

- (i) Increase in mass
 - (ii) Increase in number of individuals
 - (iii) Cellular organization
 - (iv) Cellular differentiation
- (A) (i) and (ii) (B) (i) and (iii)
- (C) (ii) and (iii) (D) (iii) and (iv)

5. Match Column-I with Column-II and select the correct option from codes given below.

Column-I	Column-II
A. <i>Planaria</i>	(i) Binary fission
B. Fungi	(ii) Asexual spores
C. Yeast	(iii) Budding
D. <i>Amoeba</i>	(iv) True regeneration
	(v) Fragmentation

- (A) A-(i), B-(ii), C-(iii), D-(iv)
- (B) A-(iv), B-(ii), (v), C-(iii), D-(i)
- (C) A-(ii), B-(v), C-(i), D-(iv)
- (D) A-(v), B-(ii), (i), C-(iii), D-(iv)

6. Read the following statements and select the correct option.
Statement 1: Reproduction cannot be considered as defining property of living organisms.
Statement 2: There are many living organisms which do not reproduce e.g., mules, worker bees, infertile human couples, etc.
- (A) Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.
 - (B) Both statements 1 and 2 are true and statement 2 is not the correct explanation of statement 1.
 - (C) Statement 1 is true and statement 2 is false.
 - (D) Both statements 1 and 2 are false.
7. Which of the following statements regarding the response of living organisms to external stimuli is correct?
- (A) The external environmental stimuli can be physical, chemical or biological.
 - (B) All organisms, from the prokaryotes to the most complex eukaryotes can sense and respond to environmental stimuli
 - (C) Consciousness and response to external stimuli is the defining property of living organisms.
 - (D) All of these

8. Select the correctly written botanical/zoological name.
(A) *Homo Sapiens* (B) *Panthera tigris*
(C) *Pisum sativum* (D) *Mangifera Indica*
9. First step in taxonomy is
(A) description of the organism
(B) identification of the organism
(C) nomenclature of the organism
(D) classification of the organism
10. Which of the following is the correct representation of organization levels in living beings?
(A) Subcellular → Cellular → Individual → Community → Population
(B) Atomic → Molecular → Subcellular → Cellular → Tissue → Organ system → Individual
(C) Individual → Population → Organ system → Tissue → Cellular → Molecular → Atomic
(D) Atomic → Molecular → Tissue → Individual → Ecosystem → Community

11. Linnaeus described 5900 species of plants in his book _____ (1753) and 4326 species of animals in his book _____ (1758).

- (A) *Philosophia Botanica, Genera Plantarum*
- (B) *Historia Naturalis, Species Plantarum*
- (C) *Systema Naturae, Species Plantarum*
- (D) *Species Plantarum, Systema Naurae*

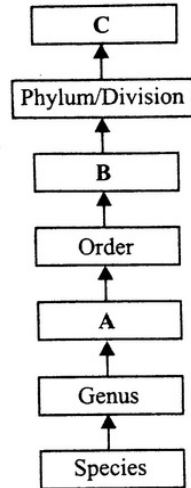
12. Match Column-I with Column-II and select the correct option from the codes given below.

Column-I	Column-II
A. Binomial nomenclature	(i) Hippocrates
B. The Darwin of the 20th century	(ii) Earnst Mayr
C. Father of Botany	(iii) Linnaeus
D. Father of medicine	(iv) Theopharastus

- (A) A-(iii), B-(ii), C-(iv), D-(i)
- (B) A-(iii), B-(ii), (v), C-(i), D-(iv)
- (C) A-(i), B-(ii), C-(iii), D-(iv)
- (D) A-(ii), B-(iii), (i), C-(iv), D-(i)

13. Most names in biological nomenclature of living organisms are taken from which language?
- (A) Hindi (B) Latin
(C) German (D) French
14. The scientific name of banyan is written as *Ficus bengalensis* L. Which of the following statements is correct regarding this?
- (A) Letter L. signifies Latin language
(B) The name should be written reverse with *bengalensis* preceding *Ficus*.
(C) Letter L. signifies the taxonomist Linnaeus.
(D) *bengalensis* is generic name.
15. In the binomial system of taxonomy, developed during the 18th century by C. Linnaeus, the second word of an organism's biological name represents
- (A) species (B) genus
(C) race (D) family
16. Which one of the following books was contributed by Linnaeus?
- (A) *Systema Naturae* (B) *Historia Plantarum*
(C) *Historia Naturalis* (D) All of these

17. Which of the following is a mismatched pair of common name and biological name of an organism?
- (A) Para rubber – *Hevea brasiliensis*
 - (B) Tea – *Thea chinensis*
 - (C) Earthworm – *Pheretima posthuma*
 - (D) Frog – *Bufo melanostictus*
18. Linnaean system of classification was based on
- (A) morphology
 - (B) ecology
 - (C) embryology
 - (D) cytology
19. The given flowchart represents the hierarchy of various taxonomic categories. Identify the missing categories (A, B and C) and select the correct statements regarding these.
- (i) A is the taxonomic category which contains a number of related genera.
 - (ii) Examples of category B are Monocotyledoneae, Dicotyledoneae, Mammalia, etc.
 - (iii) C represents the basic unit of taxonomic hierarchy.
 - (iv) Examples of category C are Fungi, Monera, Protista, etc.



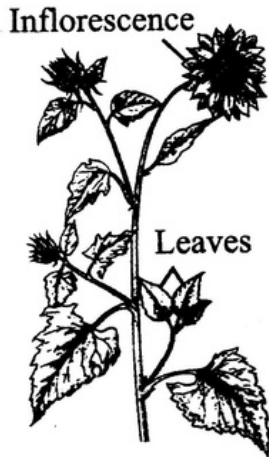
(A) (i) and (ii)

(B) (iii) and (iv)

(C) (i), (ii) and (iv)

(D) (i), (ii), (iii) and (iv)

20. Select the correct classification for the given plant.



Division	Class	Order	Family
(A) Plantae	Angiospermae	Asterales	Asteraceae
(B) Angiospermae	Dicotyledonae	Asterales	Asteraceae
(C) Angiospermae	Dicotyledonae	Polymoniales	Compositae

(D)Dicotyledonae	Asteraceae	Asterales	Compositae
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21. Which of the following represents the correct sequence of various taxonomic categories?

- (A) Class – Phylum – Tribe – Order – Family – Genus – Species
- (B) Division – Class – Family – Tribe – Order – Genus – Species
- (C) Division – Class – Order – Family – Tribe – Genus – Species
- (D) Phylum – Order – Class – Tribe – Family – Genus – Species

22. Select the mismatched pair.

(A) <i>Panthera leo</i>	Belongs to class Mammalia
(B) <i>Musca domestica</i>	The common house lizard, a reptile
(C) <i>Entamoeba coli</i>	Commonly occurring protozoan in human intestine
(D) <i>Solanum tuberosum</i>	A dicotyledonous plant

23. Two organisms are present in the same class but not in the same family. They may belong to same

- (A) genus
- (B) species

(C) variety

(D) order

24. *Mangifera* is a

(A) variety

(B) genus

(C) species

(D) class

25. The name of a plant order ends with

(A) – aceae

(B) – ales

(C) – idae

(D) – ae

26. Which one of the following statements is incorrect?

(A) *indica*, *tuberosum* and *leo* represent the specific epithets.

(B) *Physalia*, *Apis* and *Helianthus* represent the generic epithets.

(C) Monocotyledonae and Dicotyledonae are the two classes of division Angiospermae.

(D) Phylum Chordata is the largest phylum of kingdom Animalia.

27. Select the incorrect statement with respect to the taxon, 'genus'

(A) It is a group or assemblage of related species.

(B) A genus essentially possesses more than one number of species.

(C) Lion, Tiger, Leopard, Jaguar are closely related species which have been placed in the genus *Panthera* and are respectively named as *Panthera leo*, *P.tigris*, *P.paradus* and *P.onca*.

(D) *Solanum*, *Penicillium*, *Withania* and *Canis* are the examples of genera.

28. Study the following table which shows different organisms with their taxonomic categories.

Common name	Family	Order	Class	Phylum/Division
Man	Hominidae	Primata	Mammalia	A
Housefly	Muscidae	Diptera	B	Arthropoda
Mango	C	Sapindales	Dicotyledonae	Angiospermae
Wheat	Poaceae	Poales	D	Angiospermae

Select the correct option for A, B, C and D.

A (A) Chordata	B Insecta	D	
(B) Animalia	Arachnida (C)	Anacardiaceae	Monocotyledonae
Chordata	Arachnida	Anacardiaceae	Monocotyledonae
		Polygonaceae	Monocotyledonae
(D) Non-chordata	Insecta	Anacardiaceae	Dicotyledonae

29. Which one of the following is an incorrect pair?
- (A) *Rhizopus stolonifer* – A common black bread mould
 - (B) *Trypanosoma gambiense* – A protozoan protist
 - (C) *Euplectella* – A member of phylum Cnidaria
 - (D) *Lycopersicon* – A dicotyledonous plant
30. A taxonomic category refers to
- (A) the basic unit of classification
 - (B) a rank or level in a taxonomic hierarchy
 - (C) a group of related organisms able to interbreed
 - (D) a group of related organism but unable to interbreed freely.
31. Which one is the odd among the given series?
- (A) *sapiens*
 - (B) *americana*
 - (C) *rotundus*
 - (D) *Rana*
32. Which of the following options represents the correct classification for the given animal?



Phylum	Class	Order	Family	Genus	Species
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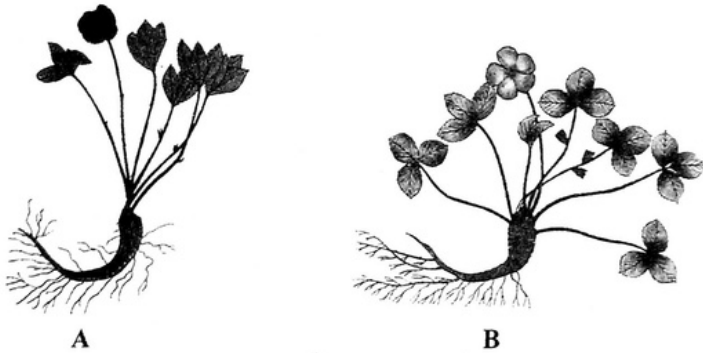
(A) Chordata	Vertebrata	Chiroptera	Felidae	<i>Canis</i>	<i>tigris</i>
(B) Chordata	Mammalia	Carnivora	Felidae	<i>Panthera</i>	<i>tigris</i>
(C) Vertebrata	Mammalia	Carnivora	Felidae	<i>Panthera</i>	<i>tigris</i>
(D) Mammalia	Felidae	Carnivora	Feliaceae	<i>Panthera</i>	<i>leo</i>

33. Match Column-I with Column-II and select the correct option from codes given below.

Column-I	Column-II
(A) John Ray	(i) Gave the concept of new systematics.
(B) C. Linnaeus	(ii) First described species as a unit of classification
(C) Aristotle	(iii) Father of Zoology
(D) Julian Huxley	(iv) Introduced binomial nomenclature

- (A) A-(i), B-(ii), C-(iii), D-(iv)
- (B) A-(iv), B-(ii), C-(iii), D-(i)
- (C) A-(ii), B-(iii), C-(i), D-(iv)
- (D) A-(ii), B-(iv), C-(iii), D-(i)

34. Which of the following figures represents the correct method of pressing plants to form herbarium sheets?



- (A) Figure A as the plant parts are folded.
- (B) Figure B as every plant part is unfolded.
- (C) Both figure A and B as folding or unfolding does not matter.
- (D) None of these

35. Study the following statements and select the correct ones.

- (i) Herbarium is a store house of collected plant specimens that are dried, pressed and preserved on sheets.
- (ii) Flora provides the index to the plant species found in a particular area.
- (iii) Monographs contain information on only one taxon.

- (A) (i) and (ii)
- (B) (ii) and (iii)
- (C) (i) and (iii)
- (D) (i), (ii) and (iii)

36. Match Column-I with Column-II and select the correct option from codes given below.

Column-I	Column-II	
A. Royal botanical garden, Kew	(i)	Lucknow
B. Indian botanical garden	(ii)	England
C. National Botanical Research Institute	(iii)	Howrah
D. Llyod Botanical Garden	(iv)	Darjeeling

- (A) A-(ii), B-(iii), C-(i), D-(iv)
 (B) A-(i), B-(iii), C-(ii), D-(iv)
 (C) A-(iv), B-(ii), C-(i), D-(iii)
 (D) A-(iv), B-(iii), C-(ii), D-(i)

37. Match Column-I with Column-II and select the correct option from the codes given below.

Column-I	Column-II	
A. Botanical garden	(i)	Preserved plant specimens
B. Zoological park	(ii)	Preserved plant and animal specimens

C. Museum	(iii) Living plants
D. Herbarium	(iv) Living wild animals

- (A) A-(i), B-(ii), C-(iii), D-(iv)
- (B) A-(iii), B-(iv), C-(ii), D-(i)
- (C) A-(iii), B-(iv), C-(i), D-(ii)
- (D) A-(i), B-(ii), C-(iv), D-(iii)

38. Read the following statements regarding biological museums.

- (i) Biological museums are generally set up in educational institutes such as schools and colleges.
- (ii) Museums have collections of preserved plant and animal specimens for study and reference.
- (iii) Specimens are preserved in the containers or jars in preservative solutions.
- (iv) Insects are preserved in insect boxes after collecting, killing and pinning.
- (v) Larger animals like birds and mammals are usually stuffed and preserved.
- (vi) Skeletons of mammals are not allowed to be kept in museums.

Which of the above statements is/are not correct?

- (A) (ii) and (iii)
- (B) (i) and (vi)
- (C) (v) only
- (D) (vi) only

39. Read the following statements and select the correct option.

Statement 1: Zoological parks are the places where wild animals are kept in protected environments under human care and which enable us to learn about their food habits and behavior.

Statement 2: Adequate arrangement for the treatment, medication, regular checkup and pathological investigations are absolutely necessary to be made for the health, care and upkeep of the animals.

- (A) Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.
- (B) Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1.
- (C) Statement 1 is true and statement 2 is false.
- (D) Both statements 1 and 2 are false.

40. Study the following regarding the preparation of herbarium sheets.

- (i) Plant should be collected in flowering stage.
- (ii) Every detail regarding the plant such as locality, ecological conditions, vegetative and floral characters, etc. should be noted.
- (iii) Plants are evenly pressed by unfolding all the plant parts between blotting papers (or newspapers) with the help of plant pressers.

- (iv) Blotting papers need not be changed until the plant gets dried.
- (v) After drying, the plant specimen is carefully mounted/pasted on the herbarium sheets.
- (vi) The herbarium sheet is labeled on the lower right hand corner representing the number of plant specimen, date of collection etc.

Which of the above statement is/are not correct?

- (A) (i) only
- (B) (iv) only
- (C) (i) and (iv)
- (D) (iii) and (iv)

41. Match Column-I with Column-II and select the correct option from the codes given below.

Column-I	Column-II
A. Ecology	(i) Relationships of organisms and environment
B. Herbarium	(ii) Original specimen cited by an author
C. Holotype	(iii) A hierarchical unit
D. Taxon	(iv) Collection of wild and domestic plants

- (A) A-(i), B-(ii), C-(iii), D-(iv)
- (B) A-(i), B-(ii), C-(iv), D-(iii)
- (C) A-(i), B-(iv), C-(ii), D-(iii)

(D) A-(iv), B-(ii), C-(iii), D-(i)

42. Read the following statements.

P : The taxonomic hierarchy for *Brassica campestris* can be written as:

Plantae → Phanerogamae → Angiospermae →
Dicotyledonae → Parietales → Brassicaceae →
Brassica → *campestris*.

Q : Tautonym is the taxonomic designation used for certain plants having trinomial nomenclature.

R : A character present in an ancestral species and shared exclusively by its evolutionary descendants is referred to as synapomorphy.

S : Family Fabaceae is divided into three sub-families i.e., Leguminosae, Mimosaceae and Caesalpiniaceae.

Which of the following combinations of above statements is correct?

(A) P and Q

(B) P and R

(C) R and S

(D) P, R and S

43. A 'type' is one particular specimen (or a group of specimens) of an organism to which the scientific name of that organism is formally attached. Match Column-I (type) with Column-II (description) and select the correct option from codes given below.

Column-I	Column-II
A. Holotype	(i) A specimen cited with original description other than the holotype or isotype
B. Isotype	(ii) A duplicate of the holotype
C. Paratype	(iii) A specimen designated in the original description
D. Lectotype	(iv) A specimen selected from original material to serve as nomenclature type when the holotype was not designated.

- (A) A-(iii), B-(ii), C-(i), D-(iv)
 (B) A-(iii), B-(i), C-(ii), D-(iv)
 (C) A-(iii), B-(ii), C-(iv), D-(i)
 (D) A-(iii), B-(iv), C-(i), D-(ii)

44. Read the following statements with one or two blanks in each one of them.

(i) A genus containing more than one species is called _____ genus, e.g., _____ .

(ii) _____ is a collection of dried, pressed and preserved plants mounted on _____ sheets, properly labeled, systematically arranged and available for reference study.

(iii) Living fossils are ancient organisms persisting in modern times _____ gradual morphological changes.

(iv) A _____ is comprehensive treatise of a taxonomic group, generally a genus or a family, providing all taxonomic data related to that group.

Which of the following correctly fills any two of the above statements?

(A) (i) monotypic, *Homo*; (ii) Herbarium, paper

(B) (ii) Manual, paper; (iii) with

(C) (iii) without; (iv) Monograph

(D) (i) polytypic, *Solanum*; (iv) Monograph

45. Match the following and choose the correct option.

A. Family (i) *tuberosum*

B. Kingdom (ii) Polymoniales

C. Order (iii) *Solanum*

D. Species (iv) Plantae

E. Genus (v) Solanaceae

(A) i-D, ii-C, iii-E, iv-B, v-A

(B) i-E, ii-D, iii-B, iv-A, v-C (C)
i-D, ii-E, iii-B, iv-A, v-C (D) i-E,
ii-C, iii-B, iv-A, v-D

ANSWERS

1. D 2. D 3. B 4. A 5. B 6. A 7. D 8. B 9. B 10. B
11. D 12. A 13. B 14. C 15. A 16. A 17. D 18. A 19. C 20. B
21. C 22. B 23. D 24. B 25. B 26. D 27. B 28. A 29. C 30. B
31. D 32. B 33. D 34. B 35. D 36. A 37. B 38. D 39. D 40. B
41. C 42. B 43. A 44. D 45. A

SOLUTIONS

1. Growth is defined as an irreversible increase in the number of cells or mass of the living structure. In plants, growth occurs continuously throughout life. However, in animals, growth is restricted to a certain period only, but cell division occurs in certain tissues to replace the old and worn out cells. The sum total of anabolic and catabolic reactions occurring in our body is called metabolism. All living organisms are made up of chemical compounds which are constantly synthesised by metabolic reactions. All organisms, prokaryotes or eukaryotes, have the ability to sense the conditions in their surroundings and respond to

these stimuli which can be physical, chemical or biological. Hence, option D is the correct option.

3. A multicellular organism increases its mass by cell division. In plants growth continues throughout life as they have meristematic areas where cell divisions occur continuously. In animals growth occurs to a certain age after which cells divide only to replace worn out and lost cells.
5. In Planaria (Phylum -Platyhelminthes,) true regeneration is observed i.e., a fragmented organism regenerates the lost parts of its body and becomes a new organism. In fungi, vegetative reproduction occurs by fragmentation, budding (in yeasts), sclerotia, rhizomorphs, etc. Asexual reproduction in fungi occurs through the formation of various kinds of sexual spores such as zoospores, sporangiospores, chlamydospores, oidia, conidia, etc
9. First step on taxonomy is identification of the organism. Identification is the finding of correct name and place of an organism according to some approved system of classification. Manuals, floras, monographs, catalogues, keys, etc are various taxonomic aids, which are use in the identification of an organisms. Identification is followed by nomenclature and classification of organisms.
13. The original scientific names were taken from Latin and Greek languages. New names are now derived either from Latin language or are latinised. This is because Latin

language is dead and therefore, it will not change in form or spellings with the passage of time.

17. Zoological name of the common Indian frog is *Rana tigrina*. *Bufo melanostictus* refers to Indian toad. Both belong to class – Amphibia of phylum- Chordata.
18. Linnaeus put forward an artificial system of classification which was mainly based upon morphological characters of plants.
20. Given plants is *Helianthus* sp, which can be classified as :
Kingdom - Plantae - Angiospermae -
Division Dicotyledonae - Asterales -
Class Compositae (= Asteraceae) -
Order Helinthus
Family
Genus
22. *Musca domestica* (Housefly) belongs to class-Insecta of phylum-Arthropoda.
25. Order includes one or more related families e.g. the family Solanaceae is placed in the order Polemoniales along with four related families (Convolvulaceae, Boraginaceae, Hydrophyllaceae and Polemoniaceae). Name of a plant order usually ends with 'ales'.
26. Phylum Arthropoda is the largest phylum of kingdom Animalia. It includes the largest number of animals with about 900,000 species. Phylum Mollusca is the second largest animal phylum, which includes over 60,000 species.

29. *Euplectella* (The Venus' flower basket) belongs to phylum Porifera (sponges). It is found in deep sea water. Its skeleton is given as a costly marriage gift in Japan as it is thought to be a symbol of union of wife and husband.
31. In binomial nomenclature, *sapiens* is the specific name of humans (*Homo sapiens*), *americana* is the specific name of cockroach (*Periplaneta Americana*) and *rotundus* is the specific name of nut grass (*Cyperus rotundus*). However, *Rana* is the generic name of frog (*Rana tigrina*).
35. Floras, manuals, monographs, etc. are some important taxonomic aids that help in the correct identification. Flora contains the actual account of habitat and distribution of plants of a given area. These provide the index to the plant species found in a particular area. Manuals are useful in providing information for identification of names of species found in an area. Monographs contain detailed information on any one taxon.
41. A particular specimen or illustration designated by the author to represent the type of a species is referred to as holotype. It is now essential to designate a holotype when publishing a new species.
42. Tautonym is the taxonomic designation used for certain animals assigned with same generic name and specific name. Family Leguminosae is divided into three sub-families i.e., Papilionaceae (= Fabaceae), Mimosaceae and Caesalpinaceae.