus of light.	The tropic movement of the part of plant in response to stimulus of light is called phototropism.
Example: Positive movement of chloroplast due to cyclosis	**Example:** Differential growth of part of plant like root and stem.

Q:19 Differentiate between epinasty and hyponasty.

Ans:

Epinasty	Hyponasty
In this case the upper surface shows more growth as compared to lower surface of the leaf in the bud condition.	In this case lower surface of leaf shows more growth as compared to upper surface of the leaf in bud condition.
This leads to opening of bud	This leads to closing of bud

PAST PAPER SHORT QUESTIONS

Q:20 Explain the terms epinasty and hyponasty.
(RWP 2014, DGK 2015, BWP 2017, LHR 2017, SWL 2017)

Q:21 What is pulvinus? **(DGK 2017)**

Q:22 Compare photonasty with thermonasty. **(SWL 2017)**

Q:23 What are paratonic movements? Name its types. **(MTN 2017)**

Q:24 Define tropic movements. Write the names of its types. **(SGD 2017)**

Q:25 Compare phototropism and geotropism. **(LHR 2017)**

Q:26 Define nastic movement. What is Thermonasty? **(RWP 2019)**

Q:27 Define turgor pressure. Give its two functions **(RWP 2019)**

Q:28 Name the types of turgor movements. **(GRW2019)**

Q:29 What is sleep movement? Also write an example. **(LHR2019)**

Q:30 What is phototactic movement? Give examples. **(LHR2019, FSD 2022)**

Q:31 What is the role of vacuole in generating turgor pressure in plant cells? **(MTN 2021)**

Q:32 Differentiate between Epinasty and nyctinasty. **(DGK 2022)**

ROLE OF PLANT GROWTH SUBSTANCES IN PLANT MOVEMENT

KIPS SHORT QUESTIONS

Q:33 What is the role of Auxins in plant movements?

Ans. Some of their important roles are given below:

- They play major role in phototropism.
- They are responsible for positive gravitropism of roots and negative gravitropism of stems.
- They cause epinasty.

PAST PAPER SHORT QUESTIONS

Q:34 Give the name of hormones which are involved in epinasty and hyponasty. **(LHR2018)**

SUPPORT & MOVEMENT IN ANIMALS

HYDROSTATIC SKELETON

KIPS SHORT QUESTIONS

Q:35 Give the composition of epicuticle and procuticle.

Ans. Epicuticle: Waxy lipoprotein.

Procuticle: Chitin, Polysaccharide, Several kinds of proteins.

PAST PAPER SHORT QUESTIONS

Q:36 Define the mechanism of hydrostatic skeleton. **(FSD 2017)**

Q:37 What is Hydrostatic Skeleton, give example? **(SGD 2019, MTN 2021)**

Exoskeleton

KIPS SHORT QUESTIONS

Q:38 Explain the role of exoskeleton in arthropods.

Ans: The role of exoskeleton in the arthropods is given as;

- The invagination of exoskeleton forms firm ridges and bars for attachment of muscle.
- It forms the joints.
- The skeleton has sensory receptor called sensilla. The sensilla form the bristles and lenses.
- It helps in exchange of gases.
- It protects from drying.
- It is thin, soft, and flexible at joints to move easily.

PAST PAPER SHORT QUESTIONS

Q:39 What are disadvantages of exosoleleton? **(MTN 2018, RWP 2021)**

Q:40 Why does moulting take place in arthropods? **(GRW 2017, DGK 2019)**

Q:41 What is an exoskeleton? Name its two layers. **(DGK 2018)**

Q:42 Define ecdysis or moulting, give its two stages.
(FSD 2018, SGD 2018, FSD 2019, FSD 2021LHR 2021, 2022, WP 2022)

Q:43 Give two modifications in the exoskeleton of arthropods. **(LHR2021)**

SOME MAJOR FUNCTIONS OF SKELETAL SYSTEM

KIPS SHORT QUESTIONS

Q:44 Enlist functions of endoskeleton.

1. Support and movement
2. Minerals homeostasis
3. Blood cells production
4. Protection

PAST PAPER SHORT QUESTIONS

Q:45 Give role of skeleton in mineral homeostasis and blood cell production. **(RWP 2014)**

Q:46 Write four major functions of skeletal system.
(LHR2021, SWL 2021, GRW2021, SGD 2022)

ENDOSKELETON

KIPS SHORT QUESTIONS

Q:47 Is bone a living tissue. Give two valid reasons.

Ans: Yes, bone is a living rigid type of connective tissue.

Living features:

- It contains living cells i.e. osteoblast, osteocyte and osteoclast.
- It can grow in size and can be regenerated during healing of broken bone.

Q:48 Distinguish between bone and cartilage.

Ans.

Bone	Cartilage
It is rigid form of connective tissue.	It is comparatively soft form of connective tissue.
Its living cells are osteocyte.	Its living cells are chondrocyte
Blood vessels penetrate in them	Blood vessels do not penetrate.

Q:49 List the main parts of axial and appendicular skeleton.

Ans. Axial Skeleton:

(i) Skull **(ii)** Vertebral column
(iii) Rib cage **(iv)** Sternum

Appendicular Skeleton:

(i) Pectoral girdle **(ii)** Pelvic girdle
(iii) Forelimb **(iv)** Hindlimb

PAST PAPER SHORT QUESTIONS

Q:50 Compare exoskeleton with endoskeleton. **(MTN 2014)**

Q:51 Differentiate between hyaline and fibro cartilage. **(DGK 2017)**

Q:52 Describe main types of cartilage. **(RWP 2017, RWP 2017, SWL 2021)**

Q:53 Which kinds of cells are responsible for bone formation? Write their function. **(GRW 2017)**

Q:54 Differentiate the compact bone and spongy bone. Give only two differences. **(MTN 2017, LHR 2018)**

Q:55 Differentiate between hyaline and elastic cartilage. **(DGK 2018)**

Q:56 Define Bone. Write the names of cells associated with the bone. **(MTN 2019)**

Q:57 Differentiate between hyaline cartilage and elastic cartilage. **(FSD 2021)**

Q:58 Differentiate between bone and cartilage. **(LHR2021)**

AXIAL SKELETON

PAST PAPER SHORT QUESTIONS

Q:59 Name components of human axial skeleton. **(SGD 2014)**

Q:60 Name the bones of pectoral and pelvic girdle. **(SWL 2019)**

Q:61 Name unpaired bones of cranium and face. **(LHR 2016, LHR2022)**

Q:62 What are floating ribs? **(DGK 2015)**

Q:63 Name two paired facial bones. **(FSD 2017)**

Q:64 How many ribs do not attach with the sternum? **(FSD 2021)**

Q:65 Write names of paired and unpaired bones of cranium. **(MTN 2022)**

APPENDICULAR SKELETON

PAST PAPER SHORT QUESTIONS

Q:66 Name different bones of hind limb. **(BWP 2017)**

Q:67 What is difference between axial skeleton and appendicular skeleton? **(GRW 2017)**

Q:68 Define appendicular skeleton. **(MTN 2017)**

JOINTS

KPBS SHORT QUESTIONS

Q:69 What is synovial joint?

Ans. Synovial Joint: These joints contain a cavity filled with fluid and are adapted to reduce friction between the moving joints. The joint is surrounded by a layer of connective tissue called 'fibrous capsule' and their inner layer 'the synovial membrane'.

Example: Elbow joint

PAST PAPER SHORT QUESTIONS

Q:70 What are joints? Explain various types of joints. **(LHR 2017)**
Q:71 Compare Fibrous joints with synovial joints. **(DGK 2018)**
Q:72 What is "ball and socket joint"? **(DGK 2017, RWP 2018)**
Q:73 What is a synovial joint? Give its types. **(SGD 2019, DGK 2019)**
Q:74 Define hinge joints. Give example. **(DGK 2019)**
Q:75 Define joint and give name on the basis of structure. **(SWL 2015)**
Q:76 What are cartilaginous joints? **(MTN 2021)**
Q:77 Differentiate Hinge Joints from Ball and Socket Joints by giving examples. **(MTN 2021, LHR2022)**
Q:78 Give the structural composition of synovial joint.
Q:79 Differentiate between cartilaginous joints and synovial joints. **(GRW2022, RWP 2022)**
Q:80 What are fibrous joint? Where are they found in the human body? **(DGK 2022)**

DEFORMITIES OF SKELETON

KIPS SHORT QUESTIONS

Q:81 Differentiate between nucleus pulposus and annulus fibrosus.

Ans.

Nucleus Pulposus	Annulus Fibrosus
It is an inner semi liquid fluid present in each intervertebral disc.	It is an outer ring of fibrocartilage of intervertebral disc.
It provides elasticity and compressibility to the disc.	It is responsible to hold together successive vertebrae.

Q:82 What is osteoporosis? How is it treated?

Ans. **Osteoporosis:** It is a group of diseases in which bone resorption out paces bone deposit.
Treatment: Estrogen replacement therapy (ERT) offers the best protection against osteoporotic bone fracture.

Q:83 What is herniation of disc?

Ans: The displacement of inter vertebral disc due to rupturing of annulus fibrosus followed by protrusion of the spongy nucleus pulposus is called herniation of disc or disc slip.

Q:84 What is sciatica and its causes?

Ans: It is characterized by a stabbing pain. This pain radiate over the course of sciatic nerve. The sciatic nerve supplies the thigh muscle.

Causes

Sciatica is caused due to injury of proximal sciatic nerve. This injury is caused due to

- Herniated disc
- Improper administration of an injection in to the buttock

PAST PAPER SHORT QUESTIONS

Q:85 What is rickets? Give its causes. **(GRW 2014, BWP 2015, LHR 2015, RWP 2016, MTN 2018, SWL 2018)**
Q:86 What is meant by disc slip? **(MTN 2017)**
Q:87 What is sciatica and its causes? **(DGK 2019)**
Q:88 What is osteoporosis? Write its treatment. **(MTN 2021, LHR2022)**
Q:89 Differentiate between Microcephaly and Osteoarthritis. **(MTN2017)**
Q:90 How genetic deformities of skeleton occur in humans? **(RWP 2017, MTN 2022)**
Q:91 What is arthritis? What is the cause of osteoarthritis? **(DGK 2018, LHR2022)**
Q:92 What is herniation of disc? **(MTN 2019, LHR2021)**
Q:93 What is Osteomalacia and cleft palate? **(FSD 2021)**
Q:94 What is spondylosis? **(SWL 2022)**

REPAIR OF BROKEN BONES

KIPS SHORT QUESTIONS

Q:95 Describe the types of reduction in the treatment of bone fracture.

Ans: A fracture is treated by reduction followed by realignment. Reduction is the fixation of fractured bones in normal position.

It is of two types:

(1) Closed reduction **(2)** Open reduction.

In **closed reduction**, bone ends are coaxed back to normal position by physician's hand.

In **open reduction**, bones are coaxed by surgery.

Q:96 What is Hematoma formation?

Ans: The blood vessels in the bone or its surrounding areas are torn when a bone breaks. It causes hemorrhage. As result, a hematoma is formed at fracture site. Hematoma is mass of clotted blood.

PAST PAPER SHORT QUESTIONS

Q:97 What is hematoma formation? **(BWP 2014, LHR 2016, GRW2021)**

Q:98 Define remodeling. **(RWP 2018)**

MUSCLES

KIPS SHORT QUESTIONS

Q:99 What are the characteristics of smooth muscles?

Ans: The characteristic of smooth muscle is given as;

- They are non – striated muscles and visceral.
- They are long and spindle shape
- Each cell contains a single nucleus.
- They are involuntary

PAST PAPER SHORT QUESTIONS

Q:100 Write few lines about cardiac muscles. **(FSD 2017)**

Q:101 Define smooth mussels. **(SGD 2018: RWP 2022, GRW2022)**

SKELETAL MUSCLE FIBER

KIPS SHORT QUESTIONS

Q:102 Differentiate sarcomeres and sarcolemma.

Sarcomere	Sarcolemma
The region of a myofibril between two successive Z-lines.	Outer embrane of muscle fibre cell
It is the smallest contractile unit of muscle fibre.	Responsible to form T-tubules or T-system.

Q:103 Differentiate between A-Band and I-Band found in myofibrils (Skeletal muscle)

Ans:

A – Band	I – Band
This is dark band.	This is light band.
It is anisotropic i.e it can polarize visible light.	It is isotropic or non-polarizing giving stripped appearance to cell.
Both thick and thin filaments present while in H-Zone only thick ones.	Only thin filaments are present
H-Zone is divided by a darker midline called M –Line	I band have midline called Z-line.

PAST PAPER SHORT QUESTIONS

Q:104 Describe the structure of a skeletal muscle fiber. **(GRW 2017)**

SLIDING FILAMENT MODEL

KIPS SHORT QUESTIONS

Q:105 Who proposed **sliding filament model for muscles contraction?**

Ans: H. Huxley and **(a)** F. Huxley and their colleagues suggested a hypothesis in 1954 to explain all events in muscle contraction, this is called "Sliding filament model" of muscle contraction.

PAST PAPER SHORT QUESTIONS

Q:106 What is rigor mortis? **(MTN 2018)**

Q:107 What is sliding filament model? **(DGK 2018)**

CONTROL OF MUSCLE MOVEMENT BY CALCIUM IONS

KIPS SHORT QUESTIONS

Q:108 What is the role of Ca^{++} ions in controlling cross bridges of a muscle?

Ans: When a muscle is at rest, tropomyosin covers the sites on actin chain where heads of myosin have to attach. As muscles have to contract, Ca^{++} ions bind with troponin molecule causing displacement of tropomyosin, exposing binding site for myosin head to get attached to actin, and contraction occurs.

Q:109 What are T-tubule and triads?

Ans. **T-tubule:** It is an invagination of sarcolemma at Z-line or AI junction.

Triad: The T-tubule along with its adjacent terminals of sarcoplasmic reticulum form triad.

Q:110 Differentiate between sarcoplasmic reticulum and endoplasmic reticulum.

Ans:

Sarcoplasmic Reticulum (S.R)	Endoplasmic reticulum (E.R)
A continuous system of sarco-tubules extending throughout the sarcoplasm around each myofibril.	A system of tubules extending throughout the cytoplasm of a **general cell.**
Smooth, devoid of ribosomes.	These tubules may hold ribosomes.

PAST PAPER SHORT QUESTIONS

Q:111 Define all or none response. **(MTN 2018, DGK 2022, SWL 2022)**

ENERGY FOR MUSCLE CONTRACTION

KIPS SHORT QUESTIONS

Q:112 What happens to accumulated lactic acid at rest?

Ans: Lactic acid accumulates in muscles during anaerobic respiration. At rest **1/5th** of that lactic acid is aerobically broken and the resulting energy is used to convert remaining **4/5th** lactic acid into glucose.

Q:113 Write effects of exercise on muscle

Ans.

- They increase in size or strength and become more efficient and fatigue resistant.
- Capillaries surrounding the muscle fibers, as well as mitochondria within them increase in number and fiber synthesize more myoglobin.

PAST PAPER SHORT QUESTIONS

Q:114 What are sources of energy for muscle contraction? **(LHR 2014)**

Q:115 How exercise effect the muscle? **(FSD 2017, MTN 2019)**

MUSCLE DISORDER

KIPS SHORT QUESTIONS

Q:116 How is muscle fatigue caused?

Ans. Muscle fatigue is caused by:

- Relative deficit of ATP.
- Accumulation of lactic acid.
- Ionic imbalance.

PAST PAPER SHORT QUESTIONS

Q:117 What is the difference between tetanus and muscle tetany? **(LHR2018)**

Q:118 How muscle fatigue is produced? **(BWP, 2017, SWL 2018, MTN 2019)**

Q:119 What is cramp? Give its causes.

(BWP 2018: FSD 2018: FSD 2019: GRW2019: SWL 2019)

Q:120 Differentiate between troponin and tropomyosin. **(LHR2021)**

ARRANGEMENT OF SKELETAL MUSCLES FOR MOVEMENT OF SKELETON

KIPS SHORT QUESTIONS

Q:121 Define antagonistic relation between muscles. Give example.

Ans. **Antagonistic Relation:** Such a relation in which muscles work against each other i.e. when one muscle group contracts then other relaxes is called antagonistic relation.

Example: The best example is the movement of elbow joint by biceps and triceps. The biceps bends the arm at elbow joint and triceps straightens it.

Q:122 What is origin and insertion of muscles?

Ans. **Origin:** It is the end of muscle which remains fixed when muscles contract.

Insertion: It is the end of muscle that moves the bone.

Q:123 Differentiate between Ligament and Tendon.

Ans:

Ligament	Tendon
Ligaments provides connection between bone to bone	Tendon provides the connection between muscles to bone.
It is slightly elastic	It is non – elastic

PAST PAPER SHORT QUESTIONS

Q:124 Define antagonistic movement of muscles. **(LHR2018)**

Q:125 How does tendon differ from ligament?

(MTN 2018, LHR 2017, 2018, BWP 2018, MTN 2019, RWP 2021)

Q:126 What are flexors? Give their examples. **(LGK 2017)**

Q:127 What is ligament? **(FSD 2021)**

Q:128 Distinguish between origin and insertion of muscles. **(GRW2021)**

LOCOMOTION IN PROCTOCTISTA AND INVERTEBRATES

KIPS SHORT QUESTIONS

Q:129 Differentiate between effective stroke and recovery stroke.

Ans.

Effective stroke	Recovery stroke
Cilia bend downward powerfully to push paramecium forward.	Cilia move upward or straighten to regain its normal shape.
5 out of 9 double fibrils bend or shorten.	4 out of 9 double fibrils contract and cilia become straight.

PAST PAPER SHORT QUESTIONS

Q:130 Differentiate between effective and recovery stroke. **(DGK 2015, LHR 2016, LHR2018)**
Q:131 What is jet propulsion? Give one example. **(GRW 2016, LHR2019)**
Q:132 How locomotion takes place in jelly fish? **(GRW2018)**
Q:133 Elaborate locomotion in star fish. **(GRW2018)**

LOCOMOTION AND SKELETON IN VERTEBRATES

KIPS SHORT QUESTIONS

Q:134 How does snake move?

Ans. Snakes have lost their limbs secondarily. The ribs of snakes have muscular connections to large belly scales that aid in locomotion.

Q:135 Enlist skeletal adaptations made by birds for effective flight.

Ans: Flight adaptations in birds are:

- Enlargement of pectoral girdle
- Development of sternum to form massive keel for the attachment of flight muscle.
- Reduction in number of bones.
- Fusion of bones for increasing strength.
- Formation of foramen triosseum which provide efficient lifting action to supra coracoid muscle.

Q:136 Differentiate between passive and active flight.

Ans:

Passive Flight	Active Flight
Birds glide through the air.	Birds fly due to flapping of wings.
Long, narrow wings	Short broad wings
Example: Gulls and other sea birds	Example: Garden birds

Q:137 Give different types of locomotion in mammals.

Ans:

Plantigrade:
In this locomotion, the mammals walk on their soles with palm, wrist and digits all resting more or less on the ground.
Example:
Monkeys, Apes, Man and bear
Digitigrade:
Some mammals tend to walk on their digits only. In this case, first digit usually reduced or completely lost.
Example:
Rodents, Rabbits.
Unguligrade:
The mammals walk on the tips of toes modified into hoof.
Example:
Deer and goat.

Q:138 How digitigrade differs from unguligarde?

Ans:

No.	Digitigrade	Unguligrade
	Some mammals tend to walk on their digits only. In this case first digit usually reduced or completely lost.	These mammals walk on the tips of toes, modified into hoofs.
	Example: Rodents and Rabbits.	**Example:** Deer and goat.

PAST PAPER SHORT QUESTIONS

Q:139 Differentiate between active and passive flight. **(DGK 2017, SGD 2017, DGK 2019)**
Q:140 What is active flight? **(BWP 2018)**
Q:141 Write two adaptations in birds that help them for flight. **(SGD 2019)**
Q:142 How does shape of wing affect the type of flight in birds? **(MTN 2021)**
Q:143 Differentiate between plantigrade and unguligrade mammals. **(GRW 2018)**
Q:144 What is plantigrade? Also give examples. **(LHR 2017)**
Q:145 Differentiate between plantigrade and digitigrade mammals. **(GRW2018)**
Q:146 How does digitigrade differ from unguligrade? **(RWP 2018)**
Q:147 Discuss locomotion in mammals? **(SWL 2022)**

EVOLUTIONARY CHANGES IN ARRANGEMENT OF BONES AND RELATED MODE OF LOCOMOTION IN MAJOR GROUPS OF VERTEBRATES

KIPS SHORT QUESTIONS

Q:148 What is formen triosseum? Which bones combine to make it?

Ans. **Formen Triosseum:** It is an opening in birds through which supra coracoid muscles passes. It helps in lifting action.

Bones: It is formed between scapula, coracoid and clavicle bones.

PAST PAPER SHORT QUESTIONS

Q:149 What is formen triosseum? Give its function. **(LHR 2017)**