Animals

Characteristics of animals

Animals are different from plants because animals do not make their food while plants do.

Characteristics of animals as living things

- They grow
- They feed
- They reproduce
- They move; - animals move to look food mates and running away from enemies.
- They excrete;- excretion is the removal of waster metabolic products from the body
- They respire; - respiration is the oxidation of organic food material to produce energy
- They respond to the environment

Classification of animals

a) **Microscopic animals virus and bacteria**
b) Invertebrates or animals without a backbone
c) Vertebrates or animal with a backbone.

Viruses

- they are the smallest living organism
- they do not have a cellular structure
- they can only reproduce in the cells and therefore they are all **obligate parasites**

Importance of virus

- they cause diseases such as covid-19 , flue
- some viruses provide immunity against bacteria pathogen

Bacteria

Are small microscopic organisms

Importance of bacteria

(a) Some bacteria are used in treatment of sewage
(b) Some bacteria fix nitrogen into the soil
(c) Some bacteria are used to make butter and cheese
(d) Saprophytic bacteria decay rubbish
(e) Some bacteria make antibiotics
(f) Pathogenic bacteria cause disease such as
    (i) Cholera
    (ii) Syphilis
    (iii) Pneumonia
    (iv) Typhoid
    (v) Tuberculosis
    (vi) Tetanus

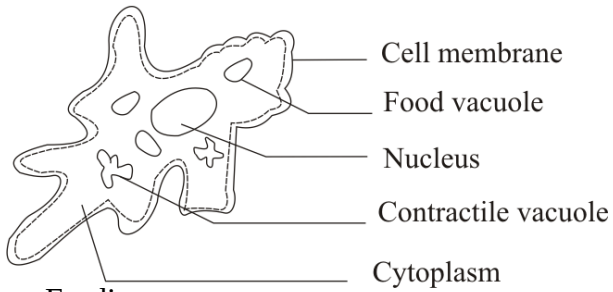
Protozoa

Examples; amoeba, Euglena, paramecium and trypanosome

Characteristics of amoeba

1. It is single celled
2. It is microscopic, that is, it is observed using a microscope.
   A microscope is an instrument used to observe small organisms.
3. It reproduces by means of binary fission.
4. It moves by pseudopodia

Amoeba



Feeding

Amoeba feeds by use of cell membrane to engulf the food particle. The food particle is taken in the cytoplasm and enclosed in food vacuole where it is digested.

Functions of parts of amoeba

a. **Cell membrane**
   - Protects internal structures
   - Regulates substances that enter or leave the cell
   - Senses external stimuli.

b. **Nucleus**: controls activities of the cell.

c. **Contractile** vacuole: eliminates excess water from the cell

Economic importance of protozoa

Amoeba - cause amoebic dysentery
- feeds and control other disease causing organisms e.g. bacteria

Trypanosome – causes nagana in cattle and sleeping sickness

Worms

These are invertebrate animals that typically have soft, slender, elongated bodies

Examples of worms

(a) Earthworm

Characteristic

- It has a segmented body
- It is hermaphrodite i.e. it has both male and female reproductive organs
- Its excretory organ is called nephrida
- Gaseous exchange occurs over the body
- Uses chaeta for locomotion

Economic importance of earthworms
- Make tunnels in the soil thereby improving aeration and drainage of soil
- Death and decay lead to formation of humus
- source of food to other animals e.g. chicken
- Mixes soil layer

(b) Round worms e.g. ascaris or hook worm

It is unsegmented
It has a cylindrical body
It exist as male or female
Gaseous exchange occurs by diffusion over the body surface

Importance of round worms

- Round worms are parasites in duodenum are transmitted in feces; they enter the human body as larvae through the skin of bare feet or through the mouth.
- They cause anemia because they feed on blood
- Transmission is controlled by proper hygiene, eating fruits after washing them

A parasite is an organism which feeds on another organism

(c) Filarial worms

These are parasites that cause elephantiasis/filariasis in man.

Filarial worms are transmitted by mosquitoes
Its spread is controlled by sleeping in mosquito net.

(d) Flat worms

They are parasitic flat worms, transmitted by eating infected beef or pork

Harmful effects of tape worms
- They are parasites
- They may block the intestine and cause constipation and other problems
- Lead to anemia by competing with the host for digested food. Tapeworm absorb digested food through their skin

Control of human intestinal worms

Just like livestock are attacked by parasites, human beings are also attacked by worms.

A parasite is an organism that feed on another organism

Source of worm infection?

Eating unready meat
Walking bare foot
Drinking contaminated water
Living in dirty environment

Signs of worm infection

Pains in the stomach
Having an itchy body
Feeling hungry after eating
Swollen body (stomach)
Diarrhea
Weight loss

- Poor health
- Anaemia
- irritation

Control of spread of worms

- proper disposal of feces
- eat well cooked food
- proper sanitation
- regular deworming with drugs

Arthropods

General characteristics

1. have segments bodies
2. have exoskeleton
3. have jointed legs
4. they have a dorsal heart with open vascular system

They are divided into five classes

a. crustacea
b. chilopoda
c. diplopoda
d. arachinida
e. insecta

Crustacean

Characteristic

- have two compound eyes
- mostly aquatic or live in water
- have five or more pairs of legs.

Examples

Water flea

crab

Economic importance
Source of food to man and other animals
Few are parasitic

Centipede

Characteristics
Have cylindrical bodies with numerous segments each with one pair of leg.
Carnivorous

Centipede

Importance
It inflict poisonous sting

Millipedes

Characteristics

- their bodies are cylindrical with numerous segments that are similar except around the head region.
- Each segment has two pair of walking legs

Economic importance

a. Millipedes are herbivores and pest to farm crops.
b. They burrow and aerate the soil and improve drainage.

Arachnids

Characteristics

a. the body is divided into two main body parts, cephalothorax and abdomen
b. have no antennae
c. have four walking legs on cephalothorax

Examples

Spider

Tick

Economic importance

- Tick and mites are parasites to domestic animals
- Tick spreads diseases to man e.g. coastal fever
- Spiders feed on vectors.
- Scorpions and spiders inflict fetal stings

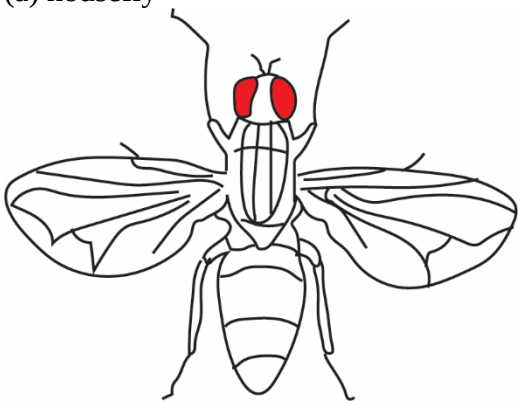
Insects

Characteristic

- Has three main body parts; head, thorax and abdomen.
- Has three pairs of legs.
- Thorax is divided into pro-, meso-, and metathorax.
- Increase in size through moulting

Common insects include

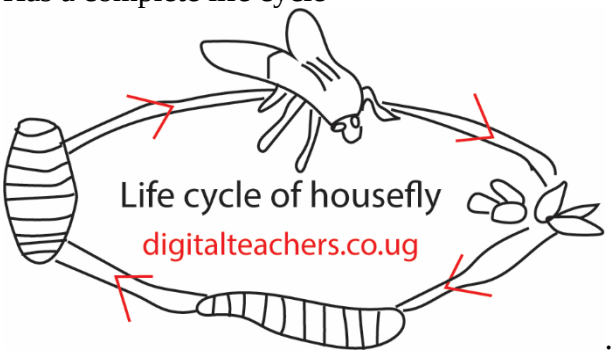
(a) housefly



Characteristics of housefly

- has a pair of compound eyes for vision
- has expanded or club shaped proboscis
- has a pair of wings and a pair of halters.
- The body is hairy.
- Has a pair of short hairy antenna

Life cycle of a housefly
Has a complete life cycle



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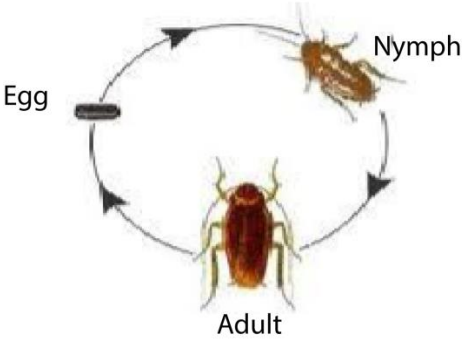
Economic importance
Transmits diseases e.g. dysentery, cholera, trachoma, typhoid fever and poliomyelitis.

Ways by which housefly transmit diseases
Carry bacteria on hairy body, on their feet and proboscis

Control
General cleanness and hygiene
Cover food
Eat hot food.
Use insecticides.

Cockroach

Life cycle of the cockroach



Economic importance
- Transmit germs from the toilets
- Their feces stain clothes
- Destroy document and clothes

Bee

Characteristics of bees

a. have two pairs of membranous wings
b. have a waist between the thorax and abdomen
c. They live in colonies

Economic importance of bee
Pollinate flowers
Make bee wax and honey

Types of bees and their role in a bee colony
(a) **Queen bee** is produced from fertilized eggs that are feed on royal jelly. It lays eggs after it has been fertilized by drone. When a new queen is born in hive bees swarm.
(b) **Drone** – male bee. It is produced from unfertilized egg and mates with the queen
(c) **Worker bee** – they are infertile female are produced from fertilized eggs. Their role is to look after the hive and other bees and collect nectar and pollen grains to make honey.

Type of bee hive

A **beehive** is a structure — either made by humans or bees — in which bees live and make honey.

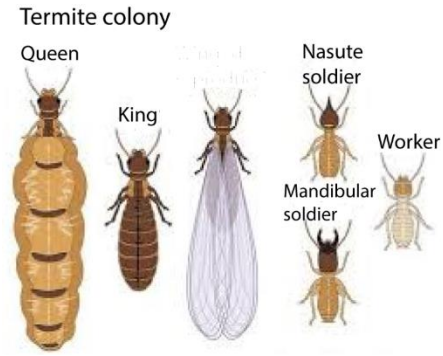
Nature beehive is usually a hole in a tree
Traditional be hive are beehive made of local materials
Modern beehive are well constructed wooden box. The advantage of modern beehive is that they produce clean

Chamber of beehive
Brood chamber (Usually in the bottom box) this is where eggs, larvae and pupa develop.
Honey chamber: this where honey is collected

Harvesting honey
Smoke the beehive to calm the bees and then open to remove honey. Honey is then removed from honey combs by crushing honey combs and honey isolated byby filtrations or centrifuging.

Dangers of bees
They sting when disturbed

Soldier termite



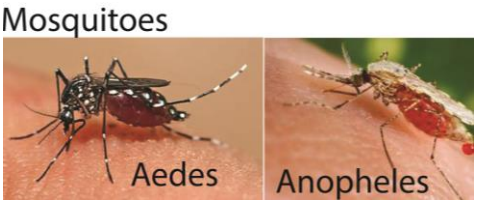
Economic importance

1. turns the soil over to keep it loose and aerated
2. source of food
3. destroy wooded properties
4. destroy plants

Grasshopper

Economic importance

- source of food
- destroy crops



Importance of mosquitoes

They transmit diseases.

Table showing diseases carried by mosquitoes.

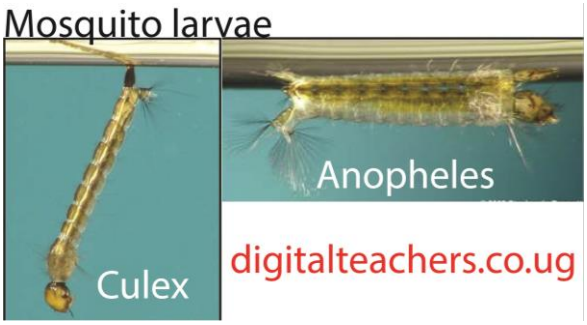
Mosquito	Diseases	Causative organism
Female anopheles	malaria	plasmodium
Aedes	Yellow fever, dengue fever	Virus virus
Culex	Elephantiasis	Filarial worm

Life cycle of a mosquito

Mosquitoes undergo complete lifecycle

Eggs → larva → Pupa → adult

The mosquito larva of culex mosquito and that anopheles mosquito are distinguished from the way they orient on water surface



Control of malaria and diseases spread by mosquitoes

- Sleep in a mosquito net
- Draining stagnant water
- Removing bush in and around the house
- Close the house to prevent entry of mosquitoes

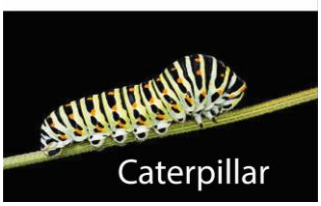
Butterfly

Feeding: feeds on nectar using sucking mouth parts.

Lifecycle: undergo complete metamorphosis i.e. eggs → larva → pupa → adult,

Importance

- Pollinate flowers
- Larva stage (caterpillar) are pest; destroy plant leaves



Wasp

Characteristics

- has two pairs of membranous wings
- has a narrow waist between the thorax and abdomen
- Has three main body parts; head, thorax and abdomen.
- Dark colored for camouflage
- Use sting to defend them selves

Importance of wasps
Inflict painful sting

Sugar ant

Characteristics

- lack wings
- has three main body parts; head, thorax and abdomen
- has three pairs of legs
- has biting mouth parts
- has thin waist between thorax and abdomen
- dark colored for camouflage.

Economic importance
Are part of food webs

Snail

They protect themselves by hiding in their shells

Importance

- source of food
- crop pest
- are vectors for diseases such as bilharzia

Adaptation of some animals for movement

Movement behavior	Part of body involved	Examples of small animals
swimming	***fins webbed feet***	***fish, frog***
running	legs	cockroach, lizard
leaping	long strong hind legs	frog, grasshopper, flea
crawling	body muscles	earthworm, snake, caterpillar
.flying	wings	housefly, butterfly, weaver bird
hopping	limbs/ legs	frog, grasshopper, flea
walking	limbs/legs	tortoise, cockroach, housefly

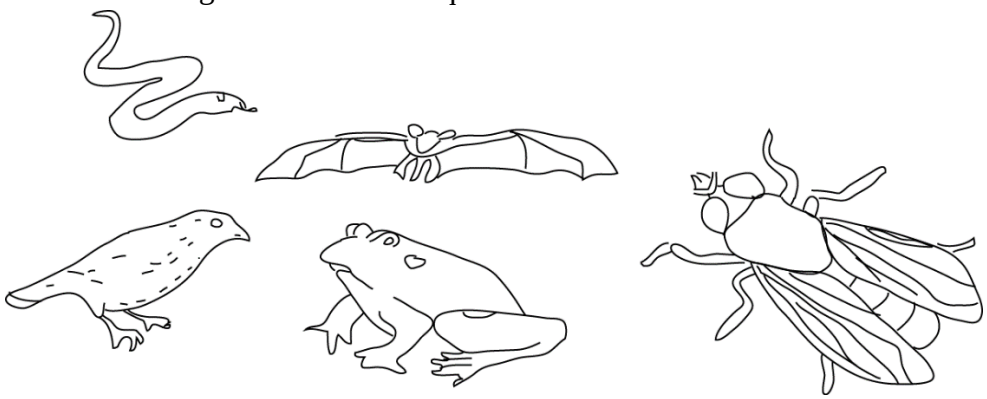
Protective behavior Adaptation/part that helps Examples of the small animal

	in protection	
stinging	sting	bee, wasp
running away	legs/limbs	lizard, cockroach
biting	mouth parts; fangs	spider, centipede, safari ant, snake
flying	wings	wasp, weaverbird, housefly
coiling	body muscles	snake, millipede, earthworm
hiding in shells	hard shells	snails and tortoise

Revision question and answers

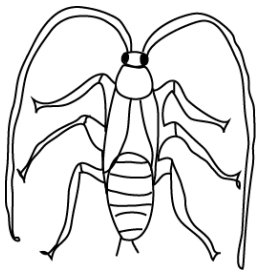
1. In which way is a housefly dangerous to man.
   Transmit diseases causing germs

Use the drawing below to answer questions 4 to 8



1. Which animal lay eggs?
   Snake, bird, frog and housefly
2. Which of these animals are cold blooded?
   Snake, frog, house fly
3. Which of these animals has no back bone?
   Housefly
4. Which these animals can fly?
   Bat, bird and housefly
5. Which of these animals is a mammal?
   Bat

Use the drawing below to answer questions 6 and 7



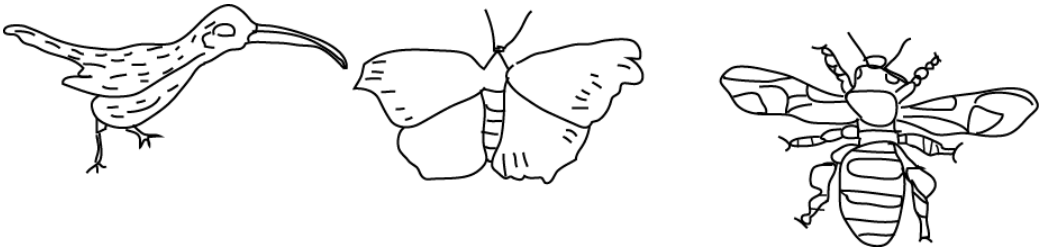
6. What stage in the life cycle of a cockroach is shown in the diagram?
   Nymph
7. Give a reason answer in question 6.
   The wings are not yet developed

8. (a) Give two possible source of worm infection?
   Eating unready meat
   Walking bare foot

Drinking contaminated water
Living in dirty environment

(b) State two signs of worm infection
Pains in the stomach
Having an itchy body
Feeling hungry after eating
Swollen body (stomach)

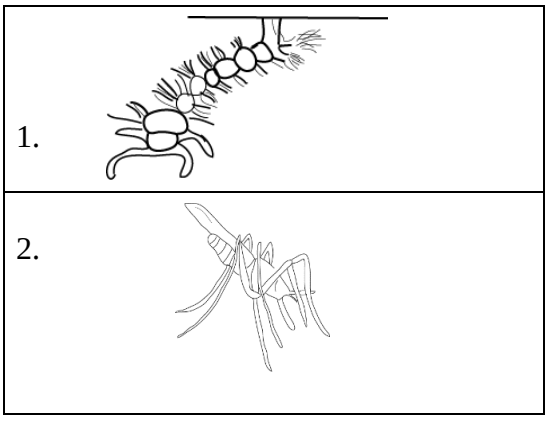
9. Use the diagram below to answer the following questions



(a) In which ways do these animals have similar for
(i) Feeding
The feed on liquid food such as nectar
(ii) Pollination
As they are sucking nectar they carry pollen grain
(iii) Movement
They have wings for flight

(b) How does one of the animals differ from others in the life history?
The bird lay eggs that hatch into chicks (two stages) the rest undergo complete metamorphosis.

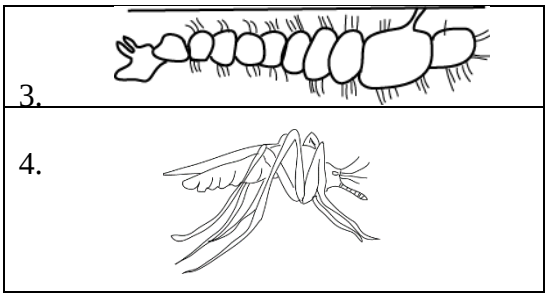
10. List A below gives two types of misquotes. The drawings in B give the larva and adult stage of mosquitoes. Write the correct number of the drawings in B against the correct mosquito in List A. Each drawing in B can be used once or more than once or not used at all.



A

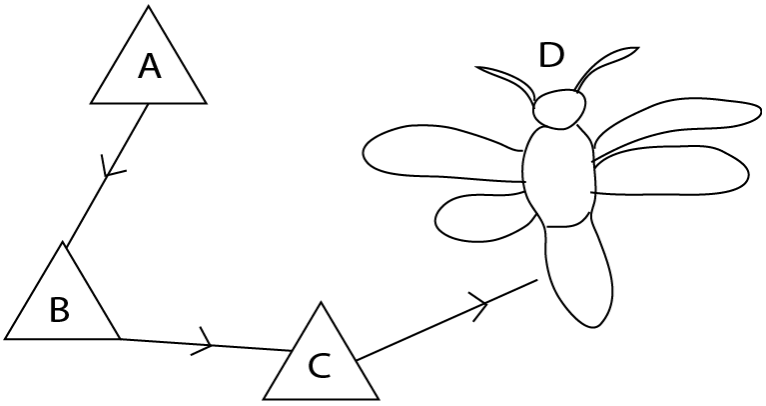
Anopheles mosquito **2,3**

Culex mosquito **1,4**



B

11. The diagram below shows the life cycle of a butterfly. Use it to answer the questions which follow.



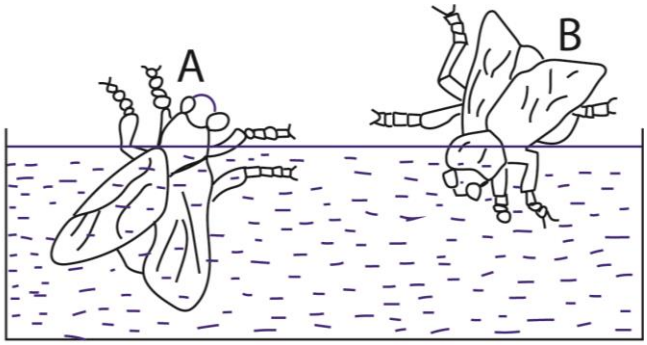
(a) Name the stages A and B.
A: eggs
B: larva

(b) At what stage is a butterfly a pest?
Stage B

(c) State one reason why a butterfly is classified as an insect.
Butterfly has three main body parts
Has three pairs of legs.

12. State any way in which spiders are different from insects.
Spiders have four pairs of legs while insects have 3 pairs of legs
Spider has two main body parts while insects have three main body parts.

In the diagram below, two insects were placed in water as shown.



(a) (i) which insect died?

A

(ii) Give a reason for your answer in (a) (i) above.

The spiracles are blocked and so it cannot breathes.

(b) In which way are the insects shown in the diagram harmful to man?

Spreads diseases such as trachoma, dysentery to human

(c) Give any other insect that causes the harm similar to that in (b) above.

Mosquitoes, tsetse fly, cockroach

13. (a) After it has rained, earthworm come out of their holes. Why do they come out?

Air holes in the soil are filled with water and therefore is no air in soil so the earthworm come out to breathe

(b) Give two reasons why an earthworm is very important to a farmer.

Earthworm aerate the soil

When earthworm dies it rots and form humus

Earthworms are food for our poultry.

(c) Why does worm die if oil is poured on its body?

It blocks gaseous exchange over the skin

14. Give the part of an insect that has the same function as the gills of a fish.

Spiracles

15. How does each of the following animals protect itself against its enemies?

(a)Tortoise **by hiding in its shell**

(b)Wasp **by stinging its enemy**

(c) Millipede **it coils its body**

(d) Chameleon: **by changing color to match with environment**

16. Give any one reason why animals move from one place to another

To look for food

To look **for mates**

17. What structure in an insect work like lungs in a mammal?

Spiracles

18. Give any one characteristics that makes a butterfly and a cockroach to be classified as insects.

They have three main body parts, head abdomen and thorax

They have three pairs of legs

Have thoracic segments

19. Give any one way in which bees benefit from plants.

Bees obtain nectar and pollen grain from the plant

20. Give any one way in which the breathing of a housefly is different from that of a rat.

Insects breathes through spiracles whereas rat breathe through lungs.

21. How does a snail protect itself from its enemies?

By hiding in its shell

22. Give any one way through which worms enter our bodies.

By eating half cooked meat

By moving in dirty places with bare feet

By eating infected, dirty fruits

23. Why an earth-worm is called an invertebrate?

It does not possess a vertebral column or back bone

24. Give any one body characteristic which is common to a spider and a tick

Both have four pairs of limbs

Both have two main body parts

25. Give any one reason why plants and animals are classified as living things.

They feed

They grow

They respond to the stimulus

They respire

They reproduce

26. Why a tick is called a parasite?

Feed on its host

27. Name one cold- blooded vertebrate that has a body shell.

Tortoise, snail

28. 5. Write down the vector that spreads elephantiasis.

Culex mosquito

29. What is the importance of a web to a spider?

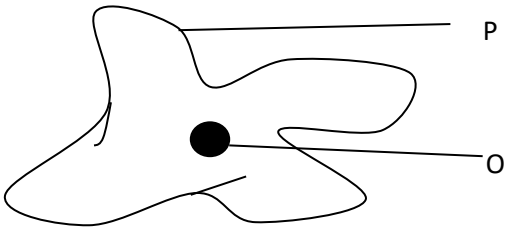
For trapping flies like spider

For movement from one place to another

30. How does fish help in controlling the spread of malaria?

Feed on mosquito larvae reducing mosquitoes

31. The diagram below is of an amoeba. Use it to answer questions that follow.



(a) What kind of organism is an amoeba?

Unicellular organism

(b) Name the structure indicated by letters:

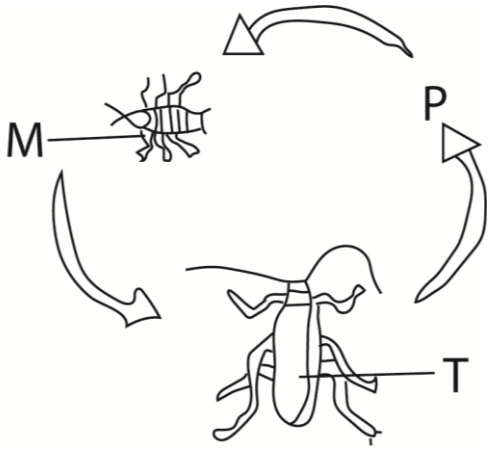
(i) O: **nucleus**

(ii) P: **cell membrane**

(c) How is the amoeba able to move from place to place?

By use of pseudopodia

32. The diagram below shows a life cycle of an insect. *Use it to answer the question that follow.*



(a) Name stages marked M and T

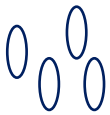
(i) **M** - Nymph

(ii) **T**- Adult

(b) Name one insect that undergoes the above stages of development.

Cockroach , grasshopper

(c) Draw the stage marked with letter **P**



Eggs

33. State one similarity in structure between a snail and earthworm.

Both lack a backbone

They both have hydrostatic skeleton

Have moist skin

34. Name the disease which is spread by a female anopheles mosquito

Malaria

35. Apart from a worker bee, mention two other types of bees found in a bee hive.

(i) Queen

(ii) drone

(b) Write down two materials collected by a worker bee from the environment

(i) nectar

(ii) pollen grain

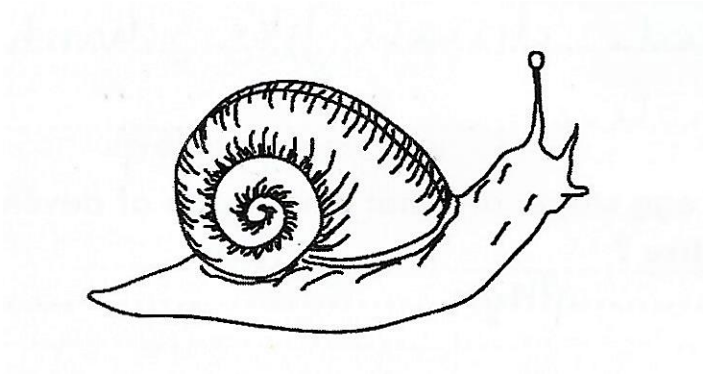
36. State one use of soil to earthworms.

Soil is a home for earthworm

37. Apart from the egg stage, at what other stage of development is a housefly not active?

Pupa

The diagram below is of a common animal. Use it to answer question 38



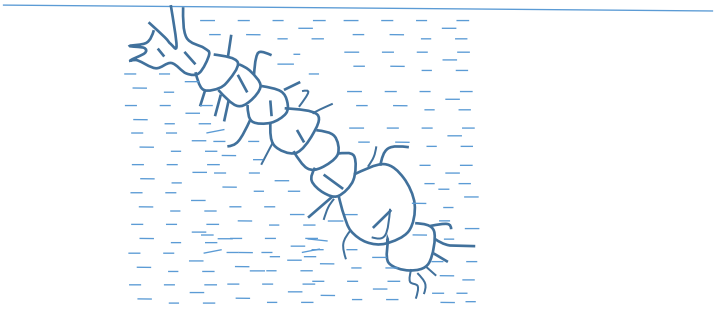
38. Which disease does the above animal spread humans?

Bilharzia or schistosomiasis

Symptoms of bilharzia

Fever, Abdominal pain (liver/spleen area), Bloody diarrhea or blood in the stools, Cough, Malaise; Headache, Rash, Body aches

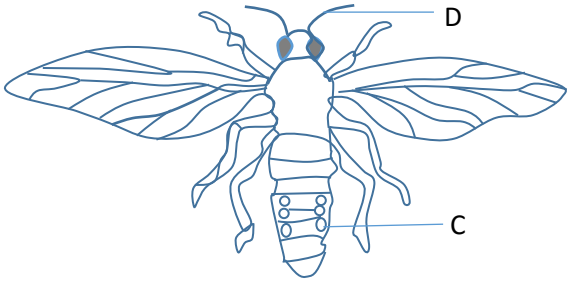
The diagram below is of a mosquito larva .**use it to answer questions 39 and 40**



39. Name the mosquito which develops from such a larva.

Culex mosquito

40. The diagram below shows an insect. Use it to answer the question that follow.



(a) Name the parts marked C and D

(i) C = spiracle

(ii) D = antenna

(b) State the function of the part marked D

1. **Used for feeling**
2. **Detect danger**
3. **For smelling**
4. **For hearing**

(c) Why would the insect above die when the whole of its abdomen is dipped in oil?

Oil blocks the spiracles and cut of oxygen

41. Apart from the number of body parts, state one other difference between Arachnids and insects.
    - Arachnids have four pairs of legs while insects have three pairs of legs
    - Arachnids have no antennae/feelers whereas insects have
    - Arachnids use lung-book for breathing while insects use trachea system

42. State the difference between the feeding of tape worm and a Hook worm.

Tape worm absorb digested food in the intestines whereas hook worm feed on blood

Hook worm


Tape worm

43. Give an example of mollusc which is a vector to human.

Water Snail

44. (a) Give the functions of each of the following part of a modern bee hive.

(i) The brood chambers.: **for queen to lay eggs**

(ii) The honey chambers: **it is where younger one grow and food for grubs is stored.**

(b) Apart from being used as food, give two other ways in which honey is useful to people

(i) medicine
(ii) making alcohol
(iii) Sweetening food
(iv) Making preservatives

45. State the eye disease which is spread by houseflies

Trachoma

46. What is the importance of smoke during the harvesting of honey?

Chase away bees to enable harvesting of honey

47. Which intestinal worm enters the human body through bare feet

Hookworm

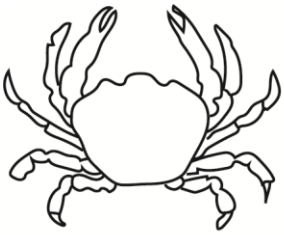
48. (a) Give any one characteristic which is common to all invertebrates
They do not have a backbone
(b) To which group of invertebrate does each of the following animals belong
(i) Snail – mollusc
(ii) Grasshopper- insect
(c) State one way in which snails may be dangerous to human
Transmit diseases like bilharzia

49. Give one way in which molluscs are different from other invertebrates
Have shells

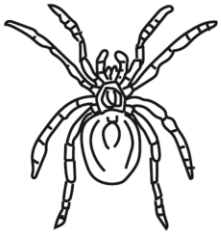
50. Name the type of bees which develops from unfertilized eggs.
Drone

51. State any one way in which the spread of germs by houseflies can be controlled.
- Proper sanitation
- Covering left over food
- Washing hand after the toilets

The diagram below shows animals in the arthropods group. Study and use them to answer the questions that follow.



X



Y

Z

(a) Name the group of arthropods to which animal X and Y belong.
(i) X: **crustacean**
(ii) Y: **arachnids**

(b) Give any one reason why animal Y does not belong to the same group as animal Z.
Y has two main body parts while z has three main body parts
Y has four pairs of legs while Z has three pairs of legs

(c) How are animals X, Y and Z similar in the way they reproduce?
All bear eggs

52. What happens when a new queen is born in a hive?
The bees swarm

53. Why do housefly lay their eggs in decaying mater
Decaying matter is warm, moist and contains nutrients for the larvae

54. Give any one way in which human being can prevent tapeworm infection.

By eating well cooked beef and pork

55. What type of change is molting in insects

Biological change