BUDDHA SERIES

(Unit Wise Solved Question & Answers)

Course – B.Sc. Zoology 3rd year (5th semester)

College – Buddha Degree College

(DDU Code-859)

Department: Science

Subject: Diversity of Chordates and Comparative Anatomy

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Unit 1

1□□ Which theory suggests chordates evolved from echinoderm larvae?

A) Annelid theory
B) Echinoderm theory
C) Molluscan theory
D) Arthropod theory
Answer: B) Echinoderm theory

2□□ The dipleurula larva is found in:

A) Molluscs
B) Echinoderms and ancestral chordates
C) Annelids only
D) Arthropods only
Answer: B) Echinoderms and ancestral chordates

3□□ Which is the most accepted view regarding chordate ancestry?

A) Polyphyletic origin
B) Monophyletic origin from echinoderms
C) Origin from arthropods
D) Origin from molluscs
Answer: B) Monophyletic origin from echinoderms

4□□ The idea of chordates arising through paedomorphosis suggests:

A) Retention of larval characters in adults
B) Loss of notochord
C) Evolution of hard exoskeleton
D) Change to radial symmetry
Answer: A) Retention of larval characters in adults

5□□ Which of the following is *not* a shared characteristic of chordates and echinoderm larvae?

A) Bilateral symmetry in larvae
B) Deuterostome development
C) Radial cleavage
D) Presence of exoskeleton
Answer: D) Presence of exoskeleton

□ Classification of Phylum Chordata up to Order

6□□ Which is not a characteristic feature of phylum Chordata?

A) Notochord
B) Dorsal hollow nerve cord
C) Ventral solid nerve cord
D) Pharyngeal gill slits
Answer: C) Ventral solid nerve cord

7□□ The phylum Chordata is divided into:

A) Protochordata and Vertebrata
B) Hemichordata and Arthropoda
C) Protozoa and Metazoa
D) Echinodermata and Mollusca
Answer: A) Protochordata and Vertebrata

8□□Cephalochordata includes:

A) Balanoglossus
B) Amphioxus (*Branchiostoma*)
C) Sea squirts
D) Lampreys
Answer: B) Amphioxus (*Branchiostoma*)

9□□ Urochordata is also known as:

A) Tunicata
B) Cyclostomata
C) Agnatha
D) Gnathostomata
Answer: A) Tunicata

Which class of vertebrates is jawless?

A) Osteichthyes
B) Chondrichthyes
C) Cyclostomata
D) Reptilia
Answer: C) Cyclostomata

1□□1□□ Cartilaginous fishes belong to:

A) Osteichthyes
B) Chondrichthyes
C) Agnatha
D) Amphibia
Answer: B) Chondrichthyes

1□□2□□ The order Anura belongs to which class?

A) Reptilia
B) Amphibia
C) Mammalia
D) Aves
Answer: B) Amphibia

1□□3□□ The order Squamata belongs to:

A) Amphibia
B) Reptilia
C) Aves
D) Mammalia
Answer: B) Reptilia

1□□4□□ Birds belong to class:

A) Mammalia
B) Reptilia
C) Aves
D) Amphibia
Answer: C) Aves

1□□5□□ Rodents belong to which order?

A) Primates
B) Carnivora
C) Rodentia
D) Cetacea
Answer: C) Rodentia

1□□6□□ Which order includes whales and dolphins?

A) Primates
B) Carnivora
C) Cetacea
D) Chiroptera
Answer: C) Cetacea

1□□7□□ The class Mammalia is characterized by:

A) Feathers
B) Hair and mammary glands
C) Scales only
D) Moist skin only
Answer: B) Hair and mammary glands

1□□8□□ Lungfishes belong to the order:

A) Dipnoi
B) Cypriniformes
C) Perciformes
D) Myxini
Answer: A) Dipnoi

1□□9□□ Vertebrates have:

A) No vertebral column
B) Incomplete digestive system
C) Ventral heart
D) Exoskeleton only
Answer: C) Ventral heart

2□□0□□ The notochord in vertebrates is replaced by:

A) Stomochord
B) Vertebral column
C) Hemocoel
D) Pharyngeal bars
Answer: B) Vertebral column

□Hemichordata (General features, classification, Balanoglossus)

2□□1□□Hemichordata was earlier included under:

A) Arthropoda
B) Annelida
C) Chordata
D) Echinodermata
Answer: C) Chordata

2□□2□□ The body of hemichordates is divided into:

A) Head, thorax, abdomen
B) Proboscis, collar, trunk
C) Cephalothorax and abdomen
D) Mantle, foot, visceral mass
Answer: B) Proboscis, collar, trunk

2□□3□□ The "stomochord" in hemichordates is present in:

A) Collar
B) Proboscis
C) Trunk
D) Tail
Answer: B) Proboscis

2□□4□□ Proboscis gland in Balanoglossus helps in:

A) Excretion
B) Digestion
C) Respiration
D) Circulation
Answer: A) Excretion

2□□5□□ Balanoglossus is commonly known as:

A) Lancelet
B) Sea squirt
C) Acorn worm
D) Lamprey
Answer: C) Acorn worm

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26. The order Enteropneusta includes:

A) Pterobranchia
B) Balanoglossus
C) Cephalochordata
D) Tunicates
Answer: B) Balanoglossus

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27. In Balanoglossus, respiration takes place through:

A) Skin only
B) Pharyngeal gill slits
C) Lungs
D) Air sacs
Answer: B) Pharyngeal gill slits

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28. Habitat of Balanoglossus:

A) Terrestrial
B) Freshwater ponds
C) Burrows in shallow marine sand
D) Deep sea vents only
Answer: C) Burrows in shallow marine sand

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29. Development in Balanoglossus is:

A) Direct only
B) Indirect via tornaria larva
C) Viviparous
D) Parthenogenetic
Answer: B) Indirect via tornaria larva

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30. The circulatory system in Balanoglossus is:

A) Absent
B) Open type
C) Closed type
D) Both open and closed
Answer: B) Open type

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31. Which coelomic compartments are present in Balanoglossus?

A) Only proboscis coelom
B) Proboscis, collar, and trunk coeloms
C) Collar coelom only
D) Only trunk coelom
Answer: B) Proboscis, collar, and trunk coeloms

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32. Which feature differentiates hemichordates from true chordates?

A) Presence of pharyngeal gill slits
B) Presence of a true notochord
C) Bilateral symmetry
D) Triploblastic condition
Answer: B) Presence of a true notochord

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33. Nervous system of Balanoglossus is:

A) Centralized with brain
B) Ladder-like
C) Diffused nerve plexus
D) Absent
Answer: C) Diffused nerve plexus

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34. Excretory structure in Balanoglossus is:

A) Flame cells
B) Proboscis gland (glomerulus)
C) Nephridia
D) Malpighian tubules
Answer: B) Proboscis gland (glomerulus)

3□□5□□ Balanoglossus feeding type is:

A) Carnivorous
B) Filter feeder (mucus feeder)
C) Parasitic
D) Herbivorous only
Answer: B) Filter feeder (mucus feeder)

3□□6□□ Which larva of Balanoglossus resembles echinoderm larvae?

A) Trochophore
B) Tornaria
C) Veliger
D) Nauplius
Answer: B) Tornaria

3□□7□□ Reproduction in Balanoglossus is mainly:

A) Asexual by budding
B) Sexual, with external fertilization
C) Viviparous
D) Parthenogenetic
Answer: B) Sexual, with external fertilization

3□□8□□ The main function of collar in Balanoglossus:

A) Reproduction
B) Locomotion and food conduction
C) Respiration only
D) Excretion only
Answer: B) Locomotion and food conduction

3□□9□□ Classification of hemichordata places Balanoglossus under:

A) Class Enteropneusta
B) Class Pterobranchia
C) Class Cephalochordata
D) Class Ascidiacea
Answer: A) Class Enteropneusta

4□□0□□ Which of the following is absent in hemichordates?

A) Pharyngeal gill slits
B) True notochord
C) Open circulation
D) Tornaria larva
Answer: B) True notochord

Unit 2

1□□ Cephalochordates are commonly known as:

A) Sea squirts
B) Lancelets
C) Lampreys
D) Acorn worms
Answer: B) Lancelets

2□□ Example of cephalochordata is:

A) Herdmania
B) Branchiostoma
C) Balanoglossus
D) Ascidia
Answer: B) Branchiostoma

3□□ Notochord in cephalochordates extends:

A) Up to head only
B) Throughout body including head
C) Only up to tail
D) Only trunk region
Answer: B) Throughout body including head

4□□ Cephalochordates lack:

A) Post-anal tail
B) Vertebral column
C) Pharyngeal gill slits
D) Dorsal nerve cord
Answer: B) Vertebral column

5□□ Cephalochordates are:

A) Sessile
B) Pelagic swimmers
C) Burrowing marine animals
D) Terrestrial
Answer: C) Burrowing marine animals

6□□Branchiostoma is also called:

A) Sea squirt
B) Amphioxus
C) Salpa
D) Pyrosome
Answer: B) Amphioxus

7□□ Which structure in Branchiostoma acts as endostyle?

A) Hatschek's pit
B) Wheel organ
C) Notochord

D) Oral hood
Answer: A) Hatschek's pit

8□□Branchiostoma primarily feeds by:

A) Raptorial feeding
B) Filter feeding
C) Parasitism
D) Grazing algae
Answer: B) Filter feeding

9□□ In Branchiostoma, the hepatic caecum is analogous to:

A) Vertebrate pancreas
B) Vertebrate liver
C) Vertebrate lung
D) Vertebrate heart
Answer: B) Vertebrate liver

Number of pharyngeal gill slits in Branchiostoma:

A) 1 pair
B) 5 pairs
C) Numerous pairs (about 80–100)
D) None
Answer: C) Numerous pairs (about 80–100)

1□□1□□ Circulatory system in Branchiostoma is:

A) Open type
B) Closed type without heart
C) Closed with well-developed heart
D) Absent
Answer: B) Closed type without heart

1□□2□□ In Branchiostoma, the atrium opens to outside through:

A) Atriopore
B) Gill slits
C) Mouth
D) Anus only
Answer: A) Atriopore

1□□3□□ Reproduction in Branchiostoma is:

A) Hermaphroditic
B) Asexual
C) Unisexual with external fertilization
D) Viviparous
Answer: C) Unisexual with external fertilization

1□□4□□ Metamorphosis in Branchiostoma is:

A) Absent
B) Direct development
C) Indirect with larval stage
D) Viviparous metamorphosis
Answer: C) Indirect with larval stage

1□□5□□ Excretory organs of Branchiostoma are:

A) Nephridia
B) Protonephridia
C) Malpighian tubules
D) Green glands
Answer: B) Protonephridia

1□□6□□ Segmental muscles in Branchiostoma are called:

A) Gonads
B) Myotomes
C) Nephridia
D) Testes
Answer: B) Myotomes

1□□7□□ Which part helps Branchiostoma in burrowing?

A) Oral hood
B) Caudal fin
C) Notochord
D) Anterior pointed end
Answer: D) Anterior pointed end

1□□8□□ The oral hood of Branchiostoma bears:

A) Cirri
B) Tentacles only
C) Antennae
D) Scales
Answer: A) Cirri

1□□9□□ Habitat of Branchiostoma is:

A) Deep sea benthic region
B) Freshwater ponds
C) Sandy shallow marine waters
D) Estuarine muddy flats only
Answer: C) Sandy shallow marine waters

2□□0□□ Atrium in Branchiostoma surrounds:

A) Oral hood only
B) Pharynx and anterior intestine
C) Notochord only
D) Tail only
Answer: B) Pharynx and anterior intestine

□ Urochordata

2□□1□□ Urochordates are commonly called:

A) Sea squirts
B) Lancelets
C) Hagfishes
D) Eels
Answer: A) Sea squirts

2□□2□□ Which of the following is a urochordate?

A) Branchiostoma
B) Herdmania
C) Balanoglossus
D) Myxine
Answer: B) Herdmania

2□□3□□ In adult urochordates, notochord is present in:

A) Whole body
B) Only trunk
C) Only tail of larva
D) Entire adult body
Answer: C) Only tail of larva

2□□4□□ Urochordates show:

A) Retrogressive metamorphosis
B) Progressive metamorphosis
C) Direct development
D) No metamorphosis
Answer: A) Retrogressive metamorphosis

2□□5□□Herdmania is:

A) Free-swimming adult
B) Sessile adult
C) Parasitic
D) Freshwater animal
Answer: B) Sessile adult

2□□6□□ Body covering of Herdmania is:

A) Calcareous shell
B) Tunic or test
C) Chitinous exoskeleton
D) Keratin scales
Answer: B) Tunic or test

2□□7□□ The test of Herdmania is composed of:

A) Cellulose-like tunicin
B) Chitin only
C) Keratin only
D) Silica
Answer: A) Cellulose-like tunicin

2□□8□□ Which structure in Herdmania functions as an incurrent opening?

A) Atriopore
B) Branchial siphon
C) Atrial siphon
D) Anus
Answer: B) Branchial siphon

2□□9□□ The pharynx in Herdmania is also called:

A) Cloaca
B) Branchial sac
C) Test chamber
D) Buccal cavity
Answer: B) Branchial sac

3□□0□□ Endostyle of Herdmania is homologous to:

A) Liver of vertebrates
B) Thyroid gland of vertebrates
C) Pancreas of vertebrates
D) Kidney of vertebrates
Answer: B) Thyroid gland of vertebrates

3□□1□□ In Herdmania, heart is:

A) Absent
B) Present and periodically reverses its beat direction
C) Present with valves only
D) Present but permanently fixed direction of flow
Answer: B) Present and periodically reverses its beat direction

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3□□2□□ Excretion in Herdmania occurs through:

A) Flame cells
B) Nephridium
C) Neural gland and renal vesicles
D) Green glands
Answer: C) Neural gland and renal vesicles

3□□3□□ Larva of Herdmania resembles:

A) Adult sea urchin
B) Tadpole of frog
C) Earthworm larva
D) Fish fry
Answer: B) Tadpole of frog

3□□4□□Herdmania larva possesses:

A) No notochord
B) Notochord and dorsal nerve cord
C) Ventral nerve cord only
D) Exoskeleton only
Answer: B) Notochord and dorsal nerve cord

3□□5□□Herdmania larva is:

A) Sessile
B) Free-swimming
C) Terrestrial
D) Endoparasitic
Answer: B) Free-swimming

3□□6□□ After metamorphosis in Herdmania:

A) Tail and notochord disappear
B) Notochord remains throughout life
C) Larval features are retained
D) Becomes pelagic swimmer
Answer: A) Tail and notochord disappear

3□□7□□ Feeding in Herdmania is mainly by:

A) Raptorial predation
B) Filter feeding using pharyngeal slits
C) Absorptive feeding
D) Carnivorous behavior
Answer: B) Filter feeding using pharyngeal slits

3□□8□□ The main nerve ganglion of adult Herdmania lies:

A) In tail
B) Between two siphons
C) At branchial sac base
D) Around notochord
Answer: B) Between two siphons

3□□9□□ Which feature supports retrogressive metamorphosis in Herdmania?

A) Larva more advanced than adult
B) Adult develops complex organs
C) Larva has no chordate features
D) Adult migrates to land
Answer: A) Larva more advanced than adult

4□□0□□ Fertilization in Herdmania is:

A) Internal
B) External
C) Viviparous
D) Asexual by budding
Answer: B) External