



BIOLOGY

BOOKS - CENGAGE BIOLOGY

CLASSIFICATION OF ANIMALS : INVERTEBRATES

Mandatory Exercise Exercise Set I

1. Define the following terms:

Ectotherms



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2. The given below are the names of phyla and names of three animals in front of each phylum. Underline the two animals which belong to the phylum.

Platyhelminthes: roundworm, liver-fluke,
tapeworm



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3. The given below are the names of phyla and names of three animals in front of each phylum. Underline the two animals which belong to the phylum.

Porifera: Sycon, Chalina, Aurelia



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4. The given below are the names of phyla and names of three animals in front of each phylum. Underline the two animals which

belong to the phylum.

Coelenterate: Hydra, sea urchin, sea anemone



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5. The given below are the names of phyla and names of three animals in front of each phylum. Underline the two animals which belong to the phylum.

Aschelminthes: earthworm, hookworm,
eelworm



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6. To which phyla do the following animals belong and why?

Taenia (tapeworm)

Phylum: -----

Reason: _____

-----.



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7. To which phyla do the following animals belong and why?

Ascaris (roundworm)

Phylum: _____

Reason: _____

_____.



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8. Give appropriate names of the respective phyla and one example for each of the following:

Animals with a two-layered body wall and a mouth surrounded by tentacles. _____.



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9. Give appropriate names of the respective phyla and one example for each of the following:

Animals with a long, cylindrical, and unsegmented body but without a true coelom_____.



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10. Give appropriate names of the respective phyla and one example for each of the following:

Organisms with a cylindrical, segmented body, with a coelom_____.



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11. Observe the picture and answer the following questions:

Identify the organism shown in the picture.



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12. Observe the picture and answer the following questions:

Name the phylum to which the organism shown alongside belongs.



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13. Observe the picture and answer the following questions:

What is the unique feature of this organism?



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14. Observe the picture and answer the following questions:

Name the excretory organ of this organism.



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15. Assertion: All triploblastic eucoelomates.

Reason: They have a false coelom.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true, but R is not the correct explanation of A

C. If A is true but R is false

D. If both A and R are false

Answer: D



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16. Differentiate between the following:

Pseudocoelom and coelom



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17. Differentiate between the following:

Radial and bilateral symmetry



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18. How many layers take part in the formation of coelenterates?



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19. Write down at least three characteristics of nematodes.



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20. Match the items in column A with those in column B.

Column A (Structure)	Column B (Function)
(a) Amoebocyte	(i) Movement of water and filtering of food
(b) Osculum	(ii) Skeletal support elements
(c) Collar cells	(iii) Transport of food to non-feed cells
(d) Spicules	(iv) Moves wastes out of excretory openings
(e) Flame cell	(v) Exit for water



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21. Select the false statements and rewrite as correct statement:

The common name of Physalia is the 'venus flower basket'



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22. Select the false statements and rewrite as correct statement:

Cnidoblast cells are related with food capture, offence and defence.



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23. Select the false statements and rewrite as correct statement:

Nematodes are commonly called 'flatworms'.



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24. Select the false statements and rewrite as correct statement:

Planaria is the liver fluke.



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Mandatory Exercise Exercise Set II

1. The given below are the names of phyla and names of three animals. Underline the two animals which belong to each

Arthropoda: crayfish, millipede, earthworm



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2. The given below are the names of phyla and names of three animals. Underline the two

animals which belong to each

Echinodermata: Cucumeria, Mytilus, Antedon



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3. The given below are the names of phyla and names of three animals. Underline the two animals which belong to each

Annelida: Hirudinaria, Nereis, Planaria



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4. Consider the following statements and give appropriate names of the phyla and one example for each of the following:

Animals with jointed legs with an exoskeleton made of chitin. _____.



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5. Consider the following statements and give appropriate names of the phyla and one example for each of the following:

Marine unsegmented an exoskeleton and animals a spiny with skin _____.



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6. Consider the following statements and give appropriate names of the phyla and one example for each of the following:

Animals with an unsegmented soft body having a calcareous shell _____.



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7. Observe the picture and answer the following questions:



Label the parts marked as A and B.



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8. Observe the picture and answer the following questions:



Name the pigment present in its blood.

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9. Observe the picture and answer the following questions:



Describe its nervous system in brief



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10. Match the items under column A with those under column B.

Column A	Column B
(a) Hirudin	(i) Echinodermata
(b) Canal system	(ii) Mollusca
(c) Feather star	(iii) Arthropoda
(d) Book lungs	(iv) Leech
	(v) Porifera



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11. Name the phyla of animals with following characteristics. Give examples.

Spiny skin _____



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12. Name the phyla of animals with following characteristics. Give examples.

Jointed legs _____



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13. Name the phyla of animals with following characteristics. Give examples.

Setae as locomotory organ _____



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14. Name the phyla of animals with following characteristics. Give examples.

Mantle cavity for breathing_____



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15. Give the names of three useful insects.



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16. What is the most prominent feature of the phylum Annelida?

What advantage does this provide?



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17. What is the most prominent feature of the phylum Annelida?

What type of body cavity do these animals have?



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18. What is the most prominent feature of the phylum Annelida?

List three familiar forms of Annelida.



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19. What is a haemocoel? Is this an open or closed form of circulation?



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20. What are the stages of metamorphosis?



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21. Lac is a product of

- A. excretion from the body
- B. excess food oozing out of the body
- C. secretion from the body
- D. faecal matter

Answer: C



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22. Madreporite occurs in

A. sea urchin

B. sea cucumber

C. starfish

D. feather star

Answer: C



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Consolidated Exercise

1. Read the conditions carefully and write the answers to the questions that follow:

Conditions: A given animal is found in the coastal water of the tropical and temperate seas and possesses the following characteristics:

(a) The animal belongs to the group which depicts the tissue level of organisation.

(b) The body wall consists of two distinct layers of cells: the outer epidermis and the

inner gastrodermis.

(c) The animal has a soft, gelatinous, saucer-like body bearing numerous tentacles at the margins.

(d) The animal has minute fimbriae possessing abundant stinging cells (nematoblasts).

Based on the above information, identify the animal from the following options:

- A. The animal is a sponge
- B. The animal is an annelid.
- C. The animal is a mollusc.

D. The animal is a coelenterate.

Answer: D



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2. Read the conditions carefully and write the answers to the questions that follow:

Conditions: A given animal is found in the coastal water of the tropical and temperate seas and possesses the following characteristics:

(a) The animal belongs to the group which depicts the tissue level of organisation.

(b) The body wall consists of two distinct layers of cells: the outer epidermis and the inner gastrodermis.

(c) The animal has a soft, gelatinous, saucer-like body bearing numerous tentacles at the margins.

(d) The animal has minute .fimbriae possessing abundant stinging cells (nematoblasts).

Name the cells that act as organs of defence in the animal. Where are these cells located?

3. Read the conditions carefully and write the answers to the questions that follow:

Conditions: A given animal is found in the coastal water of the tropical and temperate seas and possesses the following characteristics:

(a) The animal belongs to the group which depicts the tissue level of organisation.

(b) The body wall consists of two distinct layers of cells: the outer epidermis and the inner gastrodermis.

(c) The animal has a soft, gelatinous, saucer-like body bearing numerous tentacles at the margins.

(d) The animal has minute .fimbriae possessing abundant stinging cells (nematoblasts).

Based on the characteristics of the animal, which of the following is the most correct statement about the group to which it belongs?

A. Animals do not reproduce sexually.

B. Animals do not show alternation of generations.

C. Animals are commonly called sac-like animals.

D. Animals possess specific organs for excretion and respiration.

Answer: C



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4. Give reason for the following statements:

Sponges are considered to be the simplest animals in terms of tissues and organs.



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5. Give reason for the following statements:

Arthropoda is the most successful animal phylum.



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6. Give reason for the following statements:

Tapeworms lack the digestive tract.



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7. Give reason for the following statements:

In nematodes, the body cavity is termed pseudocoel.



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8. Give reason for the following statements:

Leeches are used by physicians.



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9. Match each of the statements in the column B with a body structures listed in the column A.

A.

Column A	Column B
(a) Coelom	(i) Modified to form a lung in land snails
(b) Radula	(ii) Secretes the shell
(c) Gill	(iii) Used by a clam to capture food
(d) Foot	(iv) Divided into hinged halves in bivalves
(e) Mantle	(v) Functions in locomotion in most molluscs
(f) Circulatory system	(vi) Extracts oxygen from the water
(g) Shell	(vii) Rasping organ is used to scrape up food
	(viii) Distributes nutrients, water, and oxygen around the body
	(ix) Outgrowth of the body surface that drapes over the animal
	(x) Small cavities around heart, kidney, and reproductive organs
	(xi) Rippling movements of this structures propel gastropods
	(xii) A one-piece coiled structure in snails.





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Consolidated Exercise Multiple Choice Questions

1. *Taenia solium* is characterised by

- A. lack of digestive tract
- B. presence of hooks
- C. externally divided proglottids
- D. All of these

Answer: A::B::D



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2. Which of the following is the correct pairs

- A. Mollusca starfish
- B. Echinodermata starfish
- C. Pisces cuttlefish
- D. Porifera jellyfish

Answer: A::B::C::D



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3. Radial symmetry is seen in

A. Mollusca

B. Protozoa

C. Arthropoda

D. Sponges

Answer: C::D



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4. Cephalisation is absent in

A. molluscs

B. arthropods

C. echinoderms

D. sponges

Answer: A::D



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5. Open circulatory system occurs in

A. lobster

B. Hydra

C. Planaria

D. cockroach

Answer: A::D



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6. Flame cells are present in

A. Taenia solium

B. Ascaris

C. Ancylostoma

D. Unio

Answer: A::D



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7. Which of the following organisms contain mantle, shell, and gills?

A. Unio

B. Euglena

C. Octopus

D. Aurelia

Answer: A::C



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8. In the environment, the temperature change affects most of the animals which are

- A. Poikilothermal
- B. Homoiothermic
- C. Aquatic
- D. Desert living

Answer: A



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9. Which of the following statement is true?

A. Animal cells possess a cell wall.

B. Animals are unicellular eukaryotes.

C. Animals require oxygen for aerobic respiration.

D. All are correct

Answer: D



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10. Protista obtain their food as

A. Photosynthetic

B. Chemosynthesis

C. Heterotrophs

D. Both (A) and (C)

Answer: D



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11. Macro and micronucleus are the characteristic feature of

A. Paramecium

B. Opalina

C. Hydra

D. Monera

Answer:



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12. Amoeba exhibits no

A. locomotion

B. digestion

C. skeleton

D. reproduction

Answer: C



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13. Which of the following is not a characteristic feature of sponges?

A. Cellular level of organization

B. Presence of Ostia

C. Intracellular digestion

D. Body supported by chitin

Answer:



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14. Canal system is a characteristic of

A. Hydra

B. Hydra

C. Sea anemone

D. Sea urchin

Answer: B



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15. Gemmule formation in sponges is helpful in

A. Sexual reproduction

B. Asexual reproduction

C. Only dissemination

D. None of these

Answer: B



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16. Choanocyte is a characteristic of

A. Annelida

B. Arthropoda

C. Porifera

D. None of these

Answer: C



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17. Biradial symmetry and lack of cnidoblasts are the characteristics of

A. Starfish and sea anemone

B. Ctenoplana and Beroe

C. Aurelia and Paramecium

D. Hydra and starfish

Answer:



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18. The most primitive nervous system is found
in

A. Hydra

B. Amoeba

C. Sponge

D. Earthworm

Answer: A



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19. Tissue level of organization is found in

A. Porifera

B. Coelenterata

C. Annelida

D. Vertebrata

Answer: B



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20. Portuguese Man of War is

A. Physalia

B. Coral

C. Obelia

D. Plasmodium

Answer: A



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21. Germ cells in Hydra are derived from

A. Ectoderm

B. Mesoderm

C. Endoderm

D. Mesoglea

Answer: A



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22. Flatworm excretes through

- A. Kidney
- B. Nephridia
- C. Protonephridia
- D. Malpighian tubules

Answer: C



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23. Schistosoma is a parasite found in

A. Testis of frog

B. Liver

C. Intestine

D. Blood

Answer: D



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24. Solenocytes are associated with

A. Respiration

B. Digestion

C. Nutrition

D. Excretion

Answer: D



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25. Which is a free swimming stage in the life history of Fasciols?

- A. Miracidium
- B. Sporocyst
- C. Redia
- D. None of these

Answer: A



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26. The pseudocoelomate among these is

A. Porifera

B. Aschelminthes

C. Annelids

D. Mollusca

Answer: B



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27. Adult *Wuchereria bancrofti* attacks

A. Nervous system

B. Lymph vessels

C. Muscular system

D. Blood vessels

Answer: B



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28. Body is unsegmented in

A. Scorpion

B. Ascaris

C. Earthworms

D. Mosquitoes

Answer: B



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29. Filariasis is caused due to

A. Virus

B. Protozoan

C. Bacterium

D. Helminthes

Answer: D



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30. Which of the following is active stage of
Ascaris

A. Adult worm

B. Second juvenile

C. Fourth juvenile

D. Egg

Answer: B



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31. Nutrition of Ascaris is

A. Holozoic

B. Saprozoic

C. Parasitic

D. Both B and C

Answer: C



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32. Which among the following is not a characteristic feature of Ascaris?

A. Endoparasite

B. Monogenic

C. Free living

D. Dioecious

Answer: C



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33. Excretory organs in Ascaris are

A. Nephridia

B. Kidneys

C. Flame cells .

D. None of these

Answer: D



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34. Velum is present in

- A. Pheretima
- B. Ascaris
- C. Hirudinaria
- D. All of these

Answer: C



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35. The body organization of annelids is

A. Cellular

B. Acellular

C. Tissue level

D. Organ system level

Answer: D



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36. Cuticle of annelids is

A. Non-chitinous and albuminoid

B. Chitinous

C. Chitinous and albuminoid

D. Non-chitinous

Answer: A



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37. The animal which is sanguivorous is

A. Nereis

B. Hirudinaria

C. Tapeworm

D. Earthworm

Answer: B



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38. A feature absent in annelids in

A. Clitellum

B. Pseudocoelom

C. Metameric Segmentation

D. Nephridia

Answer: B



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39. Botryoidal tissue is found in

- A. Rabbit
- B. Ascaris
- C. Hirudinaria
- D. Earthworm

Answer:



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40. The largest phylum of Animalia , that includes insects is

A. Arthropods

B. Aschelminthes

C. Porifera

D. Annelids

Answer: A



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41. The body of arthropods consist of

A. Head

B. Thorax

C. Abdomen

D. All of these

Answer: D



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42. Exoskeleton of which of the following consists of a chitinous cuticle ?

A. Porifera

B. Annelida

C. Arthropods

D. Echinodermata

Answer: C



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43. Ecdysone is secreted in

A. Insecta

B. Nematods

C. Termatoda

D. Polychaeta

Answer: A



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44. Silk is obtained from

A. *Bombax mori*

B. *Apis mellifera*

C. *Laccifer lacca*

D. None of these

Answer: A



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45. Johnston's organ found in

A. Antenna of mosquito

B. Thorax of cockroach

C. Abdomen of house fly

D. Abdomen of spider

Answer: A



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46. Scorpion, wasp, honeybee and centipede
are all

A. Terrestrial

B. Viviparous

C. Venomous

D. Social animals

Answer: C



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47. A polymorphic insect is

A. Butterfly

B. Silverfish

C. White ant

D. Housefly

Answer: C



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48. Protein present in silk fibre is

A. Elastin

B. Fibroin

C. Casein

D. Keratin

Answer: C



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49. Body of molluscs is covered by

A. Chitinous exoskeleton

B. Siliceous spicules

C. Calcareous shell

D. Pellicle

Answer: C



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50. In molluscs , the body is unsegmented with a distinct

A. Head, thorax and abdomen

B. Head, thorax and muscular foot

C. Head and muscular foot

D. Head, muscular foot and visceral hump

Answer: D



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51. The space between the hump and mantle is called

- A. Coelom
- B. Mantle Cavity
- C. Cephalopods
- D. Polyplacophora

Answer: B



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52. The culture of molluscs can be studied under

- A. Pisciculture
- B. Sericulture
- C. Aquaculture
- D. Apiculture

Answer: C



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53. Largest group of mollusca is

- A. Pelecypods
- B. Gastropods
- C. Cephalopods
- D. Polyplacophora

Answer: B



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54. The number of gills in Bivalvia are

- A. Two
- B. Eight
- C. Ten
- D. Five

Answer: A



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55. Veliger larva occurs in phylum

A. Mollusca

B. Echinodermata

C. Arthropoda

D. Cnidaria

Answer: A



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56. Radula is found in

A. Pila

B. Chiton

C. Pinctad

D. Lamellidens

Answer: A



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57. Which of the following animal belongs to the phylum mollusca?

A. Devilfish

B. Dogfish

C. Silverfish

D. Jellyfish

Answer: A



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58. Which of the following is not a true fish ?

A. Dogfish

B. Devilfish

C. Catfish

D. Starfish

Answer: B



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59. Pearl is produced by the animals of phylum

A. Annelids

B. Arthropods

C. Mollusca

D. Echinodermata

Answer: C



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60. The level of organisation in Echinodermata is of

A. Cellular level

B. Tissue level

C. Organ level

D. Organ-system level

Answer: D



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61. In echinoderms, the digestive system is

A. complete

B. incomplete

C. absent

D. Either (B) or (C)

Answer: A



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62. Water vascular system helps in

A. locomotion

B. capture and transport of food

C. respiration

D. all of the above

Answer: D



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63. In Echinodermata, fertilization is usually

A. External

B. Internal

C. Absent

D. Useless

Answer: A



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64. Locomotory organs of Echinodermata are

A. Parapodia

B. Pseudopodia

C. Foot

D. None of these

Answer: D



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65. Which one of the following is not an echinoderm?

A. Sea lily

B. Sea urchin

C. Sea pen

D. Sea cucumber

Answer: C



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66. The name Echinodermata was coined by

A. Leuckart

B. Robert Grant

C. Goldfuss

D. Jacob Klein

Answer: D



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Olympiad And Ntse Level Exercises

1. Paramecium feeds on micro-organisms. As the food is taken in, it undergoes a series of breakdown. The digested food is stored in the cytoplasm by creating a vacuole and the excess food or water has to be eliminated. Which one of the following organelles helps in the elimination of the wastes?

A. Micro-nucleus

B. Contractile vacuole

C. Pellicle

D. Gullet

Answer: B



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2. Students were asked to differentiate the following organisms based on the number of germ layers involved in their development. The

organisms are Spongia, Hydra, Planaria,
Starfish

Choose the correct answer with respect to the
germ layers of the organisms.

A. Spongia and hydra are triploblastic

B. Starfish and Spongia are triploblastic.

C. Starfish is triploblastic and Spongia is
diploblastic.

D. Planaria is diploblastic and Hydra is
triploblastic

Answer: C



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3. Chloragogen cells (yellow cells) in annelids function similar to the liver in vertebrates. They store glucagon and neutralise toxins. Where are these cells found?

- A. Blood of Pheretima
- B. Coelomic fluid of Pheretima
- C. Blood of Palaemon

D. Coelomic fluid of Palaemon

Answer: B



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4. A group of arthropods have no red blood cells. Hence they have a different 'source' (a respiratory pigment) to transport oxygen. This source is dissolved in the plasma of the organism's body. Identify the 'source' that helps in transporting oxygen.

A. Haemocyanin

B. Haemocoel

C. Hemoglobin

D. Haemoerythrin

Answer: A



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5. Tapeworms are intestinal endoparasites. Still they are not digested by the enzymes

inside the host's body. What might be the reason for its survival?

A. The epidermis is resistant to digestive acids/ enzymes.

B. It secretes a chemical which neutralizes digestive enzymes.

C. The epidermis contains cellulose which is indigestible.

D. The epidermis contains chitin similar to the exoskeleton.

Answer: A



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6. Which of the following are not the trends observed in the evolution of the central nervous system in invertebrates?

- A. Increased size of cerebral ganglia and formation of a 'brain'
- B. Reduction in the number of nerve cords

C. Replacement of nerve cords by nerve nets

D. Dominance of the ventral pair of nerve cords

Answer: C



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7. How is gaseous exchange accomplished in an insect?

A. Insects use skin as a gas-exchange surface, blood is circulated near the skin and picks up oxygen and releases carbon-dioxide.

B. They have feather-like gills through which blood and water flow in a counter current mechanism for efficient gas exchange

C. Insects have primitive lungs called book lungs, which are a series of internal

plates that provide surfaces for exchange of gases between the blood and air.

D. Insects have trachea that carry air deep into the body where exchange occur directly with the tissue.

Answer: D



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Challenging Exercises

1. How do cnidarians sting their prey?



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2. Would it be reasonable to call the phylum v Arthropoda the most successful animal phylum? Explain your answer.



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3. Explain how tapeworms can survive without a coelom, a mouth, a digestive system, or an excretory system



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4. Think of the animals in this chapter that are radially symmetrical (cnidarians, comb jellies). How is the lifestyle of many radially symmetrical animals different from that of bilaterally symmetrical animals? How does their body plan complement their lifestyle?



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