

Study materials

BIOLOGY (Class 11)

Chapter 1: THE LIVING WORLD

SKYLIMIT EDUCATION

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1. THE LIVING WORLD

Single Correct Answer Type

- Biosystematics aims at
 - The classification of organism based on their evolutionary history and establishing their phylogeny on the totality of various parameters from all fields of studies
 - Identification and arrangements of organism on the basis of their cytological characteristics
 - The classification of organisms based on broad morphological characters
 - Delimiting various taxa of organisms and establishing their relationships
- Phenetic classification of organism is based on
 - Observable characteristics of existing organisms
 - The ancestral lineage of existing organism
 - Dendrogram based on DNA characteristics
 - Sexual characteristics
- ...A... is a collection of pressed, dried and preserved plants ...B... labelled arranged systematically for further reference
A and B in the above statement refers to
 - A-Herbarium; B-mounted on thin film
 - A-herbarium; B-mounted on a paper sheet
 - A-Museum; B-mounted on a iron sheet
 - A-Garden; B-mounted on a paper sheet
- Arrange the following in the ascending order of Linnaean hierarchy.
 - Kingdom-Order-Species-Genus-Class-Family-Phylum
 - Kingdom-Family-Genus-Species-Class-Phylum-Order
 - Kingdom-Phylum-Class-Order-Family-Genus-Species
 - Species-Genus-Family-Order-Class-Phylum-Kingdom
- Where was the first herbarium set up?
 - London in Great Britain
 - Pisa in Italy
 - New York in USA
 - Tokyo in Japan
- Animal of the same phylum are grouped below. Choose the incorrect group from given below option
 - Shark, snake, whale, reptiles
 - Insect, spider, shrimp
 - Snail, squid, slug
 - Earthworm, millipede, leech
- Systematic botany means
 - System analysis
 - Systematic arrangement of organs of plants
 - Systematic study of organelles and tissues
 - Methodical study of plants, dealing with identification, naming and classificartion
- What is the symbol of Bombay Natural History Society?
 - Kingfisher
 - Eagle
 - Hornbill
 - Hawaiin Goose
- Which is called 'sexual system' of classification?
 - Bentham and Hooker
 - Tippos
 - Linnaeus
 - Takhtajan
- Identify from the following the only taxonomic category that has a real existence.
 - Genus
 - Species
 - Phylum
 - Kingdom
- Process of metabolism leads to
 - Growth
 - Development
 - Functions of living body
 - All of these



12. Which of the following taxonomic ranks contain organism most similar to one another?
a) Class b) Genus c) Family d) Species
13. Which is first step in taxonomy?
a) Description of the organism
b) Identification of the organism
c) Nomenclature of the organism
d) Classification of the organism
14. What is the prime source of taxonomic studies?
a) Collection of actual specimens of organisms species
b) Identification of actual specimen of organism species
c) Both (a) and (b)
d) None of the above
15. ... is a book (taxonomic acid) which contain information about habitat, distribution, climate description and index of plant found in a particular area
a) Manual b) Flora c) Monograph d) Key
16. In hierarchial classification, class occupied a place between
a) Kingdom and phylum b) Order and family c) Phylum and order d) Family and genus
17. Select the correct option from the following
a) Mule can reproduce
b) Worker bee undergoes reproduction to generate new progeny
c) Mule and worker bee do not reproduce
d) None of the above
18. Why hierarchial taxonomic system is used?
a) As each higher taxonomic category contains its below groups groups/categories
b) It is helpful to established classifications
c) All taxonomic categories reflect common habitats
d) Taxonomic group shows similar characters and have no evolutionary relationship
19. Biological organization in living state is at
a) Sub-microscopic level b) Atomic level c) Cellular level d) Mixture level
20. Arrange the following in ascending similar characteristic
I. Family II. Genus III. Class IV. Species
a) Class < Family < Genus < Species b) Family < Class < Genus < Species
c) Species < Genus < Family < Class d) Class < Genus < Species < Family
21. Among the following choose the properties shown by the living organism exclusively?
I. growth
II. increase in mass
III. self-replication ability
IV. response to touch stimuli
a) I and II b) I, II and III c) I, III and IV d) I, II, III and IV
22. Which one of the following feature is shared by all living organism at all hierarchial level
a) Mode of nutrition
b) Cellular organization
c) Nature of protoplasmic-composition
d) Growth by cell division
23. ...A... is a collection of pressed, dried and preserved plants ...B... labelled arranged systematically for further reference
A and B in the above statement refers to
a) A-Herbarium; B-mounted on thin film



- b) A-herbarium; B-mounted on a paper sheet
c) A-Museum; B-mounted on a iron sheet
d) A-Garden; B-mounted on a paper sheet
24. By which chemical specimen for herbaria are treated to prevent fungal attack
a) 0.1% mercuric chloride
b) 0.1% mercurous chloride
c) Carbon disulphide
d) Acetic acid
25. Who proposed binomial system of nomenclature?
a) Candolle b) Linnaeus c) Bentham d) Hutchinson
26. Term 'Taxonomy' was coined by
a) De Candolle b) Takhtajan c) Linnaeus d) Aristotle
27. A group of interconnected genera is called a
a) Family b) Class c) Phylum d) Order
28. True regeneration is found in
a) *Amoeba* b) *Hydra* c) *Planaria* d) Bacteria
29. Select true statement from the following and choose the right answer from the option given below
I. Human's scientific name is *Homo sapiens*
II. *Genera Plantarum* is written by John Ray
III. Highest taxonomic categories is division
IV. Taxonomic group of any rank is taxon
V. A group of closely related species of organism represent genus
VI. The term 'systematic' was coined by de Candolle
a) II, III, IV and VI b) I, III, V and VI c) I, IV and V d) II, III and VI
30. Third name in trinomial nomenclature indicate
a) Species
b) Sub-species
c) Sub-genus
d) Ecotype of organism
31. Who first proved that virus was made up of a nucleic acid and protein?
a) Griffith b) WM Stanley
c) Dr Salvador Huria and Dr Max Delbruck d) Dr NW Pjrie and Dr FC Bawden
32. The suffix 'phyta' indicates
a) Family b) Class c) Order d) Division
33. The genus *Felis* includes
a) Tiger b) Fish c) Cat d) Frog
34. Who proposed binomial system of nomenclature?
a) Candolle b) Linnaeus c) Bentham d) Hutchinson
35. Where was the first herbarium set up?
a) London in Great Britain
b) Pisa in Italy
c) New York in USA
d) Tokyo in Japan
36. A group of organisms with similar trait of any rank is
a) Taxon b) Family c) Genus d) Species
37. Term 'New Systematic' was given by
a) Julian Huxley b) Bateson c) Linnaeus d) Darwin
38. A genus with a single species is called



- a) Typical b) Polytype c) Monotype d) Syntype
39. MABP stands for
a) Man and Biosphere Programme
b) Man and Biosphere Protection
c) Man and Biosphere Conservation and Protection
d) All of the above
40. Which of the following is correctly sequenced?
a) Phylum, class, order, family b) Phylum, order, class, genus
c) Phylum, class, family, order d) Phylum, order, family, class
41. A germplasm is a
a) Collection of seeds or plants consists diverse alleles of all genes in a crop
b) Collection of specimens of all the species of botanical garden
c) Collection of hybrid varieties of plants
d) Seed or pollar collection of threatened species of a group
42. Species is considered as
a) Largest taxon of taxonomy/classification
b) Key of taxonomy/classification
c) Smallest taxon of taxonomy/classification
d) Both small and largest unit of taxonomy/classification
43. Two or more species which occupy the same or overlapping area are known as
a) Sympatric b) Allotropic c) Sibling d) Sub-species
44. Who coined the term 'Phylum'?
a) Cuvier b) Aristotle c) Ernst Haeckel d) Hooker
45. Which of the following statements regarding universal rules of nomenclature is wrong?
a) The first word in a biological name represents the genus
b) The first word denoting the genus starts with a capital letter
c) Both the words in a biological name, when handwritten are separately underlined
d) Biological names are generally in Greek and written in italics
46. Category among following is
a) Species b) Malvaceae c) Thalmiflorae d) Dicotyledonae
47. 'SystemaNaturae' was written by
a) Ernst Mayr b) Carolus Linnaeus c) R H Whittaker d) W M Stanley
48. What is the symbol of Bombay Natural History Society?
a) Kingfisher b) Eagle c) Hornbill d) Hawaiiin Goose
49. Two different genera are classified in the same taxonomic category family. Which statement is correct about their classification?
a) The same class, but different species b) A different class and different order
c) The same phylum, but different class d) A different kingdom and different phylum
50. Metabolism can be best defined as
a) The process in which a chemical is formed inside a body
b) The process in which a chemical is destroyed inside a body
c) The sum total all of chemical reactions only occurring in a body
d) A complex construction process only
51. Among the following choose the properties shown by the living organism exclusively?
I. growth
II. increase in mass
III. self-replication ability
IV. response to touch stimuli



- a) I and II b) I, II and III c) I, III and IV d) I, II, III and IV
52. In hierarchical classification, class occupied a place between
a) Kingdom and phylum b) Order and family c) Phylum and order d) Family and genus
53. Choose the wrong statements regarding universal rules of nomenclature
a) The first word in a biological name represents the genus
b) The first word denoting the genus starts with a capital letter
c) Both the words in a biological name, when handwritten are separately underlined
d) Biological names are generally in English and written in italics
54. Who set up the first herbarium?
a) Engler and Pranti b) Bentham c) Luca Ghini d) Theophrastus
55. Who is regarded as Father of Zoology and Biology?
a) Aristotle b) Theophrastus c) Darwin d) Linnaeus
56. Among the following which is a common phenomenon exhibited by living and non-living organisms to show the feature of growth?
a) Increase in mass b) By cell division
c) Increase in replication rate d) By cell differentiation
57. A group of interconnected genera is called a
a) Family b) Class c) Phylum d) Order
58. Arrange the following in ascending similar characteristic
I. Family II. Genus III. Class IV. Species
a) Class < Family < Genus < Species
b) Family < Class < Genus < Species
c) Species < Genus < Family < Class
d) Class < Genus < Species < Family
59. In five kingdom classification the unicellular prokaryotic organisms were classified under kingdom
a) Protista b) Monera c) Animalia d) Plantae
60. Largest herbarium in India is
a) Madras Herbarium Coimbatore (TN)
b) Central, National Herbarium (Indian Botanical Garden) Sibpur, Kolkata (WB)
c) Herbarium of National Botanical Research Institute, Lucknow (UP)
d) Forest Research Institute, Dehradun (UA)
61. In which of the following, the usual taxonomic hierarchy is not followed?
a) Polypetalae and Gamopetalae b) Gamopetalae and Monochlamydae
c) Monochlamydae and monocots d) None of the above
62. Scientific name are printed (with english) and derived from
a) Bold and English
b) Italics and Latin
c) Italics and German
d) Italics and French
63. What is the basic unit of classification?
a) Family b) Order c) Species d) Genus
64. *Solanum* and *Panthera* are
a) Genus and species b) Genus and genus c) Species and species d) Only species
65. The biological concept of species was formulated by
a) Mayr b) Stebbins c) Heywood d) Love
66. National wildlife protection act came into force in/was inacted in
a) 1978 b) 1982 c) 1972 d) 1986
67. Biodiversity can be best defined as



- a) Occurrence of number and type of organisms
b) Species and ecosystem of a region
c) Variety of life in an ecosystem
d) Totality of genes, species and ecosystem of a given region
68. Who had written *Systema Naturae*?
a) Ernst Mayr b) Carolus Linnaeus c) RH Whittaker d) WM Stanley
69. Among the following which is a common phenomenon exhibited by living and non-living organisms to show the feature of growth?
a) Increase in mass
b) By cell division
c) Increase in replication rate
d) By cell differentiation
70. Who coined the term 'Species'?
a) John ray b) Aristotle c) Linnaeus d) Cuvier
71. Binomial nomenclature means that every organism has
a) Two names one scientific and other popular
b) One scientific name consisting of a generic and a specific epithet
c) One name given by two scientist
d) Two names, one Latinize and other of the person
72. Which one among the following is accurately arranged in descending specificity
a) Species → Family → Class → Order → Division
b) Species → Genus → Division → Class → Kingdom
c) Species → Genus → Family → Order → Class
d) Class → Order → Family → Genus → Species
73. What is illustrated by the statement 'Nothing lives forever, yet life continues'?
a) Metabolism b) Embryogenesis c) Reproduction d) Replication
74. Regeneration was first discovered in
a) *Hydra* b) *Planaria* c) Sponges d) *Amoeba*
75. Select the correct statement from the following statements
I. Increase in mass and increase in number of individuals are twin characteristics of growth
II. Metabolic reactions can also be demonstrated outside the body in isolated cell-free systems
III. 'Response to stimuli' is a defining property of living organisms
a) I and II b) II and III c) I and III d) I, II and III
76. Which one of the following has a real existence?
a) Genus b) Species c) Family d) Order
77. In plants growth occur by ... throughout their life span.
Choose an appropriate option to complete the given NCERT statement
a) Cell dedifferentiation b) Cell differentiation c) Cell multiplication d) None of these
78. In which of the following, metabolic reactions take place?
a) In living organism only
b) Both in living and non-living organism
c) In isolated cell free systems
d) Both (a) and (c)
79. Two or more species which occupy the same or overlapping area are known as
a) Sympatric b) Allotropic c) Sibling d) Sub-species
80. Third name in trinomial nomenclature indicate
a) Species b) Sub-species c) Sub-genus d) Ecotype of organism
81. Family placed between



- a) Genus and species b) Order and class c) Class and genus d) Order and genus
82. A defining property or characteristic of living organisms is
a) Increase in mass b) Development
c) Response to external stimuli d) Growth
83. ... is a book (taxonomic acid) which contain information about habitat, distribution, climate description and index of plant found in a particular area
a) Manual b) Flora c) Monograph d) Key
84. Natural system of classification is given by
a) Bentham and Hooker b) Carolus Linnaeus c) Charles Darwin d) Engler and Prantl
85. Five kingdom scheme to classify living being was given by
a) J B S Haldane b) G G Simpson c) E Mayr d) R H Whittaker
86. In majority of higher animals and plants reproduction and growth are
a) Mutually exclusive events b) Synonymous events
c) Both (a) and (b) d) None of the above
87. Which of the following classification is based in some morphological characters?
a) Artificial b) Natural c) Phylogenetic d) Both (A) and (c)
88. New systematic introduced by Sir Julian Huxley is also called
a) Phenetics b) Cladistics c) Biosystematics d) Numerical taxonomy
89. Who coined the term 'Phylum'?
a) Cuvier b) Aristotle c) Ernst Haeckel d) Hooker
90. Evolutionary history of an organism is known as
a) Phylogeny b) Ancestry c) Paleontology d) Ontogeny
91. Distinction of prokaryota and eukaryote is based on
a) Cell organelles only b) Chromosome only c) Nucleus only d) All of these
92. The phylogenetic system of classification was put forth by
a) Carolus Linnaeus b) George Bentham and Joseph Dalton Hooker
c) Aristotle d) Adolf Engler and Karl Prantl
93. Term 'Taxonomy' was coined by
a) De Candolle b) Takhtajan c) Linnaeus d) Aristotle
94. Largest herbarium in India is
a) Madras Herbarium Coimbatore (TN)
b) Central, National Herbarium (Indian Botanical Garden) Sibpur, Kolkata (WB)
c) Herbarium of National Botanical Research Institute, Lucknow (UP)
d) Forest Research Institute, Dehradun (UA)
95. Who set up the first herbarium?
a) Engler and Pranti b) Bentham c) Luca Ghini d) Theophrastus
96. Phylogenetic system of classification is based on
a) Evolutionary relationships b) Morphological features
c) Chemical constituents d) Floral characters
97. A living organism can be easily distinguished from non-living on the basis of
a) Responsiveness to touch stimuli
b) Movement and growth
c) Reproduction
d) Interaction with environment and progressive evolution
98. The term 'Taxonomy' was introduced by
a) de Candolle b) Bentham and Hooker c) Linnaeus d) Huxley
99. A species is a group of organisms which
a) Can interbreed freely



- b) Do not interbreed
c) Can live together
d) Can interbreed occasionally
100. Which branch of taxonomy is based on the determination of genetic relationship?
a) Experimental taxonomy
b) Numerical taxonomy
c) Cytotaxonomy
d) Biochemical taxonomy
101. Who coined the term 'Species'?
a) John ray b) Aristotle c) Linnaeus d) Cuvier
102. Which one of the following branch is applicable to both plants and animals?
a) Herpetology b) Saurology c) Taxonomy d) Ichthyology
103. Which of the following set of organisms reproduce by fragmentation (asexual mode of reproduction)?
a) *Amoeba*, fungi and earthworm
b) Fungi, filamentous algae and protonema of mosses
c) *Hydra*, fungi, *Amoeba* and bacteria
d) Earthworm, bacteria and fungi
104. Which one of the taxonomic aids can give comprehensive account of complete compiled information of any one genus or family at a particular time?
a) Taxonomic key b) Flora c) Herbarium d) Monograph
105. A 'texa' differ from 'taxon' due to
a) Being a higher taxonomic category than taxon
b) Being a lower taxonomic category than taxon
c) Being a plural of taxon
d) Being singular of taxon
106. What name would be suggested for phylum in classification of plants?
a) Phylum b) Sub-division c) Division d) Both (b) and (c)
107. Taxon is a/an
a) Group of same species b) Any rank in taxonomic hierarchy
c) Group of similar genera d) Sub-division of kingdom
108. Phylogenetic system of classification was proposed by
a) Linnaeus b) Bentham c) Hutchinson d) Theophrastus
109. Who has written the book *Historia Generalis Plantarum*?
a) Hutchinson b) Lamarck c) John Ray d) Linnaeus
110. A taxon is a
a) Group of related species b) Group of related families
c) Type of living organism d) Taxonomic group of any ranking
111. The genus *Felis* includes
a) Tiger b) Fish c) Cat d) Frog
112. Who is regarded as Father of Zoology and Biology?
a) Aristotle b) Theophrastus c) Darwin d) Linnaeus
113. Where labelling is done/pasted on herbarium sheet?
a) Lower RHS b) Lower LHS c) Upper RHS d) Upper LHS
114. A germplasm collection is a
a) Collection of specimens of all the species of an area in a herbarium or botanical garden
b) Collection of modern varieties of a crop
c) Collection of plants or seeds having diverse alleles of all genes in a crop
d) Collection of seeds or pollen of rare and threatened species of a group or area



115. 'Ordines Anomali' of Bentham and Hooker includes
- Seed plants showing abnormal forms of growth and development
 - Plants represented only in fossil state
 - Plants described in the literature but which Bentham and Hooker did not see in original
 - A few orders which could not be placed satisfactorily in the classification
116. Growth in unicellular organisms can be observed by
- Counting the mass of cultured cells
 - Analysing the amount of nutrient absorb by living organism
 - Growth can not be observed
 - In vitro* culture by simply counting the number of cells under microscope
117. Which of the following are considered as the twin characteristics of growth?
- Responses to stimuli
 - Increases in mass
 - Increases in the number of individuals
 - Increases in width
- a) II and IV b) III and IV c) II and III d) I, II, III and IV
118. Biodiversity can be best defined as
- Occurrence of number and type of organisms
 - Species and ecosystem of a region
 - Variety of life in an ecosystem
 - Totality of genes, species and ecosystem of a given region
119. Scientific name are printed (with english) and derived from
- a) Bold and English b) Italics and Latin c) Italics and German d) Italics and French
120. A living organism can be easily distinguished from non-living on the basis of
- Responsiveness to touch stimuli
 - Movement and growth
 - Reproduction
 - Interaction with environment and progressive evolution
121. In five kingdom classification the unicellular prokaryotic organisms were classified under kingdom
- a) Protista b) Monera c) Animalia d) Plantae
122. In angiosperms floral features are commonly used for identification, why?
- Flower can be preserved easily
 - Flower are attractive to work with
 - Flower have aroma and different colour
 - Reproductive parts are more conservative
123. True regeneration is found in
- a) *Amoeba* b) *Hydra* c) *Planaria* d) Bacteria
124. The basic unit of classification is
- a) Species b) Genus c) Family d) Phylum
125. Where is Biosphere Reserve Simlialpal located?
- a) Kerala b) Odisha c) Asom d) Sikkim
126. Where labelling is done/pasted on herbarium sheet?
- a) Lower RHS b) Lower LHS c) Upper RHS d) Upper LHS
127. Who is regarded as Father of Taxonomy?
- a) Hooker b) Linnaeus c) Aristotle d) De Candolle
128. Bionomial nomenclature was first issued in
- a) *Systema Naturae* b) *Genera Plantarum* c) *Genera Animalium* d) *Species Plantarum*
129. National wildlife protection act came into force in/was inacted in
- a) 1978 b) 1982 c) 1972 d) 1986

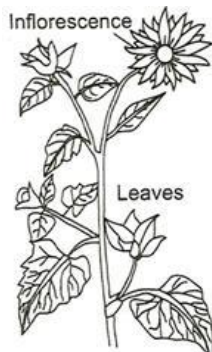


130. A taxon is a
a) Group of related species
b) Group of related families
c) Type of living organism
d) Taxonomic group of any ranking
131. A 'taxa' differ from 'taxon' due to
a) Being a higher taxonomic category than taxon
b) Being a lower taxonomic category than taxon
c) Being a plural of taxon
d) Being singular of taxon
132. Correct name is
a) *brassica indica*
b) Magnifera Indica
c) SOLANUM MELONGINA
d) *Mimosa Pudica*
133. Increase in body mass can be considered a criterion for growth
a) In living being b) Non-living being c) Both (a) and (b) d) None of these
134. Who is regarded as Father of Taxonomy?
a) Hooker b) Linnaeus c) Aristotle d) De Candolle
135. Which one of the following taxonomic categories top the hierarchy of categories?
a) Order b) Division c) Class d) Family
136. In five kingdom classification, the eukaryotes were assigned under how many kingdoms?
a) Only four kingdom
b) All five kingdom
c) Only two kingdom
d) Only three kingdom
137. Which taxonomical aid provide all information about a particular taxon like order or family
a) Herbarium b) Catalogue c) Taxonomic key d) Monograph
138. Binomial system of nomenclature was given by
a) Engler b) Linaeus c) Prantl d) Both (a) and (C)
139. In which of the following, metabolic reactions take place?
a) In living organism only
b) Both in living and non-living organism
c) In isolated cell free systems
d) Both (a) and (c)
140. What is the old name of Indian Board of wildlife
a) National Board of Wildlife Animal
b) Central Board of Wildlife
c) Board of Wildlife
d) Wildlife Protection Board
141. According to binomial nomenclature, scientific name of an organism consists of
a) Generic name b) Specific epithet c) Both (a) and (b) d) None of these
142. Different (various) group of ranks or levels in classification is known/called as
a) Category b) Order c) Genera d) Taxon
143. Species is considered as
a) Largest taxon of taxonomy/classification
b) Key of taxonomy/classification
c) Smallest taxon of faxonomy/classification
d) Both small and largest unit of taxonomy/classification
144. Which one of the following is the feature of phylum-Chordata is also exhibited by adult tunicate?



- a) Possession of visceral slits
- b) Possession of a ventral chord
- c) Possession of closed vascular system
- d) Possession of ventral tubular nervous system

145. Choose the correct classification for the given plant



- a) Plantae, Angiosperm, Monocotyledons
 - b) Plantae, Angiosperm, Dicotyledons
 - c) Plantae, Gymnosperm, Monocot
 - d) Plantae, Pteridophytes, Dicot
146. Scientific study of diversity of organisms and their evolutionary relationship is
- a) Morphology
 - b) Anatomy
 - c) Taxonomy
 - d) Systematics
147. Different (various) group of ranks or levels in classification is known/called as
- a) Category
 - b) Order
 - c) Genera
 - d) Taxon
148. The concept that monocots are more primitive than dicots was proposed by
- a) Bentham and Hooker
 - b) Theophrastus
 - c) Aristotle
 - d) Engler and Prantl
149. A defining property or characteristic of living organisms is
- a) Increase in mass
 - b) Development
 - c) Response to external stimuli
 - d) Growth
150. What is the old name of Indian Board of wildlife
- a) National Board of Wildlife Animal
 - b) Central Board of Wildlife
 - c) Board of Wildlife
 - d) Wildlife Protection Board
151. Species are consider as
- a) Artificial concept of human mind which cannot be defined in absolute terms
 - b) Real units of classification devised by taxonomists
 - c) Real basic units of classification
 - d) The lowest units of classification
152. In plants growth occur by ... throughout their life span.
Choose an appropriate option to complete the given NCERT statement
- a) Cell dedifferentiation
 - b) Cell differentiation
 - c) Cell multiplication
 - d) None of these
153. Growth in unicellular organisms can be observed by
- a) Counting the mass of cultured cells
 - b) Analysing the amount of nutrient absorb by living organism
 - c) Growth can not be observed
 - d) *In vitro* culture by simply counting the number of cells under microscope
154. Largest herbarium in the world is
- a) Conservatory and Botanical Garden, Geneva
 - b) New York Botanical Garden

- c) Royal Botanical Garden, Kew (London)
d) British, Museum of Natural History
155. Taxonomic hierarchy refers to
a) Stepwise arrangement of all categories for classification of plants and animals
b) A group of senior taxonomists, who decide the nomenclature of plants and animals
c) A list of botanists or zoologists, who have worked on taxonomy of a species or group
d) Classification of a species based on fossil record
156. A perennial shrub has compound leaves and solitary zygomorphic and epigynous flowers. Each flower reveals dichlamydeous condition with many stamens and multiple fruit with exalbuminous seeds. What is the ratio of advanced and primitive characters in it?
a) 1:2 b) 2:3 c) 1:1 d) 3:2
157. A germplasm is a
a) Collection of seeds or plants consists diverse alleles of all genes in a crop
b) Collection of specimens of all the species of botanical garden
c) Collection of hybrid varieties of plants
d) Seed or pollar collection of threatened species of a group
158. Which one of the following has a real existence?
a) Genus b) Species c) Family d) Order
159. Binomial system of classification was based on
a) Embryology b) Morphology c) Cytology d) Anatomy
160. Which is not a category?
a) Asteraceae/Fabaceae b) Species c) Phylum d) Class
161. Select true and false statement and choose correct answer from the option given below
I. Taxon is a group of related organism
II. *Homo sapiens* is the scientific name of man
III. Royal Botanical Garden is located in Bristol (England)
IV. Dudhwa National Park is located at Lakhimpur in UP
V. There are about 89 wildlife sanctuaries and 492 National Parks in India
VI. When specific name is identical to generic name it is an example of tautonym
a) True-I, III, V, False-II, IV, VI b) True-I, II, III, False-IV, V, VI
c) True-II, IV, VI, False-V, III, I d) True-VI, V, IV, False-III, II, I
162. Biological organization in living state is at
a) Sub-microscopic level b) Atomic level
c) Cellular level d) Mixture level
163. Which of the following are considered as the twin characteristics of growth?
I. Responses to stimuli
II. Increases in mass
III. Increases in the number of individuals
IV. Increases in width
a) II and IV b) III and IV c) II and III d) I, II, III and IV
164. Linnaean system of plant classification is based on
a) Morphological and anatomical characters b) Evolutionary trends
c) Floral characters d) None of the above
165. A group of inbreeding plant or animals is
a) Order b) Species c) Family d) Genus
166. Binomial nomenclature means
a) A scientific name, which consist of two words giving a generic name and a specific name
b) One name is given by two scientists



- c) Two name, one vernacular and one scientific
d) Two name, one in Latin and other is a named of person
167. Tautonym is
a) Unscientific explanation of a phenomenon b) Common name used as a scientific name
c) Nonlatinised name d) Same name for genus and species
168. What size of herbarium sheet and label is recommended generally?
a) 30×40 cm, 6×12 cm b) 29×41 cm, 7×14 cm
c) 30×45 cm, 7×12 cm d) 20×30 cm, 5×10 cm
169. Choose the correct classification for the given plant



- a) Plantae, Angiosperm, Monocotyledons
b) Plantae, Angiosperm, Dicotyledons
c) Plantae, Gymnosperm, Monocot
d) Plantae, Pteridophytes, Dicot
170. Which one is correctly written scientific name?
a) *Panther Tigris* b) *Mangifera indica*
c) *Pucnthera Leo* d) *Columnba LIVEA*
171. New systematics introduced by Sir Julian Huxley is also called as
a) Phonetics b) Cladistics
c) Biosystematics d) Numerical taxonomy
172. Which one of the category contain the least similar characteristic to one another?
a) Class b) Order c) Family d) Division
173. Who first proved that virus was made up of a nucleic acid and protein?
a) Griffith b) WM Stanley c) Dr Salvador Huria and Dr Max Delbruck d) Dr NW Pjrie and Dr FC Bawden
174. In five kingdom classification, the eukaryotes were assigned under how many kingdoms?
a) Only four kingdom b) All five kingdom c) Only two kingdom d) Only three kingdom
175. Select the correct statement from the following statements
I. Increase in mass and increase in number of individuals are twin characteristics of growth
II. Metabolic reactions can also be demonstrated outside the body in isolated cell-free systems
III. 'Response to stimuli' is a defining property of living organisms
a) I and II b) II and III c) I and III d) I, II and III
176. In *Mangifera indica*, the word *Mangifera* is a
a) Genus b) Species c) Variety d) Order
177. In majority of higher animals and plants reproduction and growth are
a) Mutually exclusive events
b) Synonymous events
c) Both (a) and (b)
d) None of the above
178. Binomial nomenclature means

- a) A scientific name, which consist of two words giving a generic name and a specific name
b) One name is given by two scientists
c) Two name, one vernacular and one scientific
d) Two name, one in Latin and other is a named of person
179. Which taxonomical aid provide all information about a particular taxon like order or family
a) Herbarium b) Catalogue c) Taxonomic key d) Monograph
180. The biological definition of a species depends on
a) The geographical distribution of two groups of organism
b) Reproductive isolation of two groups of organism
c) Anatomical and development differences between the two groups of organism
d) Difference in the adaptation of two groups of organism
181. Which is the only kingdom occupied by BGA, nitrogen fixing bacteria and methanogenic bacteria in five kingdom classification?
a) Plantae b) Protista c) Monera d) Fungi
182. What is the basic unit of classification?
a) Family b) Order c) Species d) Genus
183. Which of the following is a category?
a) Division b) Phylum c) Viruses d) Both (a) and (b)
184. Distinction of prokaryota and eukaryote is based on
a) Cell organelles only
b) Chromosome only
c) Nucleus only
d) All of these
185. Cladistics can be defines as
a) The relationship between sub-species and species
b) Relationship between two most forward races
c) Relationship between endangered and surviving species
d) Method of classification that attempt to interface phylogenetic relationship
186. Why hierarchiral taxonomic system is used?
a) As each higher taxonomic category contains its below groups groups/categories
b) It is helpful to established classifications
c) All taxonomic categories reflect common habitats
d) Taxonomic group shows similar characters and have no evolutionary relationship
187. Which one among the following is accurately arranged in descending specificity
a) Species → Family → Class → Order → Division b) Species → Genus → Division → Class → Kingdom
c) Species → Genus → Family → Order → Class d) Class → Order → Family → Genus → Species
188. Viral genome when incorporated and integrated with bacterial genome is referred as
a) Prophages b) DNA c) RNA d) Both (a) and (c)
189. Process of metabolism leads to
a) Growth
b) Development
c) Functions of living body
d) All of these
190. The suffix 'phyta' indicates
a) Family b) Class c) Order d) Division
191. A group of organisms with similar trait of any rank is
a) Taxon b) Family c) Genus d) Species
192. Ascending or descending arrangement of taxonomic categories is known as



- a) Classification b) Key c) Taxonomy d) Hierarchy
193. A group of inbreeding plant or animals is
a) Order b) Species c) Family d) Genus
194. Regeneration was first discovered in
a) *Hydra* b) *Planaria* c) Sponges d) *Amoeba*
195. What is illustrated by the statement 'Nothing lives forever, yet life continues'?
a) Metabolism b) Embryogenesis c) Reproduction d) Replication
196. ICVCN stands for
a) International Code of Virus Nomenclature
b) International Code of Valuation in Nomenclature
c) International Code of viral Classification and Nomenclature
d) International Code of Virulence Nomenclature
197. In *Solanum tuberosum*, first and second word stand for, respectively
a) Genus, generic name
b) Specific epithet species
c) Specific name and generic name
d) Generic name and specific name
198. In *Mangifera indica*, the word *Mangifera* is a
a) Genus b) Species c) Variety d) Order
199. An example for the artificial system of classification is
a) Betham and Hooker b) Linnaeus system c) Engler and Prantl d) Bessey
200. Select the correct option from the following
a) Mule can reproduce b) Worker bee undergoes reproduction to generate new progeny
c) Mule and worker bee do not reproduce d) None of the above
201. Which is not a category?
a) Asteraceae/Fabaceae b) Species c) Phylum d) Class
202. Viral genome when incorporated and integrated with bacterial genome is referred as
a) Prophages b) DNA c) RNA d) Both (a) and (c)
203. In angiosperms floral features are commonly used for identification, why?
a) Flower can be preserved easily
b) Flower are attractive to work with
c) Flower have aroma and different colour
d) Reproductive parts are more conservative
204. A place where dried, pressed and preserved plant specimens are kept
a) Herbarium b) Museum c) Botanical garden d) Both (a) and (c)
205. Which one is the important function of botanical garden?
a) Allow *ex situ* conservation of germplasm
b) Are place for recreation
c) Plant diversity can be observed
d) Provide natural habitat for wildlife
206. Select true statement from the following and choose the right answer from the option given below
I. Human's scientific name is *Homo sapiens*
II. *Genera Plantarum* is written by John Ray
III. Highest taxonomic categories is division
IV. Taxonomic group of any rank is taxon
V. A group of closely related species of organism represent genus
VI. The term 'systematic' was coined by de Candolle



223. Which one of the category contain the least similar characteristic to one another?
a) Class b) Order c) Family d) Division
224. Binomial system of nomenclature was given by
a) Julian Huxley b) Bentham and Hooker c) Linnaeus d) Casper Bauhin
225. Which is first step in taxonomy?
a) Description of the organism b) Identification of the organism
c) Nomenclature of the organism d) Classification of the organism
226. Among the following listed features, which is not a unique feature of living organisms?
a) Increase in size
b) Response to stimuli
c) Self organisation
d) Growth and reproduction
227. Which one is species?
a) *Cannis* b) *Pisum* c) *Leo* d) Carnivora
228. Biological organisation level of living being can be represented as
a) Sub-cellular → Cellular → Individual → Population b) Atomic → Molecular → Cellular → Tissue → Organ
→ Organ systems → Individual
c) Organ system → Tissue → Cellular → Molecular → Atomic d) Individual → Molecular → Tissue → Organ system
→ Population
229. Nomenclature given by Linnaeus is
a) Binomial b) Trinomial c) Phylogenetic d) Natural
230. Two different genera are classified in the same taxonomic category family. Which statement is correct about their classification?
a) The same class, but different species
b) A different class and different order
c) The same phylum, but different class
d) A different kingdom and different phylum
231. Choose the correct sequence in the hierarchy of taxonomic categories in descending order.
a) Species-genus-family-order-class-division b) Division-order-class-family-genus-species
c) Division-class-family-order-genus-species d) Division-class-order-family-genus-species
232. What name would be suggested for phylum in classification of plants?
a) Phylum b) Sub-division c) Division d) Both (b) and (c)
233. A species is a group of organisms which
a) Can interbreed freely
b) Do not interbreed
c) Can live together
d) Can interbreed occasionally
234. Which one is the important function of botanical garden?
a) Allow *ex situ* conservation of germplasm
b) Are place for recreation
c) Plant diversity can be observed
d) Provide natural habitat for wildlife
235. Which one is the first biosphere reserve?
a) Norkrek Biosphere Reserve
b) Simlipal Biosphere Reserve
c) Pachmarhi Biosphere Reserve
d) Nilgiri Biosphere Reserve
236. Father of botany is



- a) Aristotle b) Robert Hooke c) Darwin d) Theophrastus
237. Two plants can be conclusively said to belong to the same species if they
- a) Can reproduce freely with each other and form seeds
b) Have more than 90 percent similar genes
c) Look similar and possess identical secondary metabolites
d) Have same number of chromosomes.
238. Which one is the first biosphere reserve?
- a) Norkrek Biosphere Reserve b) Simlipal Biosphere Reserve
c) Pachmarhi Biosphere Reserve d) Nilgiri Biosphere Reserve
239. A place where dried, pressed and preserved plant specimens are kept
- a) Herbarium b) Museum c) Botanical garden d) Both (a) and (c)
240. Which one of the following feature is shared by all living organism at all hierarchial level
- a) Mode of nutrition b) Cellular organization
c) Nature of protoplasmic-composition d) Growth by cell division
241. Select the wrong statements.
- (I) Lower the taxon, more are the characteristics that the member within the taxon share.
(II) Order is the assemblage of genera which exhibit a few similar characters.
(III) Cat and dog are included in the same family-Felidae.
(iv) Binomial nomenclature was introduced by Carolus Linnaeus.
- a) I, II and III b) II, III and IV c) I and IV d) II and III
242. ICBN stands for
- a) Indian Congress of Biological Name b) International Code for Botanical Nomenclature
c) International Congress of Biological Name d) Indian Code of Botanical Nomenclature
243. The framework system of classification in which various taxonomic categories are arranged in order of logical sequence is called
- a) Systematics b) Classification c) Hierarchy d) Taxon
244. Which of the following is a merit in the Bentham and Hooker's system of classification?
- a) The position of gymnosperms in between dicots and monocots
b) Closely related families are placed apart
c) The placement of family-Asteraceae in the beginning of Gamopetalae
d) The placement of order-Ranals in the beginning
245. Huxley is father of
- a) Classical taxonomy b) Artificial taxonomy
c) Neo-taxonomy d) Adansonian taxonomy
246. Classification based on chromosome number is
- a) Cytotaxonomy b) Numerical taxonomy c) Karyotaxonomy d) Biochemistry
247. Which one of the following taxonomic categories can categorized rest all others
- a) Family b) Genus c) Class d) order
248. This of the following taxonomist described classification of plant in 'Families of flowering plants'?
- a) Cronquist b) Thakhtajan c) Benson d) Hutchinson
249. National botanical research Institute is situated at
- a) Lucknow b) Kolkata c) Mumbai d) Chennai
250. What is the prime source of taxonomic studies?
- a) Collection of actual specimens of organisms species
b) Identification of actual specimen of organism species
c) Both (a) and (b)
d) None of the above
251. Choose the wrong statements regarding universal rules of nomenclature



- a) The first word in a biological name represents the genus
b) The first word denoting the genus starts with a capital letter
c) Both the words in a biological name, when handwritten are separately underlined
d) Biological names are generally in English and written in italics
252. The term 'species' was coined by
a) Aristotle b) Engler c) John Ray d) Linnaeus
253. Which one is correctly written scientific name?
a) *Panther Tigris* b) *Mangifera indica* c) *Pucnthera Leo* d) *Columnba LIVEA*
254. Metabolism can be best defined as
a) The process in which a chemical is formed inside a body
b) The process in which a chemical is destroyed inside a body
c) The sum total all of chemical reactions only occurring in a body
d) A complex construction process only
255. MABP stands for
a) Man and Biosphere Programme
b) Man and Biosphere Protection
c) Man and Biosphere Conservation and Protection
d) All of the above
256. In *Solanum tuberosum*, first and second word stand for, respectively
a) Genus, generic name
b) Specific epithet species
c) Specific name and generic name
d) Generic name and specific name
257. *Solanum* and *Panthera* are
a) Genus and species b) Genus and genus c) Species and species d) Only species
258. By which chemical specimen for herbaria are treated to prevent fungal attack
a) 0.1% mercuric chloride b) 0.1% mercurous chloride
c) Carbon disulphide d) Acetic acid
259. Which of the following is a category?
a) Division b) Phylum c) Viruses d) Both (a) and (b)
260. Who has written the book *Historia Generalis Plantarum*?
a) Hutchinson b) Lamarck c) John Ray d) Linnaeus
261. Read the following features and select the correct option from the options given below with respect to living beings
I. They reproduce
II. They metabolise
III. They have cellular organisation
IV. They have ability to respond to stimuli
a) I and III are true b) I and II are true c) Only III is true d) All are true
262. According to binomial nomenclature, scientific name of an organism consists of
a) Generic name
b) Specific epithet
c) Both (a) and (b)
d) None of these
263. Which one is species?
a) *Cannis* b) *Pisum* c) *Leo* d) Carnivora
264. New systematics introduced by Sir Julian Huxley is also called as
a) Phonetics b) Cladistics c) Biosystematics d) Numerical taxonomy



265. Largest herbarium in the world is
a) Conservatory and Botanical Garden, Geneva
b) New York Botanical Garden
c) Royal Botanical Garden, Kew (London)
d) British, Museum of Natural History
266. Read the following features and select the correct option from the options given below with respect to living beings
I. They reproduce
II. They metabolise
III. They have cellular organisation
IV. They have ability to respond to stimuli
a) I and III are true b) I and II are true c) Only III is true d) All are true
267. Abbreviation for International Code of Bacteriological Nomenclature is
a) ICBN b) IC Bact N c) ICNB d) IC Bati N
268. Abbreviation for International Code of Bacteriological Nomenclature is
a) ICBN b) IC Bact N c) ICNB d) IC Bati N
269. ICVCN stands for
a) International Code of Virus Nomenclature b) International Code of Valuation in Nomenclature
c) International Code of viral Classification and Nomenclature d) International Code of Virulence Nomenclature
270. Select true and false statement and choose correct answer from the option given below
I. Taxon is a group of related organism
II. *Homo sapiens* is the scientific name of man
III. Royal Botanical Garden is located in Bristol (England)
IV. Dudhwa National Park is located at Lakhimpur in UP
V. There are about 89 wildlife sanctuaries and 492 National Parks in India
VI. When specific name is identical to generic name it is an example of tautonym
a) True-I, III, V, False-II, IV, VI
b) True-I, II, III, False-IV, V, VI
c) True-II, IV, VI, False-V, III, I
d) True-VI, V, IV, False-III, II, I
271. Which branch of taxonomy is based on the determination of genetic relationship?
a) Experimental taxonomy
b) Numerical taxonomy
c) Cytotaxonomy
d) Biochemical taxonomy
272. One of the most important functions of botanical garden is
a) One can observe tropical plants there b) They allow *ex situ* conservation of germplasm
c) They provide the natural habitat for wildlife d) They provide a beautiful area for recreation
273. Reproduction is synonymous with growth in which of the following set of organisms?
a) Bacteria, unicellular algae and *Amoeba*
b) Bacteria, *Amoeba* and fungi
c) Unicellular algae and fungi
d) Unicellular algae and filamentous algae
274. Reproduction is synonymous with growth in which of the following set of organisms?
a) Bacteria, unicellular algae and *Amoeba* b) Bacteria, *Amoeba* and fungi
c) Unicellular algae and fungi d) Unicellular algae and filamentous algae
275. Where is Biosphere Reserve Simlipal located?



- a) Kerala b) Odisha c) Asom d) Sikkim
276. Who had written *Systema Naturae*?
a) Ernst Mayr b) Carolus Linnaeus c) RH Whittaker d) WM Stanley
277. A genus with a single species is called
a) Typical b) Polytype c) Monotype d) Syntype
278. Ascending or descending arrangement of taxonomic categories is known as
a) Classification b) Key c) Taxonomy d) Hierarchy
279. Binomial system of classification was based on
a) Embryology b) Morphology c) Cytology d) Anatomy
280. Which series ends with the cohort umbellales in Bentham and Hooker's system of classification?
a) Thalamiflorae b) Disciflorae c) Heteromerae d) Calyciflorae

SENJEE



Assertion - Reasoning Type

This section contain(s) 0 questions numbered 1 to 0. Each question contains STATEMENT 1(Assertion) and STATEMENT 2(Reason). Each question has the 4 choices (a), (b), (c) and (d) out of which **ONLY ONE** is correct.

- a) Statement 1 is True, Statement 2 is True; Statement 2 **is** correct explanation for Statement 1
- b) Statement 1 is True, Statement 2 is True; Statement 2 **is not** correct explanation for Statement 1
- c) Statement 1 is True, Statement 2 is False
- d) Statement 1 is False, Statement 2 is True

1

Statement 1: There are seven obligate categories in hierarchy of taxonomy

Statement 2: Other categories of similar type can be called as intermediate categories

2

Statement 1: Linnaeus system of animal classification is essentially an artificial system, yet it has become a natural system.

Statement 2: Similarities forming the basis in Linnaeus system are indicative of genetic relationship

3

Statement 1: Museums are places/institution where preserved plant, animals, artistic and educational material are exhibited to public

Statement 2: Museums are of different kinds, like art, history, science and general museum which exhibit their material to public awareness

4

Statement 1: The scientific name *Malus malus* is illegitimate

Statement 2: It is a tautonym.

5

Statement 1: Death is considered as the regulatory process on earth

Statement 2: It avoids increasing population caused by continuous reproduction

6

Statement 1: Hierarchical system of classification is useful to reduce volume's description in a catalogue of organism

Statement 2: Characters of a larger category (like division are not repeated for smaller/lower categories family and order)

7

Statement 1: Death is considered as the regulatory process on earth

Statement 2: It avoids increasing population caused by continuous reproduction



8

Statement 1: "The Biological Species" concept helps us to ask how species are formed.

Statement 2: The concept of biological species focusses our attention on the question of how reproductive isolation comes about

9

Statement 1: Hierarchical system of classification is useful to reduce volume's description in a catalogue of organism

Statement 2: Characters of a larger category (like division are not repeated for smaller/lower categories family and order)

10

Statement 1: All white tigers in the world are progeny of white male tiger 'Mohan'

Statement 2: A white male tiger was captured from forest by Maharaja of Rewa and reared as Mohan

11

Statement 1: There are seven obligate categories in hierarchy of taxonomy

Statement 2: Other categories of similar type can be called as intermediate categories

12

Statement 1: A morphology based approach to taxonomy is called 'Alpha taxonomy' and it is old fashioned

Statement 2: A multi-disciplinary approach to taxonomy called 'Omega taxonomy' is favored in recent years, as it excludes morphological features.

13

Statement 1: All white tigers in the world are progeny of white male tiger 'Mohan'

Statement 2: A white male tiger was captured from forest by Maharaja of Rewa and reared as Mohan

14

Statement 1: Museums are places/institution where preserved plant, animals, artistic and educational material are exhibited to public

Statement 2: Museums are of different kinds, like art, history, science and general museum which exhibit their material to public awareness



1. Matrix-Match Type

This section contain(s) 0 question(s). Each question contains Statements given in 2 columns which have to be matched. Statements (A, B, C, D) in **columns I** have to be matched with Statements (p, q, r, s) in **columns II**.

1. Match the following columns

Column-I	Column- II
(A) Herbarium	(1) Preserved plant and animal specimen and also artistic and educational material
(B) Botanical Garden	(2) Living wild animal in their natural habitat
(C) Zoological Park	(3) Preserved plant specimen on sheet
(D) Museum	(4) Diversity of living plant

CODES :

	A	B	C	D	E
a)	4	2	1		b
b)	4	2	3		b
c)	3	1	2		b
d)	1	2	3		b
e)					b

2. Match the following columns

Column-I	Column- II
(A) Lal Bagh	(1) Darjeeling
(B) National Botanical Garden	(2) Kolkata
(C) Indian Botanical Garden	(3) Lucknow
(D) Forest Research Institute	(4) Dehradun
(E) Loyd's Botanical Garden	(5) Bengaluru

CODES :

	A	B	C	D	E
a)	3	2	4	1	b
b)	3	2	4	5	b
c)	1	3	4	1	b
d)	1	3	4	5	b



e)

b

3. Match the following columns

Column-I

Column- II

- (A) Lal Bagh
- (B) National Botanical Garden
- (C) Indian Botanical Garden
- (D) Forest Research Institute
- (E) Loyd's Botanical Garden

- (1) Darjeeling
- (2) Kolkata
- (3) Lucknow
- (4) Dehradun
- (5) Bengaluru

CODES :

	A	B	C	D	E
a)	5	3	2	4	1
b)	1	3	2	4	1
c)	2	1	3	4	1
d)	4	1	3	4	1

4. Match the following columns

Column-I

Column- II

- (A) Herbarium
- (B) Botanical Garden
- (C) Zoological Park
- (D) Museum

- (1) Preserved plant and animal specimen and also artistic and educational material
- (2) Living wild animal in their natural habitat
- (3) Preserved plant specimen on sheet
- (4) Diversity of living plant

CODES :

	A	B	C	D
a)	3	4	2	1
b)	1	4	2	3
c)	4	3	1	2
d)	4	1	2	3

5. Match the following columns

Column-I

Column- II



- (A) *Planaria*
(B) Fungi
(C) Yeast
(D) *Hydra*
(E) *Amoeba*

- (1) Binary fission
(2) Asexual spores
(3) Budding
(4) True regeneration
(5) Fragmentation

CODES :

	A	B	C	D	E
a)	2	4	5	1	b
b)	2	3	3	1	b
c)	2	3	1	4	b
d)	2	1	3	2	b
e)					b

6. Match the following columns

Column-I

Column- II

- (A) Kingdom
(B) Order
(C) Family
(D) Genus
(E) Species

- (1) Anuus
(2) *Helianthus*
(3) Fungi
(4) Canidae
(5) Rannales

CODES :

	A	B	C	D	E
a)	3	5	4	2	1
b)	3	4	5	2	1
c)	3	5	2	4	1
d)	1	5	2	4	1

7. Match the following columns

Column-I

Column- II

- (A) Family
(B) Kingdom

- (1) Tuberosum
(2) Polymoniales



- (C) Order
(D) Genus
(E) Species

- (3) *Solanum*
(4) Plantae
(5) Solanaceae

CODES :

	A	B	C	D	E
a)	5	4	2	3	1
b)	5	4	1	3	1
c)	1	2	3	5	1
d)	2	1	3	4	1

8. Match the following columns

Column-I

- (A) Kingdom
(B) Order
(C) Family
(D) Genus
(E) Species

Column- II

- (1) Anuus
(2) *Helianthus*
(3) Fungi
(4) Canidae
(5) Rannales

CODES :

	A	B	C	D	E
a)	5	4	2	1	b
b)	4	5	2	1	b
c)	5	2	4	1	b
d)	5	2	4	3	b
e)					b

9. Match the following columns

Column-I

- (A) Family
(B) Kingdom
(C) Order
(D) Genus

Column- II

- (1) Tuberosum
(2) Polymoniales
(3) *Solanum*
(4) Plantae



(E) Species

(5) Solanaceae

CODES :

	A	B	C	D	E
a)	4	2	3	1	b
b)	4	1	3	2	b
c)	2	3	5	4	b
d)	1	3	4	5	b
e)					b

10. Match the following columns

Column-I

Column- II

- (A) *Planaria*
- (B) Fungi
- (C) Yeast
- (D) *Hydra*
- (E) *Amoeba*

- (1) Binary fission
- (2) Asexual spores
- (3) Budding
- (4) True regeneration
- (5) Fragmentation

CODES :

	A	B	C	D	E
a)	1	2	4	5	1
b)	4	2	3	3	1
c)	3	2	3	1	1
d)	4	2	1	3	1



1. THE LIVING WORLD

: ANSWER KEY :

- | | | | | | | | |
|------|---|------|---|------|---|------|---|
| 1) | a | 2) | a | 3) | b | 4) | d |
| 5) | b | 6) | d | 7) | d | 8) | c |
| 9) | c | 10) | b | 11) | d | 12) | d |
| 13) | b | 14) | c | 15) | b | 16) | c |
| 17) | c | 18) | a | 19) | b | 20) | a |
| 21) | c | 22) | c | 23) | b | 24) | a |
| 25) | b | 26) | a | 27) | a | 28) | c |
| 29) | c | 30) | b | 31) | d | 32) | a |
| 33) | b | 34) | b | 35) | b | 36) | a |
| 37) | a | 38) | c | 39) | a | 40) | a |
| 41) | a | 42) | c | 43) | b | 44) | a |
| 45) | d | 46) | a | 47) | b | 48) | c |
| 49) | a | 50) | c | 51) | c | 52) | c |
| 53) | d | 54) | c | 55) | a | 56) | a |
| 57) | a | 58) | a | 59) | b | 60) | b |
| 61) | c | 62) | b | 63) | c | 64) | b |
| 65) | a | 66) | c | 67) | a | 68) | b |
| 69) | a | 70) | a | 71) | b | 72) | c |
| 73) | c | 74) | a | 75) | d | 76) | b |
| 77) | c | 78) | d | 79) | b | 80) | b |
| 81) | d | 82) | c | 83) | b | 84) | a |
| 85) | d | 86) | b | 87) | a | 88) | b |
| 89) | a | 90) | a | 91) | d | 92) | d |
| 93) | a | 94) | b | 95) | c | 96) | a |
| 97) | c | 98) | a | 99) | a | 100) | a |
| 101) | a | 102) | c | 103) | b | 104) | d |
| 105) | c | 106) | c | 107) | b | 108) | c |
| 109) | c | 110) | d | 111) | b | 112) | a |
| 113) | a | 114) | c | 115) | c | 116) | d |
| 117) | c | 118) | a | 119) | b | 120) | c |
| 121) | b | 122) | d | 123) | c | 124) | a |
| 125) | b | 126) | a | 127) | b | 128) | d |
| 129) | c | 130) | d | 131) | c | 132) | a |
| 133) | c | 134) | b | 135) | b | 136) | a |
| 137) | c | 138) | b | 139) | d | 140) | b |
| 141) | c | 142) | d | 143) | c | 144) | a |
| 145) | b | 146) | d | 147) | d | 148) | d |
| 149) | c | 150) | b | 151) | c | 152) | c |
| 153) | d | 154) | c | 155) | a | 156) | c |
| 157) | a | 158) | b | 159) | b | 160) | a |



- | | | | |
|--------|--------|--------|--------|
| 161) c | 162) b | 163) c | 164) c |
| 165) b | 166) a | 167) d | 168) c |
| 169) b | 170) b | 171) b | 172) d |
| 173) d | 174) a | 175) d | 176) a |
| 177) b | 178) a | 179) c | 180) b |
| 181) c | 182) c | 183) d | 184) d |
| 185) d | 186) a | 187) c | 188) a |
| 189) d | 190) a | 191) a | 192) d |
| 193) b | 194) a | 195) c | 196) c |
| 197) d | 198) a | 199) b | 200) c |
| 201) a | 202) a | 203) d | 204) a |
| 205) a | 206) c | 207) a | 208) c |
| 209) c | 210) d | 211) a | 212) c |
| 213) c | 214) c | 215) c | 216) b |
| 217) b | 218) a | 219) a | 220) c |
| 221) b | 222) b | 223) d | 224) c |
| 225) b | 226) a | 227) c | 228) b |
| 229) a | 230) a | 231) d | 232) c |
| 233) a | 234) a | 235) d | 236) d |
| 237) a | 238) d | 239) a | 240) c |
| 241) d | 242) b | 243) c | 244) d |
| 245) c | 246) a | 247) c | 248) d |
| 249) a | 250) c | 251) d | 252) c |
| 253) b | 254) c | 255) a | 256) d |
| 257) b | 258) a | 259) d | 260) c |
| 261) d | 262) c | 263) c | 264) b |
| 265) c | 266) d | 267) c | 268) c |
| 269) c | 270) c | 271) a | 272) b |
| 273) a | 274) a | 275) b | 276) b |
| 277) c | 278) d | 279) b | 280) d |

: ANSWER KEY :

- | | | | | | | | |
|------|------|------|------|-------|-------|-------|-------|
| 1) b | 2) c | 3) a | 4) a | 9) a | 10) b | 11) b | 12) b |
| 5) a | 6) a | 7) a | 8) d | 13) b | 14) a | | |

: ANSWER KEY :

- | | | | |
|------|-------|------|------|
| 1) a | 2) a | 3) a | 4) a |
| 5) b | 6) a | 7) a | 8) a |
| 9) a | 10) b | | |



1. THE LIVING WORLD

: HINTS AND SOLUTIONS :

- 1 **(a)**
Biosystematics aims at morphological delimitation of taxa but incorporates evidences from Genetics, Cytology, Anatomy, Palynology, Chemistry, Physiology, etc.
- 2 **(a)**
Phenetics (Gr. *Phainein*= to appear; the term phenotypes is derived from this same root) dedicates taxonomic affinities entirely on the basis of measurable similarities and differences.
- 3 **(b)**
A **herbarium** (A) is a collection/place of pressed dried and preserved plants specimen **mounted on a paper sheets** (B) labelled and arranged systematically for further reference
- 4 **(d)**
Linnaeus classified all the living organisms into two large kingdoms, *i. e.*, Plantae and Animalia. The descending order of Linnaean hierarchy is Kingdom→Phylum→Class→Order→ Family → Genus → Species.
- 5 **(b)**
Luca Ghini a professor of Botany set-up the first herbarium at Pisa in Italy
- 6 **(d)**
Shark, snake, whale, reptile belong to phylum-Chordata.
Insect, spider and shrimp belong to phylum—Arthropoda. Fish, snail, squid and slug are molluscs, while earthworm is annelids, millipede is arthropods, *Hirudinaria* is common leech of phylum—Annelida
- 7 **(d)**
- The term 'Systematic Botany' refers to the methodical study of plants, dealing with identification, naming and classification.
- 8 **(c)**
Hornbill (a bird) is the symbol of Bombay Natural History Society. It is privately owned wildlife conservation agency/organisation
- 9 **(c)**
Linnaeus produced sexual system of classification based upon the numerical relations of the floral parts. He grouped all the genera into 24 classes based on number and morphological arrangement of their stamens.
- 10 **(b)**
Species is the smallest rank of taxonomic classification modern concept of species is biological species concept (E Mayr; 1942). Mayr defined the species as the group of interbreeding natural populations that are reproductively isolated from other such groups.
- 11 **(d)**
When synthetic process or constructive process called anabolism exceeds destructive process of the body *i.e.*, catabolism, growth will take place, which in turn proceeds development and body will function well
- 12 **(d)**
According to Mayr, species are group of interbreeding natural populations that are reproductively isolated from other such groups. Species is the lowest taxonomic rank. It contains most similar organisms.
- 13 **(b)**
In taxonomy, nomenclature of organisms is possible only when the correct place and correct



name is known. *i.e.*, organism must be described correctly. This is identification and is the first step in taxonomy

- 14 (c) The prime source of taxonomic studies is collection and identification of actual specimen. Nomenclature the present scientific method of naming the organism can be completed only when actual specimen is collected and identified

- 15 (b) Flora is a book or taxonomic aid which have adequate information about habitat, distributions of climate and index of plants present in a particular region

- 16 (c) Hierarchical classification is

Kingdom

↓

Division/Phylum

↓

Class

↓

Order

↓

Family

↓

Genus

↓

Species

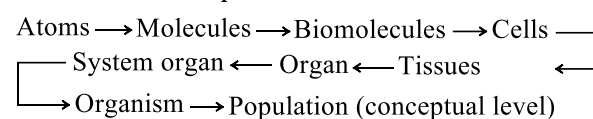
Class occupy a position between division/phylum and order

- 17 (c) Mule a result of outbreeding interspecific hybridization and worker bee lack primary sex organ. So, they are unable to do reproduction

- 18 (a) Hierarchical system is used in classification by majority of the biologist because each higher taxonomic category contain its below group, *i.e.*, it reduce the volume of description in a catalogue of animal and plants and character at larger category need not to be repeated for smaller categories

- 19 (b) Organization or living being starts with atomic, *i.e.*, sub-microscopic level and reaches to cells (microscopic level), then become visible or

microscopic with tissue and organs and then reaches to conceptual level



- 20 (a) The ascending hierarchy in similar characteristic is Class < Family < Genus < Species, *i.e.*, specificity is increasing

- 21 (c) Growth self-replication and response to stimuli are the properties, which are exclusive among the living being as increase in mass can be observed in non-living thing, e.g., mountains, sand mounds also shows increase in size by accumulation of material on their surface

- 22 (c) Nature of protoplasmic composition is shared by all living organism at all taxonomic categories. Mode of nutrition is peculiar feature of five kingdom classification

- 23 (b) A **herbarium** (A) is a collection/place of pressed dried and preserved plants specimen **mounted on a paper sheets** (B) labelled and arranged systematically for further reference

- 24 (a) 0.1% mercuric chloride solution are used to prevent fungal attack on herbarium naphthalene and carbon disulphide are common pesticides

- 25 (b) Binomial system of nomenclature was proposed by Carolus Linnaeus. The system of nomenclature was first issued in *Species Plantarum*. Binomial system approve two name for an organism, *i.e.*, generic and specific name

- 26 (a) Term 'Taxonomy' is coined by AP de Candolle (1813) in his book *Theory Elementarie de La Botanique, i.e.*, Theory of Elementary Botany. While Carolus Linnaeus is regarded as Father of Taxonomy

- 27 (a) A family is a group of related genera with less number of similarities as compared to genus and species

- 28 (c)



Regeneration is a process in which a lost part of the body is recreated by the organism to become a new organism. It can be best observed in flatworm *Planaria*

29 (c)

Genera Plantarum was written by Bentham and Hooker, highest taxonomic category is kingdom in hierarchy. Term 'Systematic' was first time used by Linnaeus

30 (b)

In trinomial nomenclature a third name is written or printed after two words name, which indicate sub-species or variety or race of the organism, e.g., Indian babul (*Acacia nilotica indica*). Where *indica* means Indian species of babul

31 (d)

Dr. NW Pjrie and Dr. FC Bawden proved that virus are composition of nucleoprotein, i.e., made up of nucleic acid and protein

32 (a)

The suffix phyta indicates division

33 (b)

The genus *Felis* is used to represent cats

34 (b)

Binomial system of nomenclature was proposed by Carolus Linnaeus. The system of nomenclature was first issued in *Species Plantarum*. Binomial system approve two name for an organism, i.e., generic and specific name

35 (b)

Luca Ghini a professor of Botany set-up the first herbarium at Pisa is Italy

36 (a)

Taxon can be defined as a group of organisms with similar trait of any taxonomic rank like roses (genus), legumes (family), gymnosperm (class). According to Simpson, it is a group of real organisms recognized at a formal unit at any level in hierarchy

37 (a)

The term new systematic was given by **Julian Huxley** (1940). New systematic or Biosystematics is the concept of systematic which bring out taxonomic affinity on the basis of evolutionary, genetic and morphological traits. The term systematic was given by **Linnaeus** (Father of

Taxonomy), who also gave binomial nomenclature concept.

Darwin has given theory of natural selection and theory of pangenesis.

38 (c)

A natural taxon means a group of similar, genetically, related organisms having certain distinct characters from other groups. A genus with single species is called monotypic genus

39 (a)

MABP stands for Man and Biosphere Programme

40 (a)

The system by which various taxonomic categories are arranged in a proper descending order is called taxonomic or systematic hierarchy. The correct sequence of categories in systematic hierarchy is-

Kingdom, sub-kingdom, division or phylum, class, sub-class, series, order, family, genus, species.

41 (a)

Germplasm is a collection seeds/plants which consists diverse alleles of all gene in a crop

42 (c)

Species is basic/lowest/smallest unit of taxonomy. According to Earnst Mayr species are group of interbreeding natural populations. Which are reproductively isolated from other such groups. It contains most similar organisms

43 (b)

Allotropic species are those group of individuals, which occupy the same or overlapping area in the different habitat and involve geographical isolation. While sympatric species occur without geographic isolation. Sibling have same ancestors and when species have subgroup, it is called subspecies or variety

44 (a)

Term phylum was coined by Cuvier. Aristotle is regarded as Father of Zoology as well as Biology. Earnst Haeckel proposed Biogenetic Law. Benthon and Hooker are pioneer workers in classification of organisms

45 (d)

There are certain rules



- (i) The names are in Latin language, sometimes in Greek.
- (ii) Generic name begins with the capital letter and is placed before specific name.
- The specific name begins with a small letter.
- (iii) The scientific name should either be underlined or italicized.
- (iv) Name of the authority should be written after specific epithet in an abbreviated form.
- 46 (a) Linnaeus introduced five categories in the taxonomic hierarchy, i.e., class, order, species and variety. Later on, three more categories, i.e., kingdom, division or phylum and family were added and variety was discarded to make a hierarchy of seven obligate categories.
- 47 (b) "**Systema Naturae**" was written by **Carolus Linnaeus**.
- 48 (c) Hornbill (a bird) is the symbol of Bombay Natural History Society. It is privately owned wildlife conservation agency/organisation
- 49 (a) In taxonomic categories family occupy the position between class and species (lowest) family can accommodate different genera but species are different like dog, jackal, wolf belong to same genera *Cannis* but species are different. But they belong to same class. More similar characteristic of order are grouped in same class
- 50 (c) Metabolism is the sum of all the metabolic activities in body, i.e., anabolism and catabolism. Anabolism is constructive process, while catabolism is a destructive process
- 51 (c) Growth self-replication and response to stimuli are the properties, which are exclusive among the living being as increase in mass can be observed in non-living thing, e.g., mountains, sand mounds
- also shows increase in size by accumulation of material on their surface
- 52 (c) Hierarchical classification is
Kingdom
↓
Division/Phylum
↓
Class
↓
Order
↓
Family
↓
Genus
↓
Species
Class occupy a position between division/phylum and order
- 53 (d) Biological or scientific name are generally written in italics at these are Greek or Latin words. The first word denotes genus and begin with capital letter, while second words denote species and starts with small letters
- 54 (c) World first herbarium was set-up Pisa in Italy by professor of Botany Luca Ghine
- 55 (a) Aristotle (384-322 BC) described structure, habit, reproduction and classification of animals in his book *Historia Animalium*. He is regarded as father of zoology and biology
- 56 (a) Increase in the body mass is a common feature of non-living and living objects to represent growth as non-living objects also grows if we take increase, in body mass as criterion for growth, e.g., mountains and boulder also grows by accumulation of material on surface
- 57 (a) A family is a group of related genera with less number of similarities as compared to genus and species
- 58 (a)



- The ascending hierarchy in similar characteristic is Class < Family < Genus < Species, *i.e.*, specificity is increasing
- 59 (b) Unicellular organisms are classified in kingdom-Monera, *i.e.*, 'kingdom of prokaryotes' of five kingdom classification, rest four kingdom are assigned to eukaryotes
- 60 (b) Largest herbarium in India is Central National Herbarium (Indian Botanical Garden) at Sibpur, Kolkata (WB)
- 61 (c) Polypetalae, Gamopetalae and Monochlamydeae are division of group dicotyledons.
- 62 (b) Binomial system of nomenclature was proposed by Carolus Linnaeus. The system of nomenclature was first issued in *Species Plantarum*. Binomial system approve two name for an organism, *i.e.*, generic and specific name
- 63 (c) The basic unit of classification is species. It is the lowest taxonomic category and consists one or more natural populations closely related that individual of other population
- 64 (b) *Solanum* and *Panthera* are genera of family—Solanaceae and Felidae, respectively
- 65 (a) The biological concept of species was formulated by Ernst Mayr.
- 66 (c) **Central Indian Government inacted wildlife protection act in 1972.** Some wildlife project in India are the project Hangul-operated in J & K Government, IUCN and WWF. Crocodile Breeding Project operated by UNDP and Central Government
- 67 (a) Number and type of organisms it includes
- 68 (b) *Systema Naturae* was a work of Carolus Linnaeus. He describe about 4330 species of animal in this, while around 6000 species of plant had been described in *Species Plantarum*
- 69 (a) Increase in the body mass is a common feature of non-living and living objects to represent growth as non-living objects also grows if we take increase, in body mass as criterion for growth, *e.g.*, mountains and boulder also grows by accumulation of material on surface
- 70 (a) John Ray introduced the term 'Species' in its presence sense for the first time. He also published a book *Historia Generalis Plantarum*
- 71 (b) Bauhin (1623) proposed a binary system of naming plants. This concept was properly enlarged by Lannaues (1753), while publishing 'Species Plantarum'. According to this, plant name consists of two parts-the generic and specific epithet.
- 72 (c) The accurate arrangement of species in order to descending specificity is
Species → Genus → Family → Order → Class
As in the taxonomical hierarchy similarity increases from highest category to lowest category
- 73 (c) Reproduction is not essential for the survival of individual. However, it is essential and required for the survival of population because the through this loss of life is compensated
- 74 (a) Regeneration was first observed in *Hydra*. *Planaria* exhibits true regeneration. All these organisms show regeneration as a key feature
- 75 (d) Increase in mass and increase in number of individuals are considered twin characteristics of growth, metabolic reaction can also be demonstrated *in vitro* and consciousness is considered as a determining property of livings
- 76 (b) Species is group of interbreeding populations according to biological concept of species (proposed by Mayr) and new species is formed from existing species
- 77 (c)



- In plant growth occurs by cell division or multiplication continuously in all parts throughout their life span
- 78 (d) Metabolic reactions can also be performed outside the body in a cell free system, *i.e.*, an isolated metabolic reaction *in vitro*
- 79 (b) Allotropic species are those group of individuals, which occupy the same or overlapping area in the different habitat and involve geographical isolation. While sympatric species occur without geographic isolation. Sibling have same ancestors and when species have subgroup, it is called subspecies or variety
- 80 (b) In trinomial nomenclature a third name is written or printed after two words name, which indicate sub-species or variety or race of the organism, *e.g.*, Indian babul (*Acacia nilotica indica*). Where *indica* means Indian species of babul
- 81 (d) The categories in taxonomic hierarchy are Kingdom → Division/Phylum → Class → Order → Family → Genus → Species.
- Hierarchy of categories is also called as Linnaean hierarchy.
- 82 (c) All living organism from prokaryotes to the most complex eukaryotes can respond external stimuli. The non-living things do not have this property at all
- 83 (b) Flora is a book or taxonomic aid which have adequate information about habitat, distributions of climate and index of plants present in a particular region
- 84 (a) In the natural system, all the important characters of plants are being considered and the plants are classified according to their related affinities. This system reflects the situation as it is thought to exist under natural conditions, *i.e.*, Bentham and Hooker's system.
- 85 (d)
- R H Whittaker** divided living organisms into five kingdoms based in cell, body structure, nutrition and life style. The five kingdoms as given by Whittaker are: **Monera, Protista, Fungi, Plantae** and **Animalia**.
- 86 (b) In majority of the higher organisms (plant and animals) reproduction and growth characteristic are mutually exclusive events as increase in the body size of living being do not alters the rate of reproduction or *vice-versa*
- 87 (a) In **artificial system** of classification, only a few characters of the plants are being considered, for example, the grouping of plants into herbs, shrubs and trees or the sexual system of Linnaeus was based on number od stamens. The best known artificial system is of **Linnaeus** published in 1735.
- 88 (b) **New systematics** or **biosystematics** is the concept of systematic, which brings out taxonomic affinity on the basis of evolutionary, genetic and morphological traits. New systematic brings out phylogenetic classification or **cladistics**.
- 89 (a) Term phylum was coined by Cuvier. Aristotle is regarded as Father of Zoology as well as Biology. Ernst Haeckel proposed Biogenetic Law. Bentham and Hooker are pioneer workers in classification of organisms
- 90 (a) **Phylogeny** (Gr. *Phylon*=tribe or race; *geneia*=origin) is the origin and diversification of any taxon or the evolutionary history of its origin and diversification. It is usually represented as a diagrammatic phylogenetic tree (that traces putative evolutionary relationships) *i.e.*, dendrogram.
- 91 (d) Prokaryote can be distinguished from eukaryotes on basis of the absence of cell organelles like chloroplast mitochondria, chromosome, nucleus and nuclear membrane
- 92 (d)



- The phylogenetic system classifies the plants according to their evolutionary and genetic relationships, e.g., classification system proposed by **Eicher, Engler and Prantl John Hutchinson** etc.
- 93 (a) Term 'Taxonomy' is coined by AP de Candolle (1813) in his book *Theory Elementarie de La Botanique*, i.e., Theory of Elementary Botany. While Carolus Linnaeus is regarded as Father of Taxonomy
- 94 (b) Largest herbarium in India is Central National Herbarium (Indian Botanical Garden) at Sibpur, Kolkata (WB)
- 95 (c) World first herbarium was set-up Pisa in Italy by professor of Botany Luca Ghine
- 96 (a) **Phylogenetic system** classifies the plants according to their evolutionary and genetic relationship, e. g., Eichler and Engler and Prantl's system of classifications.
- 97 (c) Reproduction.
Regeneration was first observed in *Hydra*. *Planaria* exhibits true regeneration. All these organisms show regeneration as a key feature
- 98 (a) The term 'taxonomy' was introduced by **A P de Candolle** (1813) in his book, '**TheorieElementarie de la Botanique**' (**Theory of Elementary Botany**). Father of taxonomy is regarded to **Carolus Linnaeus**.
- 99 (a) Species is a group of actually or potentially inbreeding population that are reproductively isolated from other such groups
- 100 (a) Experimental taxonomy is based on determination of genetic relationship, while cytotaxonomy is based on cytological study of chromosomes, i.e., behavior, number and morphology of chromosomes
- 101 (a) John Ray introduced the term 'Species' in its presence sense for the first time. He also published a book *Historia Generalis Plantarum*
- 102 (c) Taxonomy is applicable for both plants and animals.
- 103 (b) Reproduction by fragmentation can be best observed in protonema of mosses, filamentous algae and in the fungi
- 104 (d) In biological taxonomy, a monograph is a comprehensive, treatment of a taxon which revises all known species within a group, add any newly discovered species and collects and synthesis available information on various aspects, eg, ecological association, geographic distributions and morphological variations within the group.
- 105 (c) Taxa is plural of taxon. A taxon represents a grouping in a systematic classification of organism (whatever its rank)
- 106 (c) In hierarchical system of classification phylum and division occupy the same position which are used in classification of animal and plant, respectively
- 107 (b) Taxon is used to represent any rank in taxonomic hierarchy.
- 108 (c) Phylogenetic system involves the classification of plants, according to the envolutionary and genetic affinities. This system of classification was proposed by **Engler** in 1886, by **Hutchinson** in 1926 and by **Tippo** in 1942.
- 109 (c) John Ray (1627-1705) an english biologist described about 18,500 plants in three volumes of his book of *Historia Generalis Plantarum*
- 110 (d) Taxon is used to represent any rank in taxonomic hierarchy, i.e., any level of grouping of organism



- based on observable feature like dog (species), monocot (class). According to Simpson, taxon is a group of real organisms recognized at a formal unit at any level in hierarchy
- 111 (b) The genus *Felis* is used to represent cats
- 112 (a) Aristotle (384-322 BC) described structure, habit, reproduction and classification of animals in his book *Historia Animalium*. He is regarded as father of zoology and biology
- 113 (a) The correct labelling place on a herbarium sheet is lower corner of page of RHS and generally its size is 7×12 cm
- 114 (c) The sum total of all the genes present in a crop and its related species constitutes its germplasm. It is ordinarily represented by a collection of various strains and species.
- 115 (c) Bentham and Hooker did not know the affinities of the families placed under Ordines Anomali and these families were tentatively grouped together.
- 116 (d) Growth also occur in unicellular organisms by cell division. It can be observed in *vitro* culture by counting the number of cell under microscope
- 117 (c) Increase in mass and increase in number of individuals are considered the twin characteristic of growth in living organisms
- 118 (a) Number and type of organisms it includes
- 119 (b) Binomial system of nomenclature was proposed by Carolus Linnaeus. The system of nomenclature was first issued in *Species Plantarum*. Binomial system approve two name for an organism, i.e., generic and specific name
- 120 (c) Reproduction.
Regeneration was first observed in *Hydra*.
Planaria exhibits true regeneration. All these organisms show regeneration as a key feature
- 121 (b) Unicellular organisms are classified in kingdom- Monera, i.e., 'kingdom of prokaryotes' of five kingdom classification, rest four kingdom are assigned to eukaryotes
- 122 (d) Flower is a specialized, modified shoot. Which has evolved due to progressive specialization of sporophyll. Sexual reproduction in angiosperm is performed by these conservative part of flowers. Hence, flower feature are commonly used for identification
- 123 (c) Regeneration is a process in which a lost part of the body is recreated by the organism to become a new organism. It can be best observed in flatworm *Planaria*
- 124 (a) The basic unit of classification is species. It is the lowest category of classification. It is a group of closely related individuals with similar morphological, anatomical, biochemical and cytological characters. It is a group of naturally interbreeding populations with ability to produce fertile off springs. Individuals of a species share a common gene pool. Species is reproductively isolated, thus genetically closed system. Species has the real existence in nature. The term 'species' was given by **John Ray**, an English naturalist.
- 125 (b) There are 14 reserve biosphere in India. Simlipal Biosphere reserve is located in Odisha
- 126 (a) The correct labelling place on a herbarium sheet is lower corner of page of RHS and generally its size is 7×12 cm
- 127 (b) Carolus Linnaeus is a Swedish botanist is regarded as Father of Taxonomy. Binomial nomenclature was published by him in *Species Plantarum*
- 128 (d) Binomial nomenclature was given by **Carlous Linnaeus**. It was first issued in *Species Plantarum*.
- 129 (c) **Central Indian Government inacted wildlife protection act in 1972**. Some wildlife project in



India are the project Hangul-operated in J & K Government, IUCN and WWF.

Crocodile Breeding Project operated by UNDP and Central Government

130 (d)

Taxon is used to represent any rank in taxonomic hierarchy, *i.e.*, any level of grouping of organism based on observable feature like dog (species), monocot (class). According to Simpson, taxon is a group of real organisms recognized at a formal unit at any level in hierarchy

131 (c)

Taxa is plural of taxon. A taxon represents a grouping in a systematic classification of organism (whatever its rank)

132 (a)

As per binomial system of nomenclature, botanical name consists of generic epithet. The names are written in italic, generic name begins with capital letter and specific name begins with small letter, *e.g.*, *Brassica indica*.

133 (c)

Growth is exhibited by living as well as non-living organism. When increase is body mass is considered as a criterion for growth this may be as the result of accumulation of material on non-living surface or weight increase in livings, *e.g.*, mountains and sand dunes increase due to accumulation of material on their surface

134 (b)

Carolus Linnaeus is a Swedish botanist is regarded as Father of Taxonomy. Binomial nomenclature was published by him in *Species Plantarum*

135 (b)

Out of four options, division occupy the largest or top position in taxonomic hierarchy Kingdom-Division-Class-Order-Family-Genus-Species

136 (a)

Eukaryotes are assigned the kingdom-Protista, Fungi, Plantae and Animalia, while prokaryotes occupy space only in kingdom-Monera

137 (c)

Taxonomic aid monograph is treatise having complete information about a particular rank level of a taxonomic category. Key or taxonomic

key contain list of traits or characters and their alternate which are helpful in taxonomic studies.

Catalogue registers the species present in a particular place with brief description

138 (b)

Carolus Linnaeus (1707-1778) employed binomial system of nomenclature in the first edition of his book 'Species Plantarum' in 1753. According to which, the plant name is consisted of two Latin words. The first of which is generic name and the second is specific name.

139 (d)

Metabolic reactions can also be performed outside the body in a cell free system, *i.e.*, an isolated metabolic reaction *in vitro*

140 (b)

Present Indian Board of Wildlife is former Central Board of Wildlife is former Central Board of Wildlife. IBWL concerned with conservation of wildlife and run project to save wildlife and public awareness

141 (c)

Binomial nomenclature provide a distinct and proper scientific name to organism, each consisting of two words, first generic name and second specific name, which are derived from Latin language.

Scientific names are printed in italics and hand written name is underlined (zig zag)

142 (d)

→ A taxon is the taxonomic group of any rank in the system of classification

143 (c)

Species is basic/lowest/smallest unit of taxonomy. According to Earnst Mayr species are group of interbreeding natural populations. Which are reproductively isolated from other such groups. It contains most similar organisms

144 (a)

Presence of visceral slits is exhibited by both Chordata and adult Tunicata members

145 (b)

The given figure shows flowering plant so, plant belongs to angiosperm. And the leaf venation is reticulate so plant is dicot

146 (d)



The discipline of biology which deals with the kind and diversity of all organisms and the existing relationship amongst them is called systematics. The word 'systematics' is derived from Latin word *systema* which means systematic arrangement of organisms. It was first used by **Carolus Linnaeus**. He used **Systema Naturae** as the title of his publication. The scope of systematics was later enlarged to include identification, nomenclature and classification. Systematic takes into account evolutionary relationships between organisms.

147 (d)

→ A taxon is the taxonomic group of any rank in the system of classification

148 (d)

The concept that monocots are more primitive than dicots was proposed by **Engler and Prantl**.

149 (c)

All living organism from prokaryotes to the most complex eukaryotes can respond external stimuli. The non-living things do not have this property at all

150 (b)

Present Indian Board of Wildlife is former Central Board of Wildlife is former Central Board of Wildlife. IBWL concerned with conservation of wildlife and run project to save wildlife and public awareness

151 (c)

A species is a group of organisms that interbreed freely in their natural setting and do not interbreed with other population. In simple words, members of one species are reproductively isolated from members of other species. Species is the real basic unit for understanding taxonomy as well as evolution.

152 (c)

In plant growth occurs by cell division or multiplication continuously in all parts throughout their life span

153 (d)

Growth also occur in unicellular organisms by cell division. It can be observed in *in vitro* culture by counting the number of cell under microscope

154 (c)

Largest herbarium in the world is herbarium of Royal Botanical Garden, Kew (London) which contains more than 6,00,000 specimens

155 (a)

Taxonomic hierarchy refers to stepwise arrangement of all categories for classification of plants and animals. The categories in taxonomic hierarchy are: Kingdom → Division (Phylum) → Class → Order → Family → Genus → Species

156 (c)

According to phylogenetic system of classification, **primitive characters** are perennial and shrubby nature, solitary flower, numerous stamens multiple or aggregate fruit, while **advanced characters** are compound leaves, zygomorphic flowers, epigynous flowers, fused stamens (dichlamydeous condition) and albuminous seeds.

Thus, the ratio of advanced and primitive characters according to question is 1:1.

157 (a)

Germplasm is a collection seeds/plants which consists diverse alleles of all gene in a crop

158 (b)

Species is group of interbreeding populations according to biological concept of species (proposed by Mayr) and new species is formed from existing species

159 (b)

Binomial system of classification was based on morphological characteristic of an organism

160 (a)

Species, phylum and class are all taxonomic categories, while Asteraceae/Fabaceae are families

161 (c)

Taxon is used represent any rank in taxonomic hierarchy.

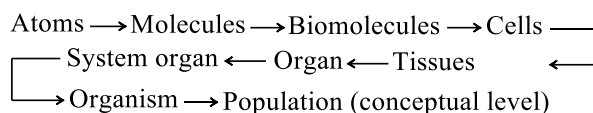
Royal Botanical Garden is located at (Kew) London in England.

There are about 492 (approximately 504) wildlife sanctuaries and 89 national park in India. Rest three statement are true

162 (b)



Organization of living being starts with atomic, *i.e.*, sub-microscopic level and reaches to cells (microscopic level), then become visible or microscopic with tissue and organs and then reaches to conceptual level



- 163 (c) Increase in mass and increase in number of individuals are considered the twin characteristic of growth in living organisms
- 164 (c) The system of classification proposed by **Linnaeus** was artificial. It was mainly based on floral characters.
- 165 (b) According to Ernst Mayr species are group of interbreeding natural populations that are reproductively isolated from other such groups. It contains most similar organisms
- 166 (a) Binomial system of nomenclature was proposed by Linnaeus. According to the system an organism is provided a distinct and proper name consisting of two words first generic name and second specific name which present genus and species, respectively
- 167 (d) When the specific name repeats the unaltered generic name this is called tautonym, e.g., *Malus malus*.
- 168 (c) Generally size of a herbarium sheet is 30×45 cm. Which is slightly small than the size of American herbarium (29×41 cm) and label size is 7×12
- 169 (b) The given figure shows flowering plant so, plant belongs to angiosperm. And the leaf venation is reticulate so plant is dicot
- 170 (b) *Mangifera indica*, scientific name consists of two words a generic and another specific name. It is binomial system of nomenclature.

The first word denoting the genus start with capital letter, while specific epithets start with small letter

- 171 (b) New systematics or biosystematics is concept of systematics which brings out taxonomic affinities on the basis of evolutionary, genetic and morphological traits. New systematics brings out cladistics or phylogenetic classification
- 172 (d) In taxonomical hierarchy similarity increases from highest/largest category to lowest categories. Therefore, division has least similar feature as compared to lower categories (species)
- 173 (d) Dr. NW Pjrie and Dr. FC Bawden proved that virus are composition of nucleoprotein, *i.e.*, made up of nucleic acid and protein
- 174 (a) Eukaryotes are assigned the kingdom-Protista, Fungi, Plantae and Animalia, while prokaryotes occupy space only in kingdom-Monera
- 175 (d) Increase in mass and increase in number of individuals are considered twin characteristics of growth, metabolic reaction can also be demonstrated *in vitro* and consciousness is considered as a determining property of livings
- 176 (a) *Mangifera* is the generic name of mango
- 177 (b) In majority of the higher organisms (plant and animals) reproduction and growth characteristic are mutually exclusive events as increase in the body size of living being do not alters the rate of reproduction or *vice-versa*
- 178 (a) Binomial system of nomenclature was proposed by Linnaeus. According to the system an organism is provided a distinct and proper name consisting of two words first generic name and second specific name which present genus and species, respectively
- 179 (c) **Taxonomic aid** monograph is treatise having complete information about a particular rank level of a taxonomic category. Key or taxonomic



key contain list of traits or characters and their alternate which are helpful in taxonomic studies. Catalogue registers the species present in a particular place with brief description

180 (b)

Mayr (1942) defined species as an array of actually or potentially interbreeding natural populations that are reproductively isolated from other such groups under natural conditions.

181 (c)

Kingdom-Monera of five kingdom classification consists of blue-green algae, nitrogen fixing bacteria and methanogens

182 (c)

The basic unit of classification is species. It is the lowest taxonomic category and consists one or more natural populations closely related that individual of other population

183 (d)

Taxonomic categories are the various grouping levels or rank in classification like kingdom (largest) and species (lowest category). So, here division and phylum are categories

184 (d)

Prokaryote can be distinguished from eukaryotes on basis of the absence of cell organelles like chloroplast mitochondria, chromosome, nucleus and nuclear membrane

185 (d)

Phylogeny is the evolutionary history of a species or individual. It plays a great role in classification. It is the appropriate theoretical background for taxonomy and is quite essential in explaining all the associations involved in classification. Cladistics is exclusively based on phylogenetic characters.

186 (a)

Hierarchical system is used in classification by majority of the biologist because each higher taxonomic category contain its below group, *i.e.*, it reduce the volume of description in a catalogue of animal and plants and character at larger category need not to be repeated for smaller categories

187 (c)

The accurate arrangement of species in order to descending specificity is

Species → Genus → Family → Order → Class

As in the taxonomical hierarchy similarity increases from highest category to lowest category

188 (a)

Prophage is the phage (viral genome) inserted into the circular bacterial genome or existing as extra chromosomal plasmid

189 (d)

When synthetic process or constructive process called anabolism exceeds destructive process of the body *i.e.*, catabolism, growth will takes place, which in turn proceeds development and body will function well

190 (a)

The suffix phyta indicates division

191 (a)

Taxon can be defined as a group of organisms with similar trait of any taxonomic rank like roses (genus), legumes (family), gymnosperm (class). According to Simpson, it is a group of real organisms recognized at a formal unit at any level in hierarchy

192 (d)

The arrangement of taxonomic categories is known as taxonomical hierarchy order either it is descending or ascending

193 (b)

According to Earnt Mayr species are group of interbreeding natural populations that are reproductively isolated from other such groups. It contains most similar organisms

194 (a)

Regeneration was first observed in *Hydra*. *Planaria* exhibits true regeneration. All these organisms show regeneration as a key feature

195 (c)

Reproduction is not essential for the survival of individual. However, it is essential and required for the survival of population because the through this loss of life is compensated

196 (c)

ICVCN is the abbreviation of international Code of Viral Classification and Nomenclature. ICNCP stands for International Code of Nomenclature for Cultivated Plants

197 (d)



- In a scientific name, the first name denote/indicates the generic name of the organism, while second name indicates or stands for specific epithet or specific names
- 198 (a) *Mangifera* is the generic name of mango
- 199 (b) **Linnaeus system** is an example for the artificial system of classification. Linnaeus also gave binomial nomenclature. In this, first part is generic name and second one is the specific name.
- 200 (c) Mule a result of outbreeding interspecific hybridization and worker bee lack primary sex organ. So, they are unable to do reproduction
- 201 (a) Species, phylum and class are all taxonomic categories, while Asteraceae/Fabaceae are families
- 202 (a) Prophage is the phage (viral genome) inserted into the circular bacterial genome or existing as extra chromosomal plasmid
- 203 (d) Flower is a specialized, modified shoot. Which has evolved due to progressive specialization of sporophyll. Sexual reproduction in angiosperm is performed by these conservative part of flowers. Hence, flower feature are commonly used for identification
- 204 (a) Herbarium/Herbaria (Plu) are place/collection of dried pressed and preserved (FAA solution) specimen of plants
- 205 (a) The most important function of botanical garden and its importance is that *ex situ* conservation of plant is allowed there. These garden serve site of recreation among nature conscious person especially during flowering
- 206 (c) *Genera Plantarum* was written by Bentham and Hooker, highest taxonomic category is kingdom in hierarchy. Term 'Systematic' was first time used by Linnaeus
- 207 (a) RH Whittaker, an American taxonomist proposed live kingdom classification. His five kingdom are Monera, Protista, Fungi, Plantae and Animalia
- 208 (c) Kingdom-Monera of five kingdom classification consists of blue-green algae, nitrogen fixing bacteria and methanogens
- 209 (c) Growth is exhibited by living as well as non-living organism. When increase is body mass is considered as a criterion for growth this may be as the result of accumulation of material on non-living surface or weight increase in livings, e.g., mountains and sand dunes increase due to accumulation of material on their surface
- 210 (d) Shark, snake, whale, reptile belong to phylum-Chordata. Insect, spider and shrimp belong to phylum-Arthropoda. Fish, snail, squid and slug are molluscans, while earthworm is annelids, millipede is arthropods, *Hirudinaria* is common leech of phylum-Annelida
- 211 (a) Increase in size with rest 3, the living organisms undergo self-replication, also and this feature makes them unique among all other forms
- 212 (c) **Hooker** proposed the concept of genus.
- 213 (c) Taxonomic or systematic hierarchy may be defined as a series of different ranks placed descending order. In other words, it is a system by which various taxonomic categories are arranged in a proper descending order. Kingdom is the highest rank and species is the lowest or basic rank, i.e., Kingdom>phylum/division>class>order>family>genus>species.
- 214 (c) Generally size of a herbarium sheet is 30 × 45 cm. Which is slightly small than the size of American herbarium (29 × 41 cm) and label size is 7 × 12
- 215 (c) Out of four given categories, class is the largest category. Therefore, can categorises rest three categories; order, family and genus



Kingdom → Division/Phylum → Class → Order →
Family → Genus → Species

216 (b)

'Species Plantarum' includes names and description of 6000 species of 1000 genera of plants. The binomial nomenclature given by Linnaeus was first used in **Species Plantarum**.

217 (b)

Reproduction by fragmentation can be best observed in protonema of mosses, filamentous algae and in the fungi

218 (a)

Presence of visceral slits is exhibited by both Chordata and adult Tunicata members

219 (a)

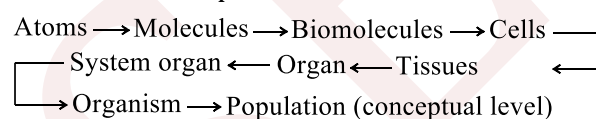
RH Whittaker, an American taxonomist proposed live kingdom classification. His five kingdom are Monera, Protista, Fungi, Plantae and Animalia

220 (c)

The first phylogenetic system was proposed by **Eichler**, who is famous for his work entitled 'Bluthen Diagramme' published in two volumes.

221 (b)

Organization level starts at sub-microscopic level and leads to population levels. Organization or living being starts with atomic, i.e., sub-microscopic level and reaches to cells (microscopic level), then become visible or microscopic with tissue and organs and then reaches to conceptual level



222 (b)

Out of four options, division occupy the largest or top position in taxonomic hierarchy Kingdom-Division-Class-Order-Family-Genus-Species

223 (d)

In taxonomical hierarchy similarity increases from highest/largest category to lowest categories. Therefore, division has least similar feature as compared to lower categories (species)

224 (c)

Linnaeus not only laid of taxonomy but also introduced binomial nomenclature. According to this scientific name consists of two parts, the first

is the name of the 'genus' and the second is called the 'specific epithet' that identifies the particular species within the genus.

225 (b)

In taxonomy, nomenclature of organisms is possible only when the correct place and correct name is known. i.e., organism must be described correctly. This is identification and is the first step in taxonomy

226 (a)

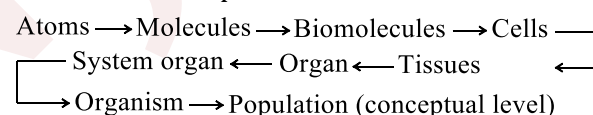
Increase in size with rest 3, the living organisms undergo self-replication, also and this feature makes them unique among all other forms

227 (c)

Panthera leo is scientific name of lion. *Cannis* is genus (cat), *Pisum* is also generic name of sweet pea, Carnivora is order

228 (b)

Organization level starts at sub-microscopic level and leads to population levels. Organization or living being starts with atomic, i.e., sub-microscopic level and reaches to cells (microscopic level), then become visible or microscopic with tissue and organs and then reaches to conceptual level



229 (a)

Linnaeus proposed binomial nomenclature. According to this scientific name of organism consists of generic epithet and specific epithet, e.g., *Labeo rohita*.

230 (a)

In taxonomic categories family occupy the position between class and species (lowest) family can accomodate different genera but species are different like dog, jackal, wolf belong to same genera *Cannis* but species are different. But they belong to same class. More similar characteristic of order are grouped in same class

231 (d)

The correct sequence in the hierarchy of taxonomic categories in descending order is as follows:



Division → class → order → family → genus → species.

232 (c)

In hierarchical system of classification phylum and division occupy the same position which are used in classification of animal and plant, respectively

233 (a)

Species is a group of actually or potentially inbreeding population that are reproductively isolated from other such groups

234 (a)

The most important function of botanical garden and its importance is that *ex situ* conservation of plant is allowed there. These garden serve site of recreation among nature conscious person especially during flowering

235 (d)

Nilgiri (TN) Biosphere reserve is the first biosphere reserve of India. Nilgiri was declared biosphere reserve in 1986

236 (d)

Father of Botany – Theophrastus

Father of Zoology/Biology – Aristotle

Father of Cytology – Robert Hooke.

237 (a)

Group of organisms capable of interbreeding and producing fertile offsprings but reproductively isolated from other such group is called **species**.

238 (d)

Nilgiri (TN) Biosphere reserve is the first biosphere reserve of India. Nilgiri was declared biosphere reserve in 1986

239 (a)

Herbarium/Herbaria (Plu) are place/collection of dried pressed and preserved (FAA solution) specimen of plants

240 (c)

Nature of protoplasmic composition is shared by all living organism at all taxonomic categories. Mode of nutrition is peculiar feature of five kingdom classification

241 (d)

Order is the assemblage of families which exhibit a few similar characters. The similar characters are less in number as compared to different genera included in a family. For example, plant families like Convolvulaceae, Solanaceae, etc. are included in order-Polimoniales mainly based on floral character. In animals, order-Carnivora includes families like Felidae and Canidae

Family has a group of related genera with less number of similarities as compared to genus and species. Cat and dog showing some similarities and some differences are placed into two different families-Felidae and Canidae, respectively.

242 (b)

ICBN stands for International Code for Botanical Nomenclature.

243 (c)

The framework system of classification in which various taxonomic categories are arranged in an order of logical sequence is called **taxonomic hierarchy**, a taxonomic category of overall taxonomic arrangement. All categories together make taxonomic hierarchy. It is also called Linnaean hierarchy as it was first proposed by **C Linnaeus**. There are seven obligate categories- Kingdom, Division (in plants) or Phylum (in animals), Class, Order, Family, Genus and Species.

244 (d)

Although Bentham and Hooker's system of classification is not phylogenetic one, yet Ranales placed in the beginning of dicotyledons. The order-Ranales is generally regarded as primitive by most of the leading authors.

245 (c)

Huxley is known as the father of **neo-taxonomy**.

246 (a)

The branch of taxonomy, which is based on cytology, is known as **cytotaxonomy**. It includes the cytological study of chromosomes, i.e., number morphology, chromosome behaviour, etc.

247 (c)



Out of four given categories, class is the largest category. Therefore, can categorises rest three categories; order, family and genus
Kingdom → Division/Phylum → Class → Order → Family → Genus → Species

248 (d)

John Hutchinson proposed a phylogenetic system of classification in 1926 and 1934 (dicots and monocots) respectively in his book '**The families of flowering plants**' which he revised in 1959.

249 (a)

National Botanical Research Institute is located at Lucknow.

250 (c)

The prime source of taxonomic studies is collection and identification of actual specimen. Nomenclature the present scientific method of naming the organism can be completed only when actual specimen is collected and identified

251 (d)

Biological or scientific name are generally written in italics at these are Greek or Latin words. The first word denotes genus and begin with capital letter, while second words denote species and starts with small letters

252 (c)

A species is a group of organisms, which are closely related and sharing a common gene pool. **John Ray** (1627-1705) introduced the term 'species' for any shole kind of living thing.

253 (b)

Mangifera indica, scientific name consists of two words a generic and another specific name. It is binomial system of nomenclature.

The first word denoting the genus start with capital letter, while specific epithets start with small letter

254 (c)

Metabolism is the sum of all the metabolic activities in body, i.e., anabolism and catabolism. Anabolism is constructive process, while catabolism is a destructive process

255 (a)

MABP stands for Man and Biosphere Programme

256 (d)

In a scientific name, the first name denote/indicates the generic name of the organism, while second name indicates or stands for specific epithet or specific names

257 (b)

Solanum and *Panthera* are genera of family—Solanaceae and Felidae, respectively

258 (a)

0.1% mercuric chloride solution are used to prevent fungal attack on herbarium nepthalene and carbon disulphide are common pesticides

259 (d)

Taxonomic categories are the various grouping levels or rank in classification like kingdom (largest) and species (lowest category). So, here division and phylum are categories

260 (c)

John Ray (1627-1705) an english biologist described about 18,500 plants is three volumes of his book of *Historia Generalis Plantarum*

261 (d)

The general characteristic of life are growth, reproduction, consciousness, body organization metabolism, adaptation and death

262 (c)

Binomial nomenclature provide a distinct and proper scientific name to organism, each consisting of two words, first generic name and second specific name, which are derived from Latin language.

Scientific names are printed in italics and hand written name is underlined (zig zag)

263 (c)

Panthera leo is scientific name of lion. *Cannis* is genus (cat), *Pisum* is also generic name of sweet pea, Carnivora is order

264 (b)

New systematics or biosystematics is concept of systematics which brings out taxonomic affinities on the basis of evolutionary, genetic and morphological traits. New systematics brings out cladistics or phylogenetic classification

265 (c)

Largest herbarium in the world is herbarium of Royal Botanical Garden, Kew (London) which contains more than 6,00,000 specimens

266 (d)



- The general characteristic of life are growth, reproduction, consciousness, body organization metabolism, adaptation and death
- 267 (c) ICNB stands for International Code of Bacteriological Nomenclature
- 268 (c) ICNB stands for International Code of Bacteriological Nomenclature
- 269 (c) ICVCN is the abbreviation of international Code of Viral Classification and Nomenclature. ICNCP stands for International Code of Nomenclature for Cultivated Plants
- 270 (c) Taxon is used represent any rank in taxonomic hierarchy.
Royal Botanical Garden is located at (Kew) London in England.
There are about 492 (approximately 504) wildlife sanctuaries and 89 national park in India. Rest three statement are true
- 271 (a) Experimental taxonomy is based on determination of genetic relationship, while cytotaxonomy is based on cytological study of chromosomes, *i.e.*, behavior, number and morphology of chromosomes
- 272 (b) Botanical garden allows *ex situ* conservation of gerplasm.
- 273 (a) In unicellular organisms like bacteria, algae (unicellular) and *Amoeba* reproduction is increase in number of cells. *i.e.*, synonymous with growth
- 274 (a) In unicellular organisms like bacteria, algae (unicellular) and *Amoeba* reproduction is increase in number of cells. *i.e.*, synonymous with growth
- 275 (b) There are 14 reserve biosphere in India. Simlipal Biosphere reserve is located in Odisha
- 276 (b) *Systema Naturae* was a work of Carolus Linnaeus. He describe about 4330 species of animal in this, while around 6000 species of plant had been described in *Species Plantarum*
- 277 (c) A natural taxon means a group of similar, genetically, related organisms having certain distinct characters from other groups. A genus with single species is called monotypic genus
- 278 (d) The arrangement of taxonomic categories is known as taxonomical hierarchy order either it is descending or ascending
- 279 (b) Binomial system of classification was based on morphological characteristic of an organism
- 280 (d) Umbelliferae of Apiaceae (carrot family) shows cup-shaped thalamus structure. Bentham and Hooker in his classification placed it under series-Calyciflorae.



: HINTS AND SOLUTIONS :

- 1 **(b)**
The obligate categories used in the classification are species, genus, family, order, class, division/phylum, kingdom. In spite of the seven major categories, sometimes sub-categories like, sub-species or varieties are added for clear distinction. These are called intermediate categories. Generally, intermediate categories are added in classification of plants
- 2 **(c)**
The entire living world was divided by Linnaeus into two kingdoms.

The members of kingdom-Animalia do not possess chlorophyll, perform locomotion and lack cellulosic cell wall. The members of kingdom-Plantae possess chlorophyll, cellulosic cell wall but have no power of locomotion.
- 3 **(a)**
Museum are source of ancient and present informational matter where preserved plants, animal and artistic and educational material are to public awareness museum can be categories
- 4 **(a)**
The scientific name *Malus malus* is illegitimate because it is just a tautonym.
- 5 **(a)**
Accompanied by a demand in increase in entropy stop all the life activities in an organisms is known as death and loss of life is compensated by reproduction
- 6 **(a)**
Hierarchy in classification as it reduce description of volume in catalogue of plants and animal. It can be illustrate by an example like *Cannis familiaris* is common dog, belong to family-Canidae. Genus *Cannis* are applied to wolf jackal of same family. But later belongs to different species therefore species have more similarities, then genus but genus have more organism. Genera have more common characters are placed in a one family.
- 7 **(a)**
And families which resemble each other are grouped in a same order. Which are grouped in a common class and class having common characteristic/feature form a phylum
- 8 **(d)**
Ernst Mayr proposed the biological species concept, which defines species as group of actually or potentially inter-breeding natural populations which are reproductively isolated from other such groups.
- 9 **(a)**
Hierarchy in classification as it reduce description of volume in catalogue of plants and animal. It can be illustrate by an example like *Cannis familiaris* is common dog, belong to family-Canidae. Genus *Cannis* are applied to wolf jackal of same family. But later belongs to different species therefore species have more similarities, then genus but genus have more organism. Genera have more common characters are placed in a one family. And families which resemble each other are grouped in a same order. Which are grouped in a common class and class having common characteristic/feature form a phylum
- 10 **(b)**
Almost all white tiger of world has common ancestor, *i.e.*, are progeny of a common white male tiger. This male tiger was captured by king of Rewa and is domesticated at Govindgarh Palace and named 'Mohan'.
- 11 **(b)**
The obligate categories used in the classification are species, genus, family, order, class, division/phylum, kingdom. In spite of the seven major categories, sometimes sub-categories like, sub-species or varieties are added for clear distinction. These are called intermediate



categories. Generally, intermediate categories are added in classification of plants

- 12 (b) Turril (1983) used the term omega (ω) taxonomy for biosystematics. Biosystematics or new systematic brings out taxonomic affinity on the basis of evolutionary genetic and morphological traits.

Turril also used the term alpha (α) taxonomy for collection and identification of organism on the basis of gross morphology, compilation of flora and monographs.

- 13 (b) Almost all white tiger of world has common ancestor, *i.e.*, are progeny of a common white male tiger. This male tiger was captured by king of Rewa and is domesticated at Govindgarh Palace and named 'Mohan'.

- 14 (a) Museum are source of ancient and present informational matter where preserved plants, animal and artistic and educational material are to public awareness museum can be categories

: HINTS AND SOLUTIONS :

- 1 (a)
- | Column I | Column II |
|---------------------|---------------------------------------|
| A. Herbarium | 3. Preserved plants specimen on sheet |
| B. Botanical Garden | 4. diversity of living plants |
| C. Zoological Park | |

D. Museum	2. Living wild animals in their natural habitat 1. Preserved plants and animals specimen and artistic and educational material also
-----------	--

- 2 (a)
- | Column I | Column II |
|------------------------------|---------------|
| 1. Lal Bagh | 5. Bangalore |
| 2. National Botanical Garden | 4. Lucknow |
| 3. Indian Botanical Garden | 3. Kolkata |
| 4. Forest Research Institute | 2. Dehradun |
| 5. Lloyd,s Botanical Garden | 1. Darjeeling |

- 3 (a)
- | Column I | Column II |
|------------------------------|---------------|
| 6. Lal Bagh | 5. Bangalore |
| 7. National Botanical Garden | 4. Lucknow |
| 8. Indian Botanical Garden | 3. Kolkata |
| 9. Forest Research Institute | 2. Dehradun |
| 10. Lloyd,s Botanical Garden | 1. Darjeeling |

- 4 (a)
- | Column I | Column II |
|--------------|---------------------------------------|
| A. Herbarium | 3. Preserved plants specimen on sheet |

B. Botanical Garden C. Zoological Park	4. diversity of living plants 2. Living wild animals in their natural habitat
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D. Museum	1. Preserved plants and animals specimen and artistic and educational material also
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6 (a)

Column I	Column II
A. Kingdom	3. Fungi
B. Order	5. Ranales
C. Family	4. Canidae
D. Genus	2. <i>Helianthus</i>
E. Species	1. <i>anuus</i>

7 (a)

Column I	Column II
A. Family	5. Solanaceae
B. Kingdom	4. Plantae
C. Order	2. Polymoniales

D. Genus	3. <i>Solanum</i>
E. Species	1. <i>tuberosum</i>

8 (a)

Column I	Column II
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9 (a)

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