



## BIOLOGY

### BOOKS - S CHAND BIOLOGY (HINGLISH)

#### OUR ENVIRONMENT

#### Solved Examples

1. Which of the following belong to the same trophic level?

Grass, Hawk, Rabbit, Frog, Deer



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2. Which of the following belong to the same trophic level?

Frog, Grasshopper, Grass, Snake, Algae

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3. Calculate the amount of energy available to lion in the following food chain if plants have 20000 J of energy available from the sun:

Plants → Deer → Lion

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4. Consider the following food chain :

Grass → Mice → Snakes → Peacocks

If in this chain, 100 J of energy is available at the producer level, then calculate the energy transferred to the peacocks as food. State the law used in the calculations.

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5. Which of the following will have the maximum concentration of harmful chemicals in its body?

Peacock, Frog, Snake, Grasshopper

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## Exercise

1. What is the functional unit of the environment comprising of the living and non-living components called?

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2. Name two natural ecosystems and two artificial ecosystems.

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3. Which one of the following is not a terrestrial ecosystem?

Forest, Grassland, Aquarium, Desert

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4. Why are plants called producers?

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5. What name has been given to those organisms which break down the complex organic compounds present in dead animals and plants?

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6. What are planktons ?



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7. State whether the following statements are true or false:

(a) In biology, human beings are called producers.

(b) Secondary consumers and tertiary consumers, both are carnivores.

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8. Which category of organisms forms the starting point of a food chain ?

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9. Which of the following belong to the same trophic level ?

Goat , Spider , Plants , Hawk , Rat

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**10.** Which of the following belong to the same trophic level ?

Tree , Frog , Snake , Grass , Lizard

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**11.** Write an aquatic food chain.

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**12.** Name the organisms belonging to the second and the fourth trophic levels in the food chain comprising the following ?

Frogs, Plants, Snakes, Hawk, Insects

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**13.** What are the various steps of food chain called ?

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**14.** Construct a food chain comprising the following :

Snakes, Hawk, Rats, Plants

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**15.** Arrange the following in a food chain :

Fish, Algae, Small animals, Big Fish

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**16.** Which organisms belong to third and fourth trophic levels in the food chain comprising the following ?

Rat, Plants, Hawk, Snakes



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**17.** Which one term in the following includes the others ?

air, flora, fauna, environment, water, sunlight, soil



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**18.** A food chain represents a unidirectional flow of X. What is X ?



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**19.** Fill in the following blanks with suitable words :

(a) Decomposer organisms are ..... In their action.

(b) In nature, all green plants are ..... Whereas animals are consumers.



(c) A series of organisms, each of which feeds on the next organism, the beginning of which is a green plant, is called a .....

(d) The science that deals with the inter-relationships of living things with one another and their environment is called .....

(e) Plastic is a ..... material whereas paper is a ..... material.

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**20.** Explain the terms 'producer' and 'consumer'. Give two examples for producers and two of consumers.

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**21.** (a) Define decomposers. Name one decomposer.

(b) What is the role of decomposers in the ecosystem ?

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**22.** What is meant by a primary consumer, secondary consumer and a tertiary consumer ? Give one example of each.

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**23.** Give an example of a four step food chain operating in grassland. Name the secondary consumer in this food chain.

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**24.** (a) Define trophic level. Draw the food chain with four trophic levels.

(b) What will happen if we kill all organisms in one trophic level ?

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**25.** What is the difference between the food habits of organisms belonging to the first and the third trophic levels ? Give one example each of the organisms belonging to these two trophic levels.

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**26.** Can the organisms of any trophic level be removed without causing any damage to the ecosystem ? Will the impact of removing all the organisms in a trophic level be different for different trophic levels ?

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**27.** Consider the food chain :

Grass → Deer → Lion

What will happen if all the lions are removed from the above food chain ?

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28. The number of malaria patients in a village increased tremendously when large number of frogs were exported from the village. What could be the cause for it ?

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29. How does a biodegradable waste differ from a non-biodegradable waste ? Give two examples of non-biodegradable wastes which pollute our environment.

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**30.** Which of the following are biodegradable and which non-biodegradable ?

Glass bottle, Paper, Ball point pen refill, Hay, DDT, Wheat, Cake, Wood, Polythene bag, Jute bag, Cotton cloth, Grass, Vegetable peels

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**31.** (a) Describe an activity to show that while paper is biodegradable but plastic (say, polythene) is non-biodegradable.

(b) Explain why, some materials are biodegradable but some are non-biodegradable.

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**32.** Write down a food chain :

(a) in the sea

(b) which ends with humans

(c) with five links in it.



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**33.** At which trophic level a person is feeding when he is eating :

(a) roasted chicken (b) bread (c) eggs (d) apple (e) fish



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**34.** A student went to study a local pond. In one part of the pond she noticed tadpoles scraping at some pond weed. In another part she saw a water beetle holding a tadpole in its jaws.

(a) Construct a food chain for the pond.

(b) How many links are there in this chain ?



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**35.** Construct (a) a long food chain, and (b) a short foodchain, ending with man.

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**36.** (a) State one advantage of using jute bags over plastic bags for shopping.

(b) Write a common food chain of a pond ecosystem having four links.

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**37.** We do not clean ponds or lakes but an aquarium needs to be cleaned periodically. Why ?

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**38.** What will be the consequence of the absence of decomposers in the ecosystem ?

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**39.** Give two differences between food chain and food web.

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**40.** Write one or two words for each of the following statements/definitions :

- (a) Each level of food chain where transfer of energy takes place
- (b) The physical factors like temperature, rainfall, light, soil, air and water of an ecosystem
- (c) Organisms which depend on the producers for food either directly or indirectly
- (d) The physical and biological world where we live in



(e) Selfcontained unit of living things and their non-living environment needing only sunlight for its functioning

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**41.** (a) What is meant by biodegradable waste materials ? Give two examples of biodegradable wastes.

(b) Which of the following materials are non- biodegradable?

Aluminium wire, Tea leaves, Synthetic fibre, Wool

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**42.** (a) What is meant by non-biodegradable waste materials ? Give two examples of non-biodegradable wastes.

(b) Which of the following materials are biodegradable ?

Animal bones, Iron nails, Plastic mugs, Leather belts, Silver foil

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**43.** (a) Define an ecosystem. Give examples of any two ecosystems.

(b) List the biotic and abiotic components of an ecosystem.



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**44.** (a) What is a food chain ? Give one example of a simple food chain.

(b) What is a 'food web' ? Show its formation.



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**45.** (a) What is meant by 'environment' ?

(b) What type of substances are the major pollutants of the environment ? Name two such substances.

(c) Name the organisms whose uncontrolled activities are damaging

the environment.

(d) Explain why, it is better to use paper bags than plastic bags.



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**46.** Which of the following constitutes a food chain ?

A. Grass, Wheat and Mango

B. Grass, Goat and Human

C. Goat, Cow and Elephant

D. Grass, Fish and Goat

**Answer: B**



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**47.** In a food chain, the initial organism is usually :

A. Photosynthetic

B. herbivore

C. saprophytic

D. parasitic

**Answer: A**



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**48.** Which of the following represents a possible food chain found in a pond :

A.

Primary producers	Primary consumers	secondary consumers
green algae	fish	mosquito larvae

B.

Primary producers	Primary consumers	secondary consumers
fish	green algae	mosquito larvae

C.

Primary producers	Primary consumers	secondary consumers
mosquito larvae	fish	green algae

D.

Primary producers	Primary consumers	secondary consumers
green algae	mosquito larvae	fish

**Answer: D**



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**49. Which of the following are decomposers of dead organisms ?**

- |    |          |       |         |
|----|----------|-------|---------|
| A. | Bacteria | Fungi | Viruses |
|    | no       | yes   | yes     |
| B. | Bacteria | Fungi | Viruses |
|    | yes      | no    | yes     |
| C. | Bacteria | Fungi | Viruses |
|    | yes      | yes   | no      |
| D. | Bacteria | Fungi | Viruses |
|    | yes      | yes   | yes     |

**Answer: C**



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50. Which of the following is an artificial ecosystem ?

- A. pond
- B. crop field
- C. lake
- D. forest

**Answer: B**



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51. Disposable plastic plates should not be used because :

- A. they are made of light weight materials
- B. they are made of toxic materials

C. they are made of biodegradable materials

D. they are made of non-biodegradable materials

**Answer: D**



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**52.** In a food chain, the third trophic level is always occupied by :

A. carnivores

B. herbivores

C. decomposers

D. producers

**Answer: A**



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53. Accumulation of non-biodegradable pesticides in the food chain in increasing amount at each higher trophic level is known as :

- A. eutrophication
- B. pollution
- C. biomagnification
- D. accumulation

**Answer: C**



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54. If a grasshopper is eaten by a frog, then the energy transfer will be from :

- A. producer to decomposer
- B. producer to primary consumer



C. Primary consumer to secondary consumer

D. secondary consumer to tertiary consumer

**Answer: C**



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**55.** An ecosystem includes :

A. all living organisms

B. non-living objects

C. both living organisms and non-living objects

D. all living organisms and input of sun's energy

**Answer: C**



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56. The decomposers in an ecosystem :

- A. convert inorganic material to simpler forms
- B. convert organic material to inorganic forms
- C. convert inorganic material into organic compounds
- D. do not break down organic compounds

**Answer: B**



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57. What will happen if deer is missing in the food chain given below ?

Grass → Deer → Tiger

- A. The population of tigers increases
- B. The population of grass decreases

C. Tigers will start eating grass

D. The population of tigers decreases and the population of grass increases.

**Answer: D**



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**58.** Organisms which synthesise carbohydrates from inorganic compounds by using radiant energy are called :

A. decomposers

B. producers

C. herbivores

D. carnivores

**Answer: B**

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59. Organisms of a higher trophic level which feed on several types of organisms belonging to a number of lower trophic levels constitute the :

- A. ecosystem
- B. food web
- C. ecological pyramid
- D. food chain

**Answer: B**

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60. In the following groups of materials, which group/groups contain only non-biodegradable materials ?

(i) wood, paper, leather

(ii) polythene, detergent, PVC

(iii) plastic, detergent, grass

(iv) plastic, bakelite, DDT

A. (iii)

B. (iv)

C. (i) and (iii)

D. (ii) and (iv)

**Answer: D**



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**61.** Which of the following statement is incorrect ?

A. all green plants and blue green algae are producers

- B. green plants get their food from readymade organic compounds
- C. producers prepare their own food from inorganic compounds
- D. plants convert solar energy into chemical energy

**Answer: B**



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**62.** Which of the following group of organisms are not constituents of a food chain ?

- (i) grass, lion, rabbit, wolf
- (ii) plankton, man, fish, grasshopper
- (iii) wolf, grass, snake, tiger
- (iv) frog, snake, eagle, grass, grasshopper

A. (i) and (iii)

B. (iii) and (iv)

C. (ii) and (iii)

D. (i) and (iv)

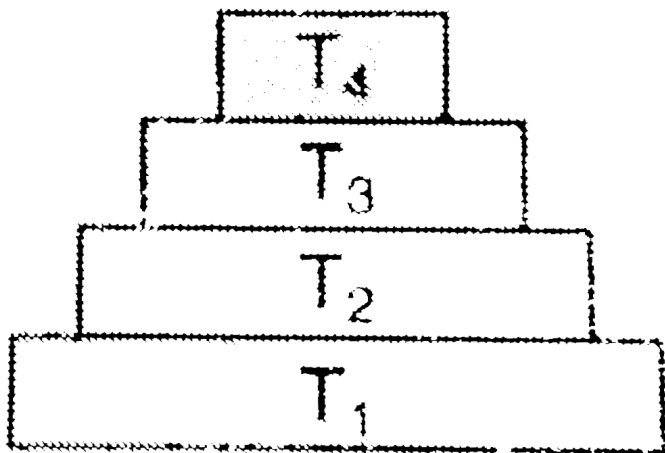
**Answer: C**



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**63.** In the figure given alongside, the various trophic levels are shown in the form of a pyramid. At which trophic level the maximum energy

is available ?



A.  $T_4$

B.  $T_2$

C.  $T_1$

D.  $T_3$

**Answer: C**



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64. One of the following is not a biodegradable material. This one is :

- A. cotton
- B. animal bones
- C. aluminium foil
- D. wood

**Answer: C**



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65. Which of the following is not a non-biodegradable material ?

- A. nylon socks
- B. plastic school bag
- C. jute carry bag
- D. polyester clothes

**Answer: C**

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**66.** The use of one of the following will pollute the environment. This one is :

- A. paper carry bags
- B. cotton cloth carry bags
- C. nylon cloth carry bags
- D. jute carry bags

**Answer: C**

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**67.** One of the following is not a consumer. This one is :

- A. giraffe
- B. antelope
- C. algae
- D. alligator

**Answer: C**



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**68.** Which of the following is not a producer ?

- A. grass
- B. zooplankton
- C. phytoplankton
- D. paddy

**Answer: B**



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**69.** One of the following is a micro-consumer. This one is :

A. ant

B. lice

C. fungi

D. mosquito

**Answer: C**



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**70.** Which of the following act as decomposers in an ecosystem ?

A. Lactobacillus bacteria

B. Cyanobacteria

C. Purifying bacteria

D. Rhizobium bacteria

**Answer: C**



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71. One of the following helps in the recycling of materials in an ecosystem. This one is :

A. autotrophs

B. saprotrophs

C. omnivores

D. carnivores

**Answer: B**



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72. In the food chain comprising of a snake, grass, insect, and frog, the secondary consumer is :

- A. insect
- B. snake
- C. frog
- D. grass

**Answer: C**

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73. Sahara Desert was formed over a period of time due to one of the following uncontrolled activities of man :

- A. excessive cutting down of forest plants and trees

- B. excessive killing of large herbivores
- C. excessive killing of large carnivores
- D. excessive use of poisonous chemicals called herbicides

**Answer: C**

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**74.** The sea water contains water beetles, tadpole, fish and weeds.

- (a) Write a food chain comprising all the given organisms.
- (b) Which organisms in the food chain are (i) herbivore, and (ii) carnivores ?
- (c) Which organisms are (i) predators, and (ii) prey ?
- (d) Which organisms can trap solar energy to make food ?
- (e) Which organism is a secondary consumer ?

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**75.** The following is a food chain that ends with human :

plants → bee → human

(a) Explain how plants provide food for bees.

(b) How do bees provide food for humans ?

(c) How does this food chain differ from a usual food chain involving human such as : plants → goat → human ?

(d) Do you think that the food chain given in this question can really be regarded as a food chain ? Explain your answer.



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**76.** A food chain occurring in the sea which provides food for many people can be written as :

phytoplankton → zooplankton → X → Y

(a) Name one phytoplankton.

(b) Name two zooplanktons.

(c) What could be X ?



(d) Name the organism which Y could be.

(e) Which organism in the above food chain is a (i) primary consumer, and (ii) tertiary consumer ?

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77. What would happen to the number of rabbits and grass plants if the number of foxes :

(a) increased ?

(b) decreases ?

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78. What would happen to the number of grass plants and foxes if the number of rabbits :

(a) increased ?

(b) decreased ?

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79. (a) Match the terms given in column I with the terms given in column II and column III having the same meaning :

Column I	Column II	Column III
(i) secondary consumer	Herbivore	1st trophic level
(ii) Primary consumer	Autotroph	3rd trophic level
(iii) Producer	Carnivore	4th trophic level
(iv) Tertiary consumer	Large carnivore	2nd trophic level

(b) Give one example of a food chain having four organisms. Below each organism write the three appropriate terms from the part (a) above which you think it represents.

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80. What percentage of the solar energy is trapped and utilised by the plants ?

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**81.** What percentage of energy available at the producer level is transferred at successive trophic levels in a food chain ?

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**82.** Name the process in which a harmful chemical enters the food chain and gets concentrated at each trophic level.

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**83.** In a food chain consisting of grass, frog, bird and insects, where will the concentration of the harmful chemicals be maximum ?

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**84.** If a harmful chemical enters a food chain comprising cat, mice and plants, which one of these organisms is likely to have the maximum concentration of the harmful chemical in its body ?

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**85.** Which radiations are absorbed by ozone layer ?

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**86.** Name the man made component which is responsible for the depletion of ozone layer

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**87.** Name two waste materials which can be recycled.

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**88.** Name the process by which the volume of solid wastes can be reduced.

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**89.** If 5 joules of energy is available at producer level (plants), then how much energy will be transferred to the lion in the following food chain ?

Plants → Goat → Lion

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**90.** State whether the following statement is true or false :

Only 10 per cent of the light energy given by the sun is available for

transfer at each higher trophic level in a food chain.

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**91.** Where does all the energy in living organisms originate from ?

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**92.** Why are there rarely more than five links (or five organisms) in a food chain ?

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**93.** Name two predators of snakes in a food web operating in a forest ecosystem.

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**94.** Fill in the following blanks with suitable words :

(a) Ultraviolet rays can cause skin .....

(b) Pesticides enter the food chain at the ..... Level

(c) Grass → ..... → Human

(d) Lettuce → ..... → Fox

(e) Plants → Antelope → .....

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**95.** TEN PER CENT LAW

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**96.** Write the full form of CFC. Give its one harmful effect.

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**97.** Explain how, harmful ultraviolet radiations of sunlight are prevented from reaching the earth's surface.

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**98.** What are the causes of depletion of ozone layer ? Which diseases are likely to be caused if the ozone layer will become thinner ?

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**99.** Explain how harmful chemicals enter our bodies.

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**100.** If we excessively use pesticides to protect the crops from diseases, then it may cause long-term damage to mankind'. Justify



this statement.

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**101.** What is meant by biological magnification ? With the help of a food chain, explain how biological magnification of harmful chemicals can occur.

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**102.** What is meant by bioconcentration of pesticides ? Which common pesticide has accumulated in human body in considerable amounts ?

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**103.** What is garbage? What does garbage consist of ?



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#### 104. MODES OF WASTE DISPOSAL



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105. How can the wastes such as paper, plastic and metal objects be disposed of ?



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106. Give a method for the disposal of household wastes such as left-over food, fruit and vegetable peels, and leaves of potted plants.



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**107.** What is meant by incineration? For what purpose is it used ?

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**108.** How are most of the solid wastes in urban areas disposed of?

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**109.** State two advantages of using disposable paper cups over disposable plastic cups.

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**110.** What is sewage ? How is sewage disposed of ?

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## 111. EFFECTS OF OZONE DEPLETION

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112. What would happen if the ozone layer in the atmosphere completely disappears ?

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113. (a) With the help of a flow diagram, describe how energy from the sun flows through various levels.

(b) Explain why, the flow of energy in the ecosystem is said to be unidirectional.

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**114.** (a) What is ozone ? How is it formed ?

(b) How does ozone layer protect us from harmful effects in the environment ?

(c) What is UNEP ? What step has been taken by UNEP in 1987 to prevent too much damage to the ozone layer ?

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**115.** (a) How is energy introduced into the ecosystem ?

(b) Consider the following food chains :

(i) Plants → Mice → Snakes → Hawks

(ii) Plants → Mice → Hawks

If energy available at the producer level in both the food chains is 100 J, in which case will hawks get more energy as food and by how much ? Justify your answer.

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**116.** (a) Explain why, a food chain usually cannot have more than three or four steps.

(b) Calculate the amount of energy that will be available to big fish in the following food chain, if 10,000 J of energy is available to small algae from the sun :

Small algae → Zooplankton → Fish → Big fish



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**117.** What provides the energy which then flows through a food chain ?

A. glucose

B. oxygen

C. respiration

D. sunlight

**Answer: D**

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**118.** Which pollutant released into the air during refrigeration and airconditioning is the greatest contributor to the depletion of ozone layer ?

- A. BHC
- B. DDT
- C. CFC
- D. UNEP

**Answer: C**

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**119.** In the given food chain, suppose the amount of energy at fourth trophic level is 5 kJ, what will be the energy available at the producer level ?

Grass → Grasshopper → Frog → Snake → Hawk

- A. 500 kJ
- B. 50 kJ
- C. 5000 kJ
- D. 5 kJ

**Answer: C**

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**120.** Which of the following limits the number of trophic levels in a food chain ?



- A. insufficient food supply from producer level
- B. decrease in energy at higher trophic levels
- C. increase in the number of organisms at higher trophic levels
- D. accumulation of harmful chemicals at higher trophic levels

**Answer: B**



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**121.** What percentage of sun's energy falling on the leaves of green plants is utilised by the plants in the process of photosynthesis and stored as chemical energy of food ?

- A. 99 per cent
- B. 10 per cent
- C. 1 per cent
- D. 20 per cent

**Answer: C**

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**122.** The depletion of ozone layer in the upper atmosphere is mainly due to the emission of :

- A. unburnt hydrocarbons
- B. chlorofluorocarbons
- C. greenhouse gases
- D. ultraviolet radiations

**Answer: B**

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**123.** In an ecosystem, the 10 % of energy available for transfer from one trophic level to the next is in the form of

- A. heat energy
- B. light energy
- C. chemical energy
- D. mechanical energy

**Answer: C**

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**124.** Flow of energy in an ecosystem is always

- A. unidirectional
- B. bidirectional
- C. cyclic

D. multidirectional

**Answer: A**

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**125.** Excessive exposure of human to UV-rays results in

(i) damage to immune system, (ii) damage to lungs

(iii) skin cancer, (iv) peptic ulcers

A. (i) and (ii)

B. (ii) and (iv)

C. (i) and (iii)

D. (iii) and (iv)

**Answer: C**

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**126.** Which of the following gets the minimum energy through the food chain in an ecosystem?

- A. carnivore
- B. large carnivore
- C. producer
- D. herbivore

**Answer: B**



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**127.** A food chain comprises of cat, seed-eating bird, plants, and dog. The organism which will have the maximum concentration of harmful pesticides coming through the food chain is most likely to be :

A. cat

B. plants

C. dog

D. seed-eating bird

**Answer: C**



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**128.** An aquatic food chain comprises of the organisms like tadpoles, weeds, fish and waterbeetles. The organism which gets the minimum energy through this food chain is :

A. water beetles

B. tadpoles

C. weeds

D. fish

**Answer: D**

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**129.** Most of the water surface of a lake is covered with algae. This algae is part of the food chain which also includes small fish, bird, larvae and big fish. Which of the following will obtain the maximum energy ?

A. big fish

B. bird

C. larvae

D. small fish

**Answer: C**

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**130.** If the energy available at the producer level in a food chain is 150 J, how much energy will be transferred to : tertiary consumer ?

- A. 15 J
- B. 10 J
- C. 1.50 J
- D. 0.15 J

**Answer: D**



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**131.** If the energy transferred to a tertiary consumer in a food chain is 10 J, how much energy was available to the primary consumer ?

- A. 100 J
- B. 500 J



C. 1000 J

D. 5000 J

**Answer: C**



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**132.** In addition to wheat plants, a crop field ecosystem has organisms such as snake, peacock, eagle and mice. If the wheat plants are sprayed with pesticides periodically, which of the following will have the minimum concentration of pesticides in the body ?

A. snake

B. eagle

C. mice

D. peacock

**Answer: C**

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**133.** Which of the following is the best method to dispose of biological wastes from hospitals ?

- A. landfill
- B. recycling
- C. incineration
- D. composting

**Answer: C**

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**134.** In an ecosystem :

- (i) the flow of energy is unidirectional
- (ii) the flow of materials is unidirectional
- (iii) the flow of materials is cyclic
- (iv) the flow of energy is cyclic.

- A. (i) and (ii)
- B. (ii) and (iii)
- C. (i) and (iv)
- D. (i) and (iii)

**Answer: D**



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**135.** The ten per cent law is associated with

- A. transfer of energy from various trophic levels to decomposers  
in a food chain
- B. transfer of ATP energy into muscular energy
- C. transfer of chemical energy from one organisms to another
- D. transfer of sun's energy to the organisms called producers.

**Answer: C**



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**136.** The harmful chemical which is accumulating in human beings through food chain is :

- A. benzenehexachloride
- B. dichlorodiphenyltrichloroethane
- C. chlorofluorocarbon

D. abscisic acid

**Answer: B**

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**137.**  $O_2$  is converted into  $O_3$  by the action of :

- A. infrared radiations
- B. ultraviolet radiations
- C. gamma radiations
- D. cosmic radiations

**Answer: B**

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**138.** Which of the following cannot be added in a composting pit to prepare compost ?

- A. sunflower plants
- B. fruit and vegetable peels
- C. flowers of plastic
- D. red worms

**Answer: C**

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**139.** The gas A is used by most of the animals to obtain energy from food by the process of respiration. When A is acted upon by radiation X, it gets converted into another gas B which is an allotrope of A but poisonous when inhaled. B forms a kind of layer C in the upper atmosphere which absorbs radiations X coming from a

source Y and prevent them from reaching the earth. Some chemicals Z released from the various devices on the earth are destroying the layer C slowly. In fact, a hole has already been formed in layer C over the area D of the earth.

- (a) What are gases (i) A, and (ii) B? Write their molecular formulae.
- (b) Name the layer C.
- (c) What are (i) X, (ii) Y, (iii) Z ?
- (d) Name the area D.
- (e) Name any two human ailments which may be caused by X.



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**140.** The surface of water in a lake appears green due to a layer of tiny free-floating organisms X on its surface. The lake water also contains organisms like water beetle, fish and tadpole. The sun shines over the lake water and provides energy for the functioning of this lake ecosystem.

- (a) What could organisms X be ?

- (b) Write a food chain comprising of all the four organisms mentioned.
- (c) What is the general name of the food chains like the one written above ?
- (d) Name (i) secondary consumer (ii) producer (iii) tertiary consumer, and (iv) primary consumer, in the above food chain.
- (e) If the tertiary consumer gets 0.2 J of energy from the secondary consumer, then how much energy was radiated by the sun to the producer ?

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**141.** A forest ecosystem having a lot of green plants has some foxes, lions and rabbits in it .

- (a) Write a food chain comprising all the four organisms mentioned above.
- (b) Name (i) one herbivore, and (ii) two carnivores, in this food chain.
- (c) Name the link which is a predator as well as a prey.



(d) Name (i) second trophic level, and (ii) third trophic level.

(e) Which link of this food chain can feed on second trophic level as well as third trophic level, independently ?

(f) If the sun provides 1000 J of energy to the plants, then how much energy will be transferred to fox through the food chain.



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**142.** A food chain consists of fish, larvae , phytoplanktons and birds. The level of pesticides in water in which the fish, larvae and phytoplanktons live is quite high.

(a) In which organisms the pesticides enter from the polluted water ? What is the level of organisms known as ?

(b) Which organism will have the maximum amount of pesticides accumulated through the food chain ? What is this process known as ?

(c) Write the food chain comprising all the organisms mentioned above.

(d) Which other organism you could write in place of bird in the above food chain ?

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**143.** Why are some substances biodegradable and some non-biodegradable?

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**144.** Give any two ways in which biodegradable substances would affect the environment

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**145.** Give any two ways in which non-biodegradable substances would affect the environment



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**146.** What are trophic levels ? Give an example of a food chain and state the different trophic levels in it.



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**147.** What is the role of decomposers in the ecosystem?



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**148.** What is ozone and how does it affect any ecosystem?



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**149.** How can you help in reducing the problem of waste disposal?

Give any two methods



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**150.** Which of the following groups contain only biodegradable items?

- A. Grass, flowers and leather
- B. Grass, wood and plastic
- C. Fruit peels, cake and lime juice
- D. Cake, wood and grass

**Answer:** (a), (c) and (d)



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**151.** Which of the following constitute a food-chain?

- A. Grass. Wheat and mango
- B. Grass, goat and human
- C. Grass, cow and elephant
- D. Grass, fish and goat

**Answer: b**



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**152.** Which of the following are environment-friendly practices?

- A. Carrying cloth bags to put purchases in while shopping
- B. Switching off unnecessary lights and fans
- C. Walking to school instead of getting your mother to drop you on her scooter

D. All of the above

**Answer: All of the above**

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**153.** What will happen if we kill all the organisms in one trophic level?

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**154.** Will the impact of removing all the organisms in a trophic level be different for different trophic levels? Can the organisms of any trophic level be removed without causing any damage to the ecosystem?

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**155.** What is biological magnification? Will the levels of this magnification be different at different levels of the ecosystem?



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**156.** What are the problems caused by the non-biodegradable wastes that we generate?



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**157.** If all the waste we generate is biodegradable, will this have no impact on the environment?



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**158.** Why is damage to the ozone layer a cause for concern? What steps are being taken to limit this damage?

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**159.** What changes can you make in your habits to become more environment-friendly?

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**160.** What would be the advantages of exploiting resources with short-term aims?

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**161.** How would these advantages differ from the advantages of using a long-term perspective in managing our resources ?

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**162.** Why do you think that there should be equitable distribution of resources? What forces would be working against an equitable distribution of our resources?

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**163.** Why should we conserve forests and wildlife?

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**164.** Suggest some approaches towards the conservation of forests.

## Questions Based On High Order Thinking Skills

1. Some hunters are roaming in the lush green forest of Africa. They spot a deer and kill it. They decide to roast the deer there and then eat it. When the hunters had just finished enjoying the feast of roasted deer, a lion attacks them. The lion kills one of the hunters and eats his flesh.

- (a) Write a food chain which provides food to lion in this case.
- (b) Which animal (other than deer) the lion could look for food if he did not get the hunter as prey ?
- (c) Which other animal in the forest could have been in place of lion ?
- (d) How does the above food chain differ from the food chain such

as : plants → goat → man ?



Humans are at the end of most of the food chains in which they occur (as this picture of man taking home a fish for food shows)



But sometimes luck runs out and humans are forced to become food for others (as this picture of lion eating a man shows). Here the human is no longer at the end of food chain. Look at the miracle of GOD : hunter has become hunted !



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2. Every household produces a lot of material A daily. In one of the methods of disposal B, material A is burned at a very high temperature of about  $1000^{\circ}\text{C}$  in a structure called C. During this process, the organic matter present is removed as D and E whereas F is left behind (which can be dumped in a landfill site).

- What is material A ?
- Name the method of disposal B.
- What is structure C known as ?
- What are (i) D (ii) E, and (iii) F ?

(e) This method is especially suitable for the disposal of materials produced by certain institutions. Name such institutions.

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### Long Answer Type Questions

1. (a) Name and state the law given by Lindeman which tells us how much energy entering a particular trophic level of organisms is available for transfer to the next higher trophic level.

(b) How much energy will be available to hawks in the food chain comprising hawk, snake, paddy and mice, if 10,000 J of energy is available to paddy from the sun ?

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