ANIMAL DIVERSITY

+ First of all "Aristotle" proposed a classification of animals on the basis of presence or absence of red blood (RBC).



- + "Pliny" classified animals into two groups -
- (i) Flying Animals
- (ii) Non Flying Animals

PHYLUM -PORIFERA

Common name - "the sponges"

- 1. They live mostly in the sea (marine) but a few occur in fresh water.
- 2. They have cellular level organization with two germ layer i.e. diploblastic animals.
- **3**. They are sessile or stationary.
- 4. Most of sponges are asymmetrical, some are radially symmetrical.
- 5. Sponges have pores on body and these pores are called **ostia**. Ostia open into a **canal system** and canal opens to outside by a large opening ; named **osculum** present at top, cavity known as spongocoel.
- e.g. Sycon (Scypha) Urn sponge

Euplectella - Venus's flower basket

Euspongia - bath sponge

Spongilla

PHYLUM - CNIDARIA OR COELENTERATA

- 1. Aquatic animals mostly marine, some of live in colonies (corals) while other live solitary.
- 2. Body is radially symmetrical.
- 3. These are the first multicellular animals having tissue level organization with distinct labour of division.
- **4.** Body has a central gastrovascular cavity- **coelentron** which lacks anus but has mouth which is surrounded by **tentacles**.
- 5. The body bears specialized cells-cnidoblasts, bearing stinging cell organelles called 'nematocysts'.
- 6. Nematocysts serve the function paralysing the prey by injecting poison.
- 8. Nervous system is primitive, has only network of nerve cells (nerve net).
- 9. Coelenterates show two main forms, the polyp (asexual) and the medusae. (sexual)

e.g.	Hydra	Obelia
	<i>Physalia</i> -Portugese man of war	Aurelia -jelly-fish
	<i>Metridium-</i> sea-anemone	Corallium- red coral

PHYLUM PLATYHELMINTHES

Common name : Flatworms

Characters :

- 1. Mostly parasitic animals, some are free-living (e.g. *Planaria*) and aquatic.
- 2. They are **triploblastic** animals showing **bilateral symmetry** and **tissue organ grade** of body organization.
- 3. The organisms are unsegmented, dorsoventrally flattened.
- 4. Body cavity (coelom) is absent i.e. acoelomate.
- 5. Suckers and hooks are usually present.
- 6. Alimentary canal has only one opening i.e. mouth, anus is absent.
- 8. Excretory system consists of blind tubules called protonephridia; having flame cells.
- 9. They are hermaphrodite i.e. male and female reproductive organs are present in same animal.
- e.g. *Planaria* or *Dugesia Fasciola* Liver fluke *Schistosoma* - Blood fluke *Taenia solium* - Pork tape worm.

PHYLUM NEMATODA OR ASCHELMINTHES

Common name - Thread worm or Round worm

- 1. They are parasitic, most are free living (in fresh or marine water or terrestrial).
- 2. They have narrow, elongated and cylindrical bodies. Body is convered by cuticle.
- 3. Triploblastic unsegmented animals with bilateral symmetry and organ system level of organization, having tube within tube body plan.
- 4. **Pseudocoelom** is present.
- 5. Alimentary canal straight and complete with mouth and anus.
- **6.** Unisexual organisms.
- e.g. *Ascaris* round worm; *Enterobius* pin worm;
 - Wuchereria filarial worm; Ancylostoma Hook worm.

PHYLUM- ANNELIDA

Common Name : Segmented worms

Characters :

- 1. They occur in fresh water, sea water or moist soil. Some are free living, some are burrowing and a few are parasites.
- 2. Body is **metamerically segmented i.e.** body is divided externally by transverse grooves as well as internally by septa, these segments are called **metameres**.
- 3. They are the first animals with true body cavity i.e. coelom.
- 4. They are bilaterally symmetrical, triploblastic animals.
- **5.** Body is covered by thin cuticle.
- 6. Locomotion by parapodia or Chitinous setae which are segmentally arranged.
- 7. Alimentary canal is complete.
- 8. Repiration is through the general body surface.

- 9. Excretion by nephridia.
- 10. Blood vascular system is closed. Blood is red due to the presence of the pigment " haemoglobin.
- 11. The nervous system consists of **a dorsal "brain**" and a **ventral nerve cord** having ganglia and lateral nerves in each body segment.
- **12.** Sexes may be united (hermaphrodite) or separate.
- e.g. *Nereis* sand worm (clam worm) *Megascolex* - Largest earth worm *Hirudo* - medicinal leech.

Pheretima - Earthworm *Hirudinaria* - India cattle leech

PHYLUM ARTHROPODA (Largest Group)

Common Name : Jointed animals

Characters :

- 1. They are found everywhere on earth- on land, in soil, in water and as parasites on plants and other animals.
- 2. Triploblastic, bilaterally symmetrical and metamerically segmented animals.
- 3. The body is segmented into 2 regions- head and thorax together and abdomen or 3 regions- head, thorax and abdomen.
- 3. Arthropods have compound eyes, having many lenses to make mosaic vision.
- 4. Exoskeleton is made of chitin.
- The body cavity is filled with blood i.e. haemocoel. Open circulatry system is present.
 Blood may be colourless Haemolymph (e.g. insects) or with copper contain pigment Haemocycanin (e.g. prawn)
- 6. Respiration occurs through general body surface, gills trachae or book lungs.
- 7. Excretion occurs by 'Malpighian tubules' or green glands or coxal glands.
- 8. Sexes are separate.

e.g.	Palaemon - (Prawn)	<i>Cancer</i> - crab.
	Scolopendra- Centipede	<i>Julus</i> - Millepede
	Gryllus - house cricket	Periplaneta - Cockroach
	<i>Musca</i> - House fly	Apis - honey bee
	Anopheles - mosquito	<i>Culex</i> - mosquito
	<i>Bombyx</i> - silkmoth	Palamnaeus- scorpion

PHYLUM- MOLLUSCA

Common Name : The soft bodies animals

second largest group.

Characters :

- 1. They are mostly aquatic, living in sea water, some of fresh water.
- 2. They are soft, unsegmented, triploblastic, coelomate animals with bilateral symmetry.

- 3. The body is divided into an anterior head, a ventral muscular foot and a dorsal visceral mass of hump. Over the hump, a fold of thin skin called mantle or pallium is present, which secretes the shell.
- 4 The soft body is usually supported by a hard shell of **calcium carbonate**.
- 5. Locomotion is brought about by muscular foot.
- 6. Buccal cavity contain a rasping organ the 'radula' for feeding.
- 7. Respiration occurs through gills called **ctendia**.
- 8. Open blood vasuclar system. Blood is usually blue due to a blue pigment called "haemocyanin".
- 9. Excretion by a pair of kidneys or metanephridia, known as Kaber's organ or Organ of Bojanus.
- e.g. Neopilina Living fossils Pila apple snail Unio fresh water mussel

Pinctada - Indian pearl oyster Sepia - cuttle fish Octopus- devil fish

PHYLUM - ECHINODERMATA

Common Name : Spiny Animals

Characters :

- 1. They are **exclusively marine** animals.
- 2. Body is triploblastic, coelomate and without segmentation with radial symmetry in adult and bilateral in larvae.
- **3.** Body lacks head, but has oral and aboral surfaces. Oral surface of body has five radial areas called **ambulacra**.
- **4.** Body cavity is modified into **water vascular system**. Tube like extensions called **tube feet**. Tube feet help in locomotion and food collection.
- 5. Digestive system is complete, mouth is on the lower surface and the anus is on the upper surface.
- 6. Respiration by gills, genital bursae, or respiratory trees.
- 7. Reporduction sexual, asexual or by regeneration. Sexes are separats.
- e.g. *Pentaceros* sea pentagen *Asterias* star fish or sea star *Echinus* sea urchin *Antedon* - sea lily or sea feathers

PHYLUM HEMICHORDATA

Characters :

- **1**. Exclusively all are marine.
- 2. These animals possess a combination of nonchordate and chordate characters.
- e.g. Balanoglossus Acorn worm.

PHYLUM CHORDATA

All chordates possess the following features.

- (i) They have a notochord. (ii) They have a dorsal nerve cord.
- (iii) They are triploblastic (iv) They have paried gill pouches.

(v) They are coelomate

SUBPHYLUM- UROCHRODATA [TUNICATA]

Character :

- 1. Notochord is present only in the tail of free living tadepole like larva
- e.g. Herdmania Sea potato or sea squirts.

SUBPHYUM – CEPHALOCHORDATA

Characters

- **1**. First complete chordate animals.
- **2.** Notochord, Nerve cord and pharyngeal gill clefts remain throughout the life span.

e.g. Branchiostoma or Amphioxus

(Lancelet – Typical chordate)

SUBPHYUM VERTEBRATA

Characters

- 1. Vertebrates are bilaterally symmetrical, tiploblastic, coelomic and segmented animals.
- 2. In vertebrates notochord is replaced by vertebral column.
- 3. Nerve cord remains enclosed within vertebral column.

Vertebrates are classified into following five groups

1.	Pisces	2.	Amphibia	3.	Reptilia	4.	Aves	5.	Mammalia
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PISCES

Characters

- 1. This class includes **true fishes**
- 2. They are exclusively water living animals.
- 3. Their body is streamlined and covered by scales.
- 4. They have **paired fins** for locomotion.
- 5. They respire through **gills**.
- 6. Heart is two chambered.
- 7. Their endoskeleton is made up of cartilage or bones.
- **8.** They are unisexual and lay eggs.
- 9. They are cold blooded.

Fishes are of two types based on the nature of their endoskeleton.

- 1. Cartilaginous fishes [Chondrichthyes]
- **2**. Bony fishes [Osteichthyes]

e.g. Scoliodon - Dog fish

Rhineodon -	Whale	shark.
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Chimera – Rat fish or Ghost fish or King of Herrings

Torpedo – Electric ray

AMPHIBIA

Characters

 These are the first vertebrate which come out of water but these are not able to live on land permanently. These depend on water for their reproduction.

Labeo rohita - Rohu or Indian carp

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Hippocampus - Sea horse

Exocoetus - Flying fish

Anabas – Climbing perch

- 2. Their skin is smooth or rough, moist, slimy, glandular and without scales.
- **3**. Head and trunk distinct, tail may be present.
- 4. Two pairs of pentadactyl (five digits) limbs are present. Digits without claws.

- 5. Three chambered heart, has two auricles and one ventricle.
- 6. Respiration by gills, lungs, skin and buccal lining.
- 7. Excrete either ammonia (by tadepole) or urea (by adults)
- **8.** They are cold-blooded animals.
- 9. Animals are unisexual; fertilization external, mostly lay eggs.

e.g. Salamander (Salamandra)

Siren – Mudeel

Hyla - Tree-frog

Rana tigrina – Indian bull frog

REPTILIA

Characters

- 1. First successful terestrial animals but some are aquatic.
- 2. Body is divided into head, neck, trunk and tail.
- **3.** Skin is dry, cornified, rough, nonglandular.
- 4. Two pairs of pentadactyl limbs with incurved nails or claws
- 5. Exoskeleton is made up of horny epidermal scales or dermal scute or bony plates.
- **6.** Heart is three chambered i. e. two auricles and an incompletely divided ventricle. Only crocodiles have four chambered heart.
- 7. One pair of metanephric kidneys, animals are uricotelic
- **8.** Fertilization is internal.
- **9.** These are mostly oviparous, eggs are cleidoic i.e. eggs are covered by a shell made up of calcium carbonate.
- 10. These are cold blooded animals.

e.g. Testudo - Land tortoise

Sphenoxon punctatum – Tuatra living fossil found in Newzeland.Hemidactylus – Common lizard, wall lizardNaja – Indian CobraNaja bungarus – King cobraCrocodilus – Crocodile (Muggar)

AVES

Characters

- 1. All types of birds are included in this class.
- 2. Body is boat shaped and covered by soft feathers, called "plumage".
- **3.** Fore limbs modified into wings for flight.
- 4. Hind-limbs bear four clawed digits and are adapted for walking and perching.
- 5. Teeth are absent, jaws form a horny beak.
- 6. Endoskeleton is made up of hollow, air-filled bones, known as pneumatic bone.
- 7. Four chambered heart with two auricles and two ventricles is present.
- **8.** They excrete uric acid.
- 9. Sound producing organ at the junction of trahea and bronchi of birds is called **syrinx**.
- **10.** Parental care is present.
- 11. Fertilization internal. They are oviparous and lay large, eggs having hard shell.
- 12. They are warm-blooded animals.

e.g. *Archaeopteryx* – Connecting link between reptiles and birds. *Passer* – House sparrow *Columba* – Pigeon *Pavo* – Peacock *Struthio* – Ostrich *Apteryx* – Kiwi

MAMMALIA

Characters

- 1. Members are cosmopolitan
- 2. Body is divided into head, neck, trunk and tail with movable eyelids
- 3. Mammary glands are found in females for baby feeding.
- **4.** The body is covered by a coat of hairs (made of keratin). Cutaneous glands such as sweat glands and oil glands.
- 5. They have two pairs of pentadactyl limbs.
- 6. Fleshy external ear (pinnae) present.
- 7. Respiration is by one pair of lungs.
- 8. A horizontal diaphragm present in between thorax and abdomen.
- 9. Heart is four chambered. Non.nucleated red blood corpuscles.
- 10. They excrete urea i.e. ureotelic.
- **11.** Mammals are warm-blooded animals.
- 12. Sexes are separate, internal fertilization present, mostly viviparous but a few are oviparous and lay eggs (e.g. Platypus & Echidna), and some like Kangaroos give birth to very poorly developed young ones.

e.g.	Ornithorhyncus – Duck billed platypus	Tachyglossues – Echidna or spiny anteater
	<i>Macropus –</i> Kangaroo	Pteropus – Flying fox or Bat
	Balaenoptera - Blue whale	Panthera tigris – Tiger
	<i>Homo sapiens</i> – Man	

SPECIAL POINTS

- Hemichordata Connecting link between non-chordata and chordata
- Archaeopteryx Connecting link between reptiles and aves
- Ornithorhynchus & Tachyglossus Connecting link between reptiles and mammals
- Neopilina Connecting link between annelida and mollusca
- Peripatus Connecting link between Annelida and Arthropoda.
- Phlebotomy To suck impure blood by leech.

Leech have an anticlotting agent 'hirudin'.

- Icthyology Study of fishes
- Mammology Study of mammals
- ✤ Ornithology Study of birds
 - Dr. Salim Ali Birdman of India
- Pterylosis Arrangement of wings on the body of birds
- Nidology Study of birds nest
- Ophiology or Serpantology Study of snakes
- Herpetology The branch of biology which deals with the study of reptiles.

EXERCISE

1.	The a	nimals which live or	the floor of se	ea are	e referre	ed to as :-	
	(A) Be	enthic	(B) Pelagic			(C) Planktonic	(D) Terrestrial
2.	To wl	nich group of animal	s, the nematoc	ysts a	are unic	que :-	
	(A) Cr	nidaria	(B) Porifera			(C) Platyhelminthes	(D) Annelida
3.	Tube-	within-tube plan is sl	nown by :-				
	(A) Co	pelenterates	(B) Flatworms			(C) Round worms	(D) Sponges
4.	Haen	nocoel is found in :-					
	(A) Ar	thropods	(B) Molluscs			(C) Both of these	(D) None of these
5.	Excre	tory organs of annel	ids are :-				
	(A) Pr	otonephridia	(B) Nephridia			(C) Green glands	(D) Kidneys
6.	Notod	chord is present in :-					
	(A) Ec	hinoderms	(B) Chordates			(C) Annelids	(D) Molluscs
7.	Study	of molluscs is called	:-				
	(A) Ma	alacology	(B) Concholog	У		(C) Mycology	(D) Phycology
8.	Aristo	otle's lantern is found	in :-				
	(A) St	ar fish	(B) Brittle star			(C) Sea urchin	(D) Sea cucumber
9.	Secor	nd largest animal in I	ndia is :-				
	(A) El	ephant	(B) Hippopota	mus		(C) Giraffe	(D) Rhinoceros
10.	Tusks	of elephants are :-					
	(A) Ind	cisors	(B) Canines			(C) Premolars	(D) Molars
11.	Most	intelligent ape is :-					
	(A) Gi	bbon	(B) <i>Gorilla</i>			(C) Orangutan	(D) Chimpanzee
12.	Small	est bird in India is :-					
	(A) Ki	wi	(B) Humming	bird		(C) Sparrow	(D) Sun bird
13.	Link l	petween animal king	dom and plant	kingo	dom is	:-	
	(A) <i>E</i> i	ıglena	(B) <i>Amoeba</i>			(C) Trypanosoma	(D) Paramecium
14.	Whick	n one is not diploblas	stic :-				
	(A) Sp	oonge	(B) Cnidaria			(C) Nematoda	(D) Ctenophora
15.	In wh	ich animals food ente	ers and leaves t	throu	gh moı	uth only :-	
	(A) Po	priferans	(B) Coelentera	ates		(C) Earthworm	(D) Cockroach
16.	Whicl	n of the following set	s is correct ?				
	(A) <i>W</i>	<i>uchereria</i> –Filariasis				(B) <i>E.coli</i> -Cholera	
	(C) Tá	<i>enia</i> -Typhoid				(D) Leishmania–Sleeping	sickness
17.	Match given	n the type of cells give the correct combine	en under colum tion of the alpt	in I wi habet	ith the is :	examples given under colu	ımn II ; choose the answer which
	-	Column I	_		Colur	nn II	
		(Cell)			(Exan	nples)	
	(a)	Flame cells	(p)	Spong	ges	
	(b)	Collar cells	(4	q)	Hydra	2	
	(c)	Singing cells	(1	r)	Plana	ria	
			(s)	Ascar	is	
	(A) a	= r, b = p, c = q	(B) a = r, b =	p, c =	= s	(C) $a = r, b = s, c = p$	(D) $a = r, b = p, c = s$
18.	Metar	neric segmentation	first appeared i	in :-		· -	
	(A) Pla	atyhelminthes	(B) Annelida			(C) Cockroach	(D) Arthropoda
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19.	Silver fish belong to :-			
	(A) Arthopoda	(B) Echinoderms	(C) Fishes	(D) Mammals
20.	The following vertebrate	respires by skin :-		
	(A) Fish	(B) Frog	(C) Crocodile	(D) Whale
21.	True coelom is lined with	:-		
	(A) Ectoderm	(B) Endoderm	(C) Mesoderm	(D) Ectoderm and endoderm
22.	Study of lizards is called :	-		
	(A) Herpatology	(B) Saurology	(C) Ophiology	(D) Serology
23.	Herpatology is the study	of :-		
	(A) Insects	(B) Birds	(C) Fishes	(D) Reptiles
24.	The venom of cobra affe	cts the :-		
	(A) Digestive system	(B) Circulatory system	(C) Nervous system	(D) Respiratory system
25.	Fish which eradicates mo	squito larvae is :-		
	(A) <i>Rohu</i>	(B) Anabas	(C) <i>Clarius</i>	(D) <i>Gambusia</i>
26.	Air sacs are in the bones	of :-		
	(A) Reptilia	(B) Aves	(C) Pneumaria	(D) Terrestrial mammals
27.	Excretory cells of platyhe	elminthes are :-		
	(A) Flame cells	(B) Nephridia	(C) Solenocytes	(D) Both (A) and (C)
28.	Green glands present in s	some arthropods help in :-		
	(A) Respiration	(B) Digestion	(C) Excretion	(D) None of these
29.	Crayfish is a :-			
	(A) Crustacean	(B) Poisonous fish	(C) Edible fish	(D) Mollusc
30.	Tube feet are characteris	tic structures of :-		
	(A) Starfish	(B) Cuttlefish	(C) Crayfish	(D) Jelly fish
31.	Osculum is characteristic	of :-		
	(A) <i>Cucumaria</i>	(B) Starfish	(C) Hydra	(D) Leucosolenia
32.	Hermit crab and sea ane	mone show :-		
	(A) Commensalism	(B) Symbiosis	(C) Mutualism	(D) None of these
33.	Which of the following cl	asses has largest number of	animals ?	
	(A) Pisces	(B) Reptilia	(C) Mammalia	(D) Insecta
34.	Father of pearl industry is	S :-		
	(A) Jenner	(B) Mikimoto	(C) Trembley	(D) Wallace
35.	A well known bird sanctu	ary of our country is :-		
	(A) Kaziranga	(B) Bandipur	(C) Palamu	(D) Bharatpur
36.	Most primitive mammals	which provide on evidence	of organic evolution from g	geological distribution are found
	in :-			
~-	(A) Africa	(B) Australia	(C) China	(D) India
37.	An open circulatory syste	em occurs in the :-		
	(A) Reptiles	(B) Birds	(C) Insects	(D) Annelids
38.	Which disease is spread	by temale <i>Culex</i> ?		
	(A) Malaria	(B) Pneumonia	(C) Filaria	(D) Typhoid
39.	In India, the best aquariu	m is located at :-		
	(A) ZSI, Calcutta	(B) Tarapur, Mumbai	(C) Chennai	(D) Vishakhapatnum
40.	Water comes from ostia a	and flows into numerous ch	annels in sponges, it is kno	wn as :-
	(A) Water vascular system	n (B) Canal system	(C) Open circulatory syste	em (D) Circulatory system

41.	Honey mainly consists of	f :-				
	(A) Monosaccharides	(B) Disaccharides	(C) Polysaccharides	(D) Fats		
42.	The pigment haemocya	nin is found in :-				
	(A) Mollusca	(B) Annelida	(C) Echinodermata	(D) Chordata		
43.	<i>Wuchereria bancrofti</i> is	spread by :-				
	(A) Anopheles	(B) Sand fly	(C) <i>Culex</i>	(D) Tse tse fly		
44.	4-chambered heart is pr	esent in :-				
	(A) Mammals	(B) Fishes	(C) Reptiles	(D) Amphibians		
45.	Kiwi is found in :-					
	(A) India	(B) South America	(C) New Zealand	(D) East Indies		
46.	The organisms with bila	teral symmetry in larvae ar	nd pentamerous in adults a	re :-		
	(A) Mollusca	(B) Annelida	(C) Arthropoda	(D) Echinodermata		
47.	Flame cells are :-					
	(A) Excretory cells	(B) Digestive cells	(C) Absorptive cell	(D) Contractile cells		
48.	Peripatus is a connecting	g link between :-				
	(A) Protozoa and Porifer	a	(B) Annelida and Molluso	ca		
	(C) Annelida and Arthrop	poda	(D) Mollusca and Echino	dermata		
49.	One of following is a flig	ht less bird :-				
	(A) Emu	(B) Albatross	(C) Magpie	(D) None of these		
50.	Earthworm has :-					
	(A) Open circulatory syst	em	(B) Closed circulatroy system			
	(C) Unique circulatory sy	stem	(D) No circulatory system			
51.	One of the following is n	ot a characteristic of Anne	lida :-			
	(A) Metanephridia	(B) Segmentation	(C) Pseudocoelom	(D) Clitellum		
52.	Malpighian tubules are p	present in :-				
	(A) Annelida	(B) Insecta	(C) Mollusca	(D) Cnidarians		
53.	Which of the following h	ave radial symmetry ?				
	(A) Porifers	(B) Echinoderms	(C) Chordates	(D) Arthropoda		
54.	Which of the following o	rganisms is a link between	chordates and non-chordat	tes :-		
	(A) Herdmania	(B) <i>Balanoglossus</i>	(C) Amphiuma	(D) <i>Pheretima</i>		
55.	Hirudinaria and Pheretin	<i>ma</i> are the representatives	of the phylum :-			
	(A) Cnidaria	(B) Platyhelminthes	(C) Annelida	(D) Nemathelminthes		

	ANIMAL DIVERSITY														
Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	А	А	С	С	В	В	А	С	D	А	D	D	А	С	В
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	А	А	В	А	В	С	В	D	С	D	В	D	С	А	А
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	D	В	D	В	D	В	С	С	В	В	А	А	С	А	С
Que.	46	47	48	49	50	51	52	53	54	55		-			
Ans.	D	A	С	A	В	С	В	В	В	С					

PLANT DIVERSITY

INTRODUCTION

) Diversity in living organisms means variety of life forms found on earth planet.

CLASSIFICATION :-

) Method of arranging variety of organisms into different groups, on the basis of similarities and dissimilarities between them, is called "classification".

B Science of classification | Taxonomy

B Father of Modern Taxonomy | Carolus Linnaeus

B Term "Taxonomy" given by | A.P. de Candolle

Hierarchy of Categories

Categories	Features
1. Species	A group of organisms capable of interbreeding to produce fertile offspring
2. Genus	A group of similar and closely related species.
3. Family	A group of apparently related genera (plural of genus).
4, Order	A group of related families.
5. Class	A group of orders within a phylum (or division).
6. Phylum (or Division)	Organisms constructed on a similar plan.
7. Kingdom	The largest group; for example, plants and animals.

Classification and Evolution :-

-) Charles Darwin first described the idea of evolution in 1856 in his book, "The Origin of Species"
-) The ancestral forms were simple and are called '**primitive**', from the primitive organisms have evolved **advanced orgamisms** which are more complex.

□ NOMENCLATURE : (The naming of organisms)

Binomial Nomenclature :

Carolus Linnaeus : He proposed scientific name of plants in his book "Species Plantarum" (1753).

For animals' scientific name - "Systema Naturae" (1758).

He provided two names to each organism.

-) The first name denoting the name of 'genus' and second name denoting 'species'.
-) First letter of generic name must be written in capital letter whereas species name is started with small letter.
- Scientific name is generally derived from **Greek** or **Latin** words.
-) The binomial names are printed in **italics** and **underlined separately** when written.

Examples :

Potato - *Solanum tuberosum* Tiger - *Panthera tigris*



CHARACTERISTIC OF FIVE KINGDOMS

1. Kingdom - Monera :

These are single celled prokaryotic (i.e. lacking a defined nucleus) organisms.

Mode of nutrition is either autotrophic (Blue-green algae) or heterotrophic (Mycoplasma and most bacteria)

Some organisms have cell wall (in bacteria) while other lacking (in Mycoplasma)

e.g.

Bacteria - Eubacteria, Archaebacteria

Blue - Green Algae (Cyanobacteria)

Mycoplasma

2. Kingdom - Protista

Organisms are unicellular, eukaryotic organization.

Mode of nutrition is either autotrophic (algae and diatomes) or heterotrophic (protozoans).

Some organisms have **cilia** (e.g. *Paramecium*); **flagellum** (e.g. *Euglena*) and **pseudopodia** (e.g. *Amoeba*) for locomation.

e.g.

Unicellular algae - *Chlamydomonas* Diatoms - *Pinnularia* Protozoa -*Amoeba, Plasmodium*

3. Kingdom - Fungi

These are non-green (lacking chlorophyll) eukaryotic, organisms.

They may be unicelluar (e.g. Yeast) or filamentous (most fungi)

The body of a multicelluar and filamentous fungus is called **mycelium** and is composed of several thread like structures termed as **hyphae**.

Heterotrophic mode of nutrition is found.

Food is gained by either **saprophytically** (from dead organic matter) or **parasitically** (from other living tissues).

Cell Wall contain - Chitin.

Reserve food material - Glycogen.

e.g. Yeast, Rhizopus (Bread mould), Penicillium, Mucor, Mushroom (Agaricus); Smut (Ustilago).

LICHEN - Symbiotic association between algae and fungi.

The algal cells make food by **photosynthesis for fungus** and **fungus** provide **shelter** and **protection** to the alga.

This is known as 'Symbiotic relation ship'

Algal component is known as "Phycobiont" and fungal component is called "Mycobiont".

e.g. Crustose lichen - Rhizocarpon

Foliose lichen - Parmelia

Fruticose lichen - Usnea

4. Kingdom - Animalia

Multicellular eukaryotes without Cell Walls.

They are heterotrophic.

5. Kingdom - Plantae

Plants are multicellular eukaryotes with cellulose cell wall.

They are autotrophs i.e. prepare own food by photosynthesis.

SPECIAL POINT

- >> In Thallophytes the male sex organs are called as antheridia and female sex organ called oogonia.
- >> Bryophytes are also known as amphibians of plant kingdom.
- Study of Bryophytes is known as Bryology.
- >> Pteriodophytes are also known as reptiles of plant kingdom.
- >> The thallophytes, bryophytes and pteridophytes have naked embryos that are called spores.
- >> All of these have inconicuous reproductive organs are called cryptogams or those with hidden sex organ.
- >> Xylem lack vessels and phloem lack companion cells in Gymnosperm.

Diversity in the Living World



EXERCISE

1.	Viruses are :-			
	(A) Obligate parasites	(B) Obligate saprophytes	(C) Partial parasites	(D) Facultative parasites
2.	Viruses possess :-			
	(A) DNA only		(B) Nucleic acid, DNA or	RNA
	(C) Protein only		(D) Nucleic acid and prote	ein
3.	AIDS virsus contains :-			
	(A) DNA only	(B) RNA only	(C) DNA + protein	(D) RNA + protein
4.	Bacteriophages kill :-			
	(A) Fungi	(B) All monerans	(C) Bacteria	(D) Viruses
5.	If a bacterial cell divides on half the cup ?	nce every minute and takes	s 60 minutes to fill a cup. H	Iow much time it will take to fill
	(A) 30 min.	(B) 32 min.	(C) 29 min.	(D) 59 min.
6.	Unilamellate thylakoids or	ccur in :-		
	(A) Chlamydomonas	(B) Nostoc	(C) Euglena	(D) Laminaria
7.	Bacteria without flagella a	are :-		
	(A) Atrichous	(B) Lophotrichous	(C) Amphitrichous	(D) Peritrichous
8.	The scientist to isolate stre	eptomycin for the first time	e is :-	
	(A) Fleming	(B) Burkholder	(C) Waksman	(D) Pasteur
9.	Mycoplasmas differ from	viruses in that they are sen	sitive to :-	
	(A) Penicillin	(B) Tetracyclines	(C) Sugars	(D) Amino acids
10.	Most common nitrogen fix	xing cyanobacterium of pa	ddy fields is :-	
	(A) Cylindrospermum	(B) Aulosira	(C) <i>Oscillatoria</i>	(D) Nostoc
11.	Chlorophyll containing eu	glenoid species are :-		
	(A) Facultative autotrophs	(B) Obligate autotrophs	(C) Obligate heterotrophs	(D) Facultative heterotrophs
12.	Kingdom protista includes	5 :-		
	(A) Life cycle showing spo	ric meiosis		
	(B) Life cycle showing zygo	otic meiosis		
	(C) Life cycle showing gam	netic meiosis		
	(D) Both B and C			
13.	The term protista was coi	ned by :-		
	(A) Haeckel	(B) Linnaeus	(C) Copeland	(D) Whittaker
14.	The wall of Rhizopus hypl	ha is composed of :-		
	(A) Cellulose	(B) Chitin	(C) Pectin	(D) Hemicellulose
15.	Yeast and Penicillium/per	nicillin producing fungus ar	e included under :-	
	(A) Basidiomycetes	(B) Zygomycetes	(C) Ascomycetes	(D) Phycomycetes
16.	The fungus that may caus	e disease in human beings	is :-	
	(A) <i>Puccinia</i>	(B) Aspergillus	(C) <i>Cystopus</i>	(D) <i>Rhizopus</i>
17.	Gametangial copulation (C	Conjugation) is common is	:-	
	(A) Ascomycetes	(B) Zygomycetes	(C) Phycomycetes	(D) Deuteromycetes
18.	Yeast cells are rich in vita	amin :-		
	(A) A	(B) B	(C) C	(D) D
19.	Fungi differ from algae in	being mostly :-		
	(A) Heterotrophic	(B) Autotrophic	(C) Parasitic	(D) Epiphytic

CBSE : CLASS-X **20.** Lichens are ecologically important as they :-(A) Purify air (B) Are pioneers on barren rocks (C) Are symbionts of algae and fungi (D) Are associated with mycorrhizal roots 21. Mycorrhiza is :-(A) Symbiotic association of a soil fungus and roots of higher plants (B) Parasitic association between a fungus and roots of seed plants (C) Saprophytic association between a fungus and root of seed plants (D) Symbiotic association between an alga and root of seed plants 22. First antibiotic isolated was :-(A) Neomycin (B) Terramycin (C) Streptomycin (D) Penicillin 23. Storage food material in fungi is :-(A) Starch (B) Protein (C) (A) & (B) Both (D) Glycogen **24**. Irish Famine of 1845 was caused by :-(B) Sclerospora graminicola (A) Alternaria solanii (C) Phytophthora infestans (D) Fusarium oxysporum 25. Rice crop was destroyed by a fungus which resulted in severe famine of Bengal in 1942-1943. It was due to :-(A) Penicillium (B) Helminthosporium (C) Rhizopus (D) Puccinia 26. An edible fungus is :-(A) Aspergillus (B) Ustilago (C) Polyporus (D) Morchella 27. The storage product of rhodophyceae is :-(A) Glycogen (B) Chrysolaminarin (C) Starch (D) Floridean starch 28. Phycoerythrin is found in :-(A) Fucus (B) Sargassum (C) Oedogonium (D) Polysiphonia 29. A red alga devoid of red colour is :-(A) Chondrus (B) Batrachospermum (C) Gelidium (D) Porphyra 30. A chlorophyll found in phaeophyceae and bacillariophyceae but absent in rhodophyceae is :-(A) Chlorophyll c (B) Chlorophyll d (C) Chlorophyll b (D) Chlorophyll a 31. Science of algae is :-(A) Phycology (C)Oceanology (B) Mycology (D) Microbiology 32. Plant body of Riccia is :-(A) Sporophyte (B) Gametophyte (C)Aquatic (D) Saprophyte **33.** Bryophytes are amphibians because :-(A) They require a layer of water for carrying out sexual reproduction (B) They occur in damp places (C) They are mostly aquatic (D) All the above 34. Pteridophytes differ from bryophytes in possessing :-(A) Gametophyte dependent on sporophyte (B) Independent gametophyte and sporophyte (C) Sporophyte dependent on gametophyte (D) No sporophyte

35. Pteridophytes differ from mosses/bryophytes in possessing :-(A) Independent gametophyte (B) Well developed vascular system (D) Flagellate spermatozoids

(C) Archegonia

Azolla/Marsilea is a :-36. (B) Moss (A) Liverwort

(D) Water fern

(C) Tree fern

37.	Fern rhizome is :-								
	(A) Root	(B) Stem	(C) Rhizophore	(D) Rhizoid					
38.	In ferns, fertilization does	s not involve:-							
	(A) Pollen tube		(B) Archegonia						
	(C) Flagellate antherozoi	ds	(D) Water						
39.	Young fern leaves are p	rotected by :-							
	(A) Indusium	(B) Rhizome	(C) Ramenta	(D) Sori					
40.	Gymnosperms do not be	ear fruits because they :-							
	(A) Do not have ovary		(B) Do not have pollination	on					
	(C) Are seedless plants		(D) Do not have the mecl	hanism of fertilization					
41.	Gymnosperms do not ha	ive :-							
	(A) Xylem vessels and sig	eve tubes	(B) Tracheids and sieve tubes						
	(C) Vessels, sieve tubes a	nd companion cells	(D) Tracheids and companion cells						
42.	A plant having seeds but	lacking flowers and fruits	belongs to :-						
	(A) Pteridophytes	(B) Mosses	(C) Ferns	(D) Gymnosperms					
43.	Gymnosperms differ from	n angiosperms in :-							
	(A) Seeds	(B) Stelar system	(C) naked ovules	(D) Sporophylls					
44.	Gymnosperms do not ha	ive :-							
	(A) Antheridium	(B) Ovule	(C) Archegonium	(D) Egg					
45.	Plants having (spores), xylem and phloem but lacking seeds are :-								
	(A) Bryophytes	(B) Gymnosperms	(C) Pteridophytes	(D) Angiosperms					
46.	Which one is absent in fe	Which one is absent in fern rhizome :-							
	(A) Vessels	(B) Sieve cells	(C) Phloem parenchyma	(D) Tracheids					
47.	Agar-agar commonly us	ed in bacterial cultures and	medication is obtained from	m :-					
	(A) Sargassum	(B) <i>Gelidium</i>	(C) Ulothrix	(D) <i>Ulva</i>					
48.	Red colour of red algae	is due to :-							
	(A) Carotenes	(B) Xanthophylls	(C) Phycoerythrin	(D) Phycocyanin					
49.	Male cone of Pinus poss	esses:-							
	(A) Megasporophylls	(B) Microsporophylls	(C) Anthers	(D) Ligules					
50.	Phytoplankton includes :	-							
	(A) Decomposer microor	ganisms	(B) Plants feeding on animals and their remains						
	(C) Aquatic algae and ph	otosynthetic bacteria	(D) Nonvascular hydrophytes						

PLANT DIVERSITY															
Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	А	D	D	С	D	В	А	С	В	В	D	D	А	В	С
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	В	В	В	А	В	А	D	D	А	В	D	D	D	В	А
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	А	В	А	В	В	D	В	А	С	А	С	D	С	А	С
Que.	46	47	48	49	50										
Ans.	А	В	С	В	С										
					-									9	1

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