Chapter - 7
Diversity in Living Organisms

Multiple Choice Questions

1. Find out incorrect sentence
(a) Protista includes unicellular eukaryotic organisms
(b) Whittaker considered cell structure, mode and source of nutrition for classifying the organisms in five kingdoms
(c) Both Monera and Protista may be autotrophic and heterotrophic
(d) Monerans have well defined nucleus

Soln:

Answer is (d) Monerans have well defined nucleus

Explanation:

Monerans include single celled prokaryotic bacteria, actinomycetes and photosynthetic blue green algae. Monerans don't have well defined nucleus and cell organelles.

2. Which among the following has specialised tissue for conduction of water?
(i) Thallophyta
(ii) Bryophyta
(iii) Pteridophyta
(iv) Gymnosperms

(a) (i) and (ii)
(b) (ii) and (iii)
(c) (iii) and (iv)
(d) (i) and (iv)

Soln:

Answer is (c) (iii) and (iv)

Explanation:

Thallophytes and Bryophytes don't have specialized tissues for water conduction where as Pteridophytes and Gymnosperms have specialized tissues for conduction of water.

3. Which among the following produce seeds?
(a) Thallophyta
(b) Bryophyta
(c) Pteridophyta
(d) Gymnosperms

Soln:

Answer is (d) Gymnosperms

Explanation:

Gymnosperms and Angiosperms are the flower bearing plants and they produce seeds. Rest other types of plants don not bear flowers and they do not produce seeds.

4. Which one is a true fish?
(a) Jellyfish
(b) Starfish
(c) Dogfish
(d) Silverfish

Soln:

Answer is (c) Dogfish

Explanation:

Jelly fish is a coelenterate, starfish belongs to Echinodermata and solver fish are Arthropod.

5. Which among the following is exclusively marine?
(a) Porifera
(b) Echinodermata
(c) Mollusca
(d) Pisces

Soln:

Answer is (b) Echinodermata

Explanation:

Echinodermata are exclusively found in marine environment whereas Porifera, Mollusc's and Pisces cab be found in both marine and fresh water.

6. Which among the following have open circulatory system?
(i) Arthropoda
(ii) Mollusca
(iii) Annelida
(iv) Coelenterata

(a) (i) and (ii)
(b) (iii) and (iv)
(c) (i) and (iii)
(d) (ii) and (iv)

Soln:

Answer is (a) (i) and (ii)

Explanation:

Annelida and Coelenterata have closed circulatory system where as Arthoropods and Mollusca have open circulatory system.

7. In which group of animals, coelom is filled with blood?
(a) Arthropoda
(b) Annelida
(c) Nematoda
(d) Echinodermata

Soln:

Answer is (a) Arthropoda

Explanation:
Annelida, Nematoda and Echinodermata don't have blood and Athropods coelom is filled with blood.

8. Elephantiasis is caused by
(a) Wuchereria
(b) Pinworm
(c) Planarians
(d) Liver flukes

Soln:

Answer is (a) Wuchereria

Explanation:

Wuchereria is a human parasite which causes Elephantiasis. Elephantiasis is spred through mosquitos.

Pinworm is a common intestinal parasite and causes enterobiasis

Planarians are non parasitic flatworms

Liver flueks are flatworms that causes liver rot in Humans.

9. Which one is the most striking or (common) character of the vertebrates?
(a) Presence of notochord
(b) Presence of triploblastic condition
(c) Presence of gill pouches
(d) Presence of coelom

Soln:

Answer is (a) Presence of notochord

Explanation:

Presence of triploblastic condition, Presence of gill pouches , Presence of coelom are found in both vertebrates and in-vertebrates but Notochord is exclusively present in vertebrates.

10. Which among the following have scales?
(i) Amphibians
(ii) Pisces
(iii) Reptiles
(iv) Mammals

(a) (i) and (iii)
(b) (iii) and (iv)
(c) (ii) and (iii)
(d) (i) and (ii)

Soln:

Answer is (c) (ii) and (iii)

Explanation:

Amphibians and mammals don’t have scales on their body whereas Pisces and reptiles have scales on their body.

11. Find out the false statement
(a) Aves are warm blooded, egg laying and have four chambered heart
(b) Aves have feather covered body, fore limbs are modified as wing and breathe through lungs
(c) Most of the mammals are viviparous
(d) Fishes, amphibians and reptiles are oviparous

Soln:

Answer is (d) Fishes, amphibians and reptiles are oviparous

Explanation:

Some fishes are vivaporous but Amphibians show external fertilization they can neither be kept under oviparous nor be viviparous hence statement (d) is wrong.

12. Pteridophyta do not have
(a) root
(b) stem
(c) flowers
(d) leaves

Soln:

Answer is (c) flowers

13. Identify a member of porifera
(a) Spongilla
(b) Euglena
(c) Penicillium
(d) Hydra

Soln:

Answer is (a) Spongilla

Explanation:

Euglena is a protozoan.
Pencillium is a fungi
Hydra is a Coelenterata

14. Which is not an aquatic animal?
(a) Hydra
(b) Jelly fish
(c) Corals
(d) Filaria

Soln:

Answer is (d) Filaria

Explanation:

Filaria is a disease caused by Wuchereria. It is spread by Mosquitos.

15. Amphibians do not have the following
(a) Three chambered heart
(b) Gills or lungs
(c) Scales
(d) Mucus glands

Soln:

Answer is (c) Scales

Explanation:

Amphibians have 3 chambered heart. Lungs are present in Adults and Gills are present in tadpoles. Mucus glands are present on the skin of Amphibians.

16. Organisms without nucleus and cell organelles belong to
(i) fungi
(ii) protista
(iii) cyano bacteria
(iv) archae bacteria

(a) (i) and (ii)
(b) (iii) and (iv)
(c) (i) and (iv)
(d) (ii) and (iii)

Soln:

Answer is (b) (iii) and (iv)

Explanation:

Cyanobacteria and archae bacteria are prokaryotes and they do not have well defined nucleus and cell organelles. Fungi and Protista are Eukaryote which posses Cell organelles and nucleus.

17. Which of the following is not a criterion for classification of living organisms?
(a) Body design of the organism
(b) Ability to produce one's own food
(c) Membrane bound nucleus and cell organelles
(d) Height of the plant

Soln:

Answer is (d) Height of the plant

Explanation:

Height of a plant is an attribute which is related to bushes and trees which are part of Kingdom Plantae hence height of the trees cannot be a criterion for classification of living organisms.

18. The feature that is not a characteristic of protochordata?
(a) Presence of notochord
(b) Bilateral symmetry and coelom
(c) Jointed legs
(d) Presence of circulatory system

Soln:

Jointed legs is a characteristic feature of Arthropods hence the answers is C)

Protochordata are triploblastic with bilaterally symmetric body and coelm. They show notochord at some stage of life and they are marine living.

19. The locomotory organs of Echinodermata are
(a) tube feet
(b) muscular feet
(c) jointed legs
(d) parapodia

Soln:

Answer is (a) tube feet

20. Tube feet in Echinodermata helps in locomotion and respiration

20. Corals are
(a) Poriferans attached to some solid support
(b) Cnidarians, that are solitary living
(c) Poriferans present at the sea bed
(d) Cnidarians that live in colonies

Soln:

Answer is (d) Cnidarians that live in colonies

21. Who introduced the system of scientific nomenclature of organisms
(a) Robert Whittaker
(b) Carolus Linnaeus
(c) Robert Hooke
(d) Ernst Haeckel

Soln:

Answer is (b) Carolus Linnaeus

Explanation:

Carolus Linnaeus introduced binomial nomenclature which is simplified method of naming organisms. Binomial nomenclature gives each organism a scientific name that has two parts. First part is a Genus and second part is Species.

22. Two chambered heart occurs in
(a) crocodiles
(b) fish
(c) aves
(d) amphibians

Soln:

Answer is (b) fish

Explanation:

Amphibians have 3 chambered heart. Aves and crocodile have 3 chambered heart.

23. Skeleton is made entirely of cartilage in
(a) Sharks
(b) Tuna
(c) Rohu
(d) None of these

Soln:

Answer is (a) Sharks

Explanation:

Sharks are cartilaginous fish whereas Tuna and Rohu are bony fishes.

24. One of the following is not an Annelid
(a) Nereis
(b) Earthworm
(c) Leech
(d) Urchins

Soln:

Answer is (d) Urchins

Explanation:

Urchins are Coelenterates

25. The book Systema Naturae was written by
(a) Linnaeus
(b) Haeckel
(c) Whittaker
(d) Robert Brown

Soln:

Answer is (a) Linnaeus

26. Karl Von Linne was involved with which branch of science?
(a) Morphology
(b) Taxonomy
(c) Physiology
(d) Medicine

Soln:

Answer is (b) Taxonomy

27. Real organs are absent in
(a) Mollusca
(b) Coelenterata
(c) Arthropoda
(d) Echinodermata

Soln:

Answer is (b) Coelenterata

Explanation:

Coelenterates have tissue level organization hence they lack real organs.

28. Hard calcium carbonate structures are used as skeleton by
(a) Echinodermata
(b) Protochordata
(c) Arthropoda
(d) Nematoda

Soln:

(a) Echinodermata

Explanation:

Echinodermata are spiny skinned organisms which are exclusively free-living marine animals. They are triploblastic and have a coelomic cavity. They use a unique water-driven tube from moving and they contain calcium carbonate structres which are used as skeleton.

29. Differentiation in segmental fashion occurs in
(a) Leech
(b) Starfish
(c) Snails
(d) Ascaris

Soln:

Answer is (a) Leech

Explanation:

Leech belongs to Annelids and it shows metameric body segmentation.

30. In taxonomic hierarchy family comes between

(a) Class and Order
(b) Order and Genus
(c) Genus and Species
(d) Division and Class

Soln:

Answer is (b) Order and Genus

Explanation:

Taxonomic hierarchy

Species
↑
Genus
↑
Family
↑
Order
↑
Class
↑
Phylum
↑
Kingdom

31. 5-Kingdom classification has given by
(a) Morgan
(b) R. Whittaker
(c) Linnaeus
(d) Haeckel

Soln:

Answer is (b) R. Whittaker

Explanation:

R. Whittaker proposed 5 kingdom classification which includes Monera, Protista, Fungi, Plantae and Animalia.

32. Well defined nucleus is absent in
(a) blue green algae
(b) diatoms
(c) algae
(d) yeast

Soln:

Answer is (a) blue green algae

Explanation:

Blue green algae belongs to prokaryotes which do not have well defined nucleus and cell organelles.

33. The 'Origin of Species' is written by
(a) Linnaeus
(b) Darwin
(c) Hackel
(d) Whittaker

Soln:

Answer is (b) Darwin

34. Meena and Hari observed an animal in their garden. Hari called it an insect while Meena said it was an earthworm. Choose the character from the following which confirms that it is an insect.
(a) Bilateral symmetrical body
(b) Body with jointed legs
(c) Cylindrical body
(d) Body with little segmentation

Soln:
Answer is Body with jointed legs

Explanation:

Body with jointed legs is a characteristic feature of Kingdom Arthropoda and all the insects belong to this kingdom.

Short Answer Questions

35. Write true (T) or false (F)
(a) Whittaker proposed five kingdom classification.
(b) Monera is divided into Archaebacteria and Eubacteria.
(c) Starting from Class, Species comes before the Genus.
(d) Anabaena belongs to the kingdom Monera.
(e) Blue green algae belongs to the kingdom Protista.
(f) All prokaryotes are classified under Monera.

Soln:

Answers
a-True
b- True
c- False
d-True
e-False
f- True

Explanation:

c) Taxonomic hierarchy

Species
↑
Genus
↑
Family
↑
Order
↑
Class
↑
Phylum
↑
Kingdom

e) Blue green algae belonged to Kingdom Monera

36. Fill in the blanks
(a) Fungi shows————mode of nutrition.
(b) Cell wall of fungi is made up of ————.
(c) Association between blue green algae and fungi is called as————.
(d) Chemical nature of chitin is ————.
(e) ————has smallest number of organisms with maximum number of similar characters
(f) Plants without well differentiated stem, root and leaf are kept in ————.
(g) ————are called as amphibians of the plant kingdom

Soln:

(a) Fungi shows **Saprophytic** mode of nutrition.
(b) Cell wall of fungi is made up of **Chitin.**
(c) Association between blue green algae and fungi is called as **Lichens.**
(d) Chemical nature of chitin is **Carbohydrate.**
(e) **Species** has smallest number of organisms with maximum number of similar characters.
(f) Plants without well differentiated stem, root and leaf are kept in **Thallophyta.**
(g) **Bryophytes** are called as amphibians of the plant kingdom.

37. You are provided with the seeds of gram, wheat, rice, pumpkin, maize and pea. Classify them whether they are monocot or dicot.

Soln:

Gram-Dicot
Wheat-Monocot
Rice- Monocot
Pumpkin- Dicot
Maize- Monocot
Pea—Dicot

38. Match items of column (A) with items of column (B)

(A)	**(B)**
(a) Naked seed	**(A) Angiosperms**
(b) Covered seed	**(B) Gymnosperms**
(c) Flagella	**(C) Bryophytes**
(d) Marchantia	**(D) Euglena**
(e) Marsilea	**(E) Thallophyta**
(f) Cladophora	**(F) Pteridophyta**
(g) Penicillium	**(G) Fungi**

Soln:

(A)	(B)
(a) Naked seed	(B) Gymnosperms
(b) Covered seed	(A) Angiosperms
(c) Flagella	(D) Euglena
(d) Marchantia	(C) Bryophytes
(e) Marsilea	(F) Pteridophyta
(f) Cladophora	(E) Thallophyta
(g) Penicillium	(G) Fungi

39. Match items of column (A) with items of column (B)

(A)	**(B)**
(a) Pore bearing animals	**(A) Arthropoda**
(b) Diploblastic	**(B) Coelenterata**
(c) Metameric segmentation	**(C) Porifera**
(d) Jointed legs	**(D) Echinodermata**
(e) Soft bodied animals	**(E) Mollusca**
(f) Spiny skinned animals	**(F) Annelida**

Soln:

(A)	(B)
(a) Pore bearing animals	(C) Porifera
(b) Diploblastic	(B) Coelenterata
(c) Metameric segmentation	(F) Annelida
(d) Jointed legs	(A) Arthropoda
(e) Soft bodied animals	(E) Mollusca
(f) Spiny skinned animals	(D) Echinodermata

40. Classify the following organisms based on the absence/presence of true coelom (i.e., acoelomate, pseudocoelomate and coelomate)

Spongilla, Sea anemone, Planaria, Liver fluke
Wuchereria, Ascaris, Nereis, Earthworm,
Scorpion, Birds, Fishes, Horse

Soln:

Spongilla- acoelomate
Sea anemone- acoelomate
Planaria- acoelomate
Liver fluke- acoelomate
Wuchereria-pseudocoelomate
Ascaris-pseudocoelomate
Nereis- coelomate
Earthworm- coelomate
Scorpion- coelomate
Birds- coelomate
Fishes- coelomate
Horse- coelomate

41. Endoskeleton of fishes are made up of cartilage and bone; classify the following fishes as cartilagenous or bony
Torpedo, Sting ray, Dog fish,
Rohu, Angler fish, Exocoetus

Soln:

Torpedo- cartilagenous
Sting ray- cartilagenous
Dog fish- cartilagenous
Rohu- bony
Angler fish- bony
Exocoetus- bony

42. Classify the following based on number of chambers in their heart. Rohu, Scoliodon, Frog, Salamander, Flying lizard, King Cobra, Crocodile, Ostrich, Pigeon, Bat, Whale.

Soln:

Rohu- 2 chambered

Scoliodon-2 chambered

Frog-3 chambered

Salamander-3 chambered

Flying lizard-3 chambered

King Cobra-3 chambered

Crocodile-4 chambered

Ostrich-4chambered

Bat-4chambered

Whale-4 chambered

43. Classify Rohu, Scolidon, Flying lizard, King Kobra, Frog, Salamander, Ostrich, Pigeon, Bat, Crocodile and Whale into the cold blooded/warm blooded animals.

Soln:

Rohu- Cold Blooded
Scolidon- Cold Blooded
Flying lizard- Cold Blooded
King Kobra- Cold Blooded
Frog- Cold Blooded
Salamander- Cold Blooded
Ostrich- Warm Blooded
Pigeon- Warm Blooded
Bat- Warm Blooded
Crocodile- Cold Blooded
Whale- Warm Blooded

44. Name two egg laying mammals.

Soln:

Billed platypus and **the echidna** are two egg laying mammals

45. Fill in the blanks
(a) Five kingdom classification of living organisms is given by ———.
(b) Basic smallest unit of classification is ———.
(c) Prokaryotes are grouped in Kingdom ———.
(d) Paramecium is a protista because of its ———.
(e) Fungi do not contain ———.
(f) A fungus ——— can be seen without microscope.
(g) Common fungi used in preparing the bread is ———.
(h) Algae and fungi form symbiotic association called ———.

Soln:

(a) Five kingdom classification of living organisms is given by **Robert Whittaker**.
(b) Basic smallest unit of classification is **Species**.
(c) Prokaryotes are grouped in Kingdom **Monera**.
(d) Paramecium is a protista because of its **Eukaryotic unicellular morphology**.
(e) Fungi do not contain **Chlorophyll**.
(f) A fungus **Mushroom** can be seen without microscope.
(g) Common fungi used in preparing the bread is **Yeast**.
(h) Algae and fungi form symbiotic association called **Lichens**.

46. Give True (T) and False (F)
(a) Gymnosperms differ from Angiosperms in having covered seed.
(b) Non flowering plants are called Cryptogamae.
(c) Bryophytes have conducting tissue.
(d) Funaria is a moss.
(e) Compound leaves are found in many ferns.
(f) Seeds contain embryo.

Soln:

Answers-

a) **False**
b) **True**
c) **True**
d) **True**
e) **True**

47. Give examples for the following

(a) Bilateral, dorsiventral symmetry is found in———.
(b) Worms causing disease elephantiasis is———.
(c) Open circulatory system is found in———where coelomic cavity is filled with blood.
(d) ———are known to have pseudocoelom.

Soln:

(a) Bilateral, dorsiventral symmetry is found in **Liver Fluke.**
(b) Worms causing disease elephantiasis is **Filarial worm.**
(c) Open circulatory system is found in **Arthropods** where coelomic cavity is filled with blood.
(d) **Nematodes** are known to have pseudocoelom.

48. Label a,b,c and d. given in Fig. 7.1 Give the function of (b)

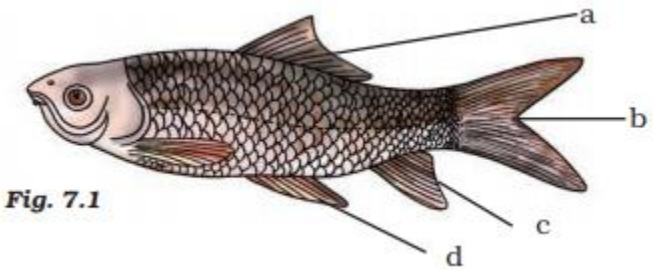
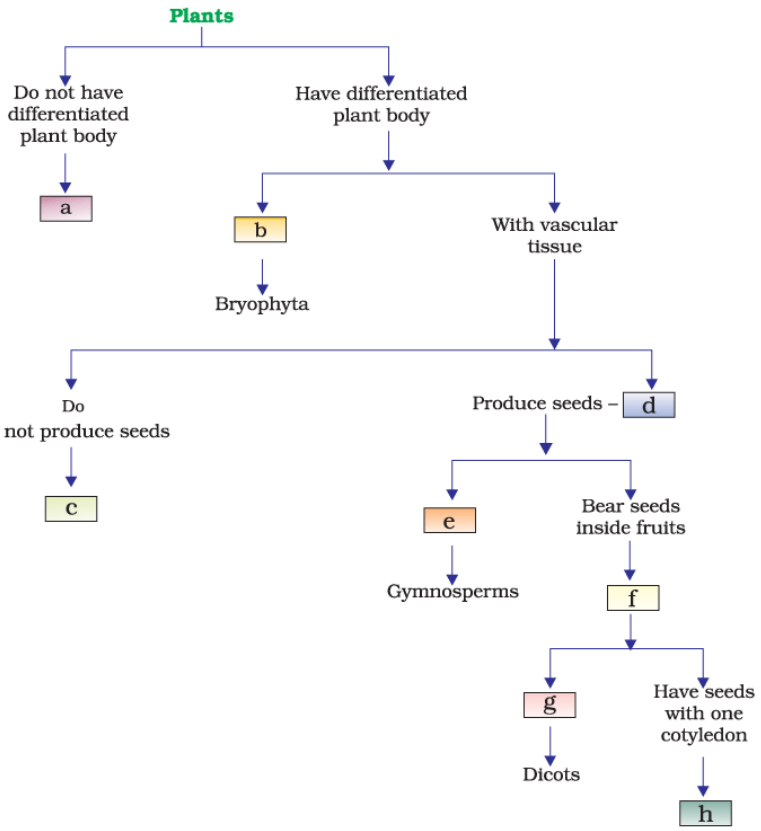


Fig. 7.1

Soln:

a) Dorsal fin
b) Caudal fin
c) Pelvic fin
d) Pectoral fin

49. Fill in the boxes given in Fig. 7.2 with appropriate characteristics/plant group (s)



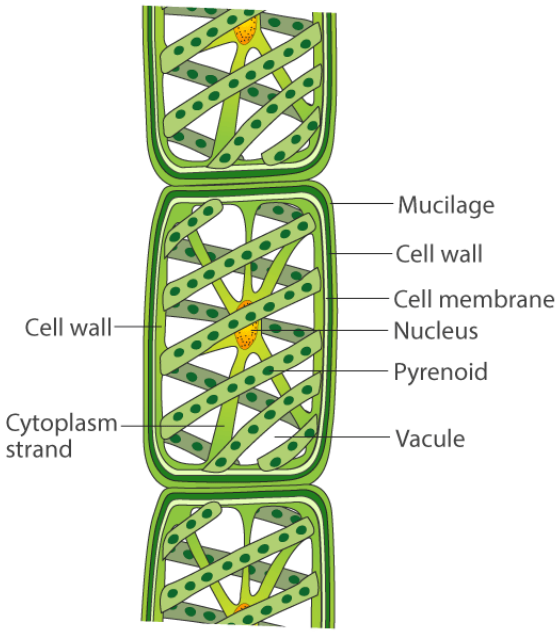
Soln:

a) Thallophyta
b) Vascular tissue without specialization
c) Pteridopphyta
d) Phanerogams
e) Bare naked seeds
f) Angiosperms
g) Seeds with two cotyledons
h) Monocots

50. Write names of few thallophytes. Draw a labelled diagram of Spirogyra.

Soln:

Ulothrix, Spirogyra, Cladophara, Ulva and Chara are few of the examples for Thallophytes



51. Thallophyta, bryophyta and pteridophyta are called as 'Cryptogams'. Gymnosperms and Angiosperms are called as 'phanerogams'. Discuss why? Draw one example of Gymnosperm.

Soln:

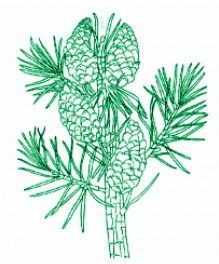
Thallophyta, bryophyta and pteridophyta are called as 'Cryptogams' because the reproductive organs of plants in all these three groups are very inconspicuous, and they are therefore called 'cryptogams', or 'those with hidden reproductive organs'. In these plants seeds are absent.

Example : Pinus

Gymnosperms and Angiosperms are called as 'phanerogams' these are the plants plants with well differentiated reproductive parts that ultimately make seeds .

Example: Cycas

Cycas



Pinus

52. Define the terms and give one example of each
(a) Bilateral symmetry
(b) Coelom
(c) Triploblastic

Soln:

a) Organism with body shapes that are mirror images along a middle line. The internal organs, however, are not necessarily distributed symmetrically. Example: Liver fluke
b) Coelem is a body cavity filled with fluid. Fluid runs the complete length of vertebrates to divide the body of an organism into inner tube and outer tube is called Coelom Example : Butterfly
c) Animals that have 3 embryonic cell layers from which differentiated tissues are made are called triploblastic organisms. Ex: Star Fish

53. You are given leech, Nereis, Scolopendra, prawn and scorpion; and all have segmented body organisation. Will you classify them in one group? If no, give the important characters based on which you will separate these organisms into different groups.

Soln:

The organisms given in the question does not belong to a common group of organisms. Leech and Nereis are annelids but Scolopendra, prawn and scorpion are arthropods

Annelids have metamerically segmented body. In Metamerically segmented body body is divided into many segments internally by septa. From head to tail body segments are lined up one after the other. Arthropoda have jointed legs and open circulating system.

54. Which organism is more complex and evolved among Bacteria, Mushroom and Mango tree. Give reasons.

Soln:

Among Bacteria, Mushroom and Mango tree; Mango tree is the complex and evolved organism Because it is Eukaryotic, multicellular, autotrophic terrestrial plant. It is an angiosperm and its seeds are covered. It reproductive organs and accumulated in the flower hence it is called as a flowering plant.

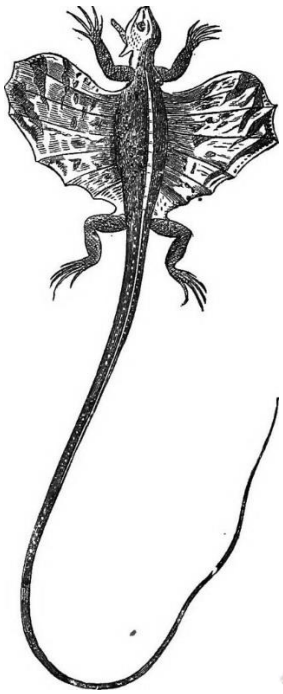
Bacteria are prokaryotic unicellular organisms and fungi are heterotrophic thallophytes with no body

differentiation. Hence mango tree is evolved more than bacteria and fungi.

55. Differentiate between flying lizard and bird. Draw the diagram.

Soln:

Sl No	Flying lizard is a reptile	Bird belongs to class-Aves.
1	Ectothermic or cold-blooded, terrestrial or aquatic vertebrates.	Warm-blooded, tetrapodous vertebrates (birds) with various flight adaptations. Size ranges from smallest humming bird to largest ostrich.
2	Body covered with dry water-proof skin having horny epidermal scales or dermal acute plates.	Persist on the feet but feathers cover most of the body.
3	Body varies in form and is usually divided into head, neck, trunk and tail.	Spindle or boat-shaped body is divisible into head, neck, trunk and tail.
4	Limbs are tetrapodous pentadacytle (five-toed) type; with clawed digits (limbs are absent in snakes and some lizards).	Fore-limbs modified into wings for flight, Hind-limbs bear four clawed digits and are adapted for walking, perching, or swimming.
5	Teeth are present in all reptiles except in tortoises and turtles.	Narrow jaws form a horny beak, which is modified for different purpose. Teeth are absent.
6	Respiration is through lungs only. No gills are present.	They breathe through lungs.
7	Heart is three chambered and is divided into two auricles and an incompletely divided ventricle. Only crocodiles have four-chambered heart.	Four-chambered heart with two auricles and two ventricles.
8	Fertilisation is internal. Most reptiles are ' oviparous and lay their eggs with tough covering and do not need to lay their eggs in water. A few reptiles are viviparous, (e.g., lizards and snakes). No aquatic larval stage.	Fertilization is internal. They are oviparous and lay large, yolk-laden eggs having hard shell.



Flying Lizard **Sparrow**

56. List out some common features in cat, rat and bat

Soln:

- All are Eukaryotes
- They are multicellular
- They are heterotrophic in nature
- All Have Notochord
- Presence of four chambered heart
- have a dorsal nerve cord
- All are triploblastic
- have paired gill pouches
- They are coelomate.

57. Why do we keep both snake and turtle in the same class?

Soln:

Because both have certain common feature which are listed below.

- These animals are cold-blooded,
- They have scales and breathe through lungs.
- Both of them have a three-chambered heart
- Both of them lay eggs with tough coverings and do not need to lay their eggs in water