

TOPIC 1: Organism and Its Environment**Major Abiotic Factors**

1. Who formulated the first postgraduate course of ecology in India?
(A) P. Maheswari
(B) Ramdeo Misra
(C) G. N. Ramchandran
(D) K. Esau
2. There are various levels of biological organization. What is the correct sequence of the increasing complexity?
(A) Macromolecules, cells, tissues, organs, organisms, population, communities and ecosystem, and biomes
(B) Macromolecules, cells, tissues, organs, organisms, communities and ecosystems, population and biomes
(C) Macromolecules, cells, tissues, organs, population, communities and ecosystems, organisms and biomes
(D) Macromolecules, cells, tissues, organs, organisms, population, biomes and communities, and ecosystems
3. Why does a bird sing?
(A) Operation of the voice box (syrinx)
(B) Vibrating bone
(C) Bird need to communicate with its mate during breeding season
(D) Both A and B
4. How does a bird sing?
(A) Operation of the voice box (syrinx)
(B) Vibrating bone
(C) Bird need to communicate with its mate during breeding season
(D) Both A and B

5. The branch of the biology that deals with the studies of interactions among organism and its physical (abiotic) environment is called

(A) Ecology

(B) Ecosystem

(C) Biome

(D) Demecology

6. Ecology the organismic level is essentially

(A) Physiological ecology

(B) Morphological ecology

(C) Behavioural ecology

(D) anatomical ecology

7. Distinct types of seasons are resulted due to

(A) Annual variation in the intensity of temperature

(B) Annual variation in the duration of temperature

(C) Annual variation in the precipitation

(D) Both A and B

8. What is the cause of annual variation in the intensity and duration of temperature?

(A) Rotation of earth around sun

(B) Tilt of axis of earth

(C) Annual variation in precipitation

(D) Both A and B

9. Major biomes such as desert, rain forest and tundra are formed due to

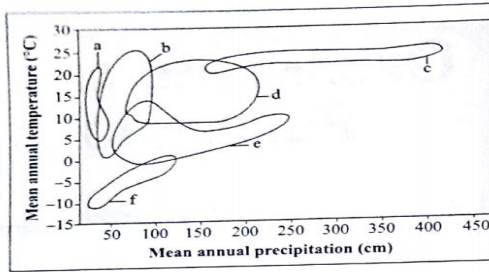
(A) Annual variation in the intensity of temperature

(B) Annual variation in the duration of temperature

(C) Annual variation in the precipitation

(D) All of the above

10. Recognise the figure and find out the correct matching



- (A) c—tropical forest, a—arctic and alpine tundra, b—desert, d—temperate forest, f—grassland, e—coniferous forest
- (B) d—tropical forest, e—arctic and alpine tundra, f—desert, e—temperate forest, b—grassland, c—coniferous forest
- (C) b—tropical forest, f—arctic and alpine tundra, a—desert, c—temperate forest, e—grassland, d—coniferous forest
- (D) c—tropical forest, f—arctic and alpine tundra, a—desert, d—temperate forest, b—grassland, e—coniferous forest**

11. Which of the following lead to the formation of a wide variety of habitats within each biome?

- (A) Regional variations (B) Local variations
- (C) Abiotic components **(D) Both A and B**

12. Most ecologically relevant environmental factor is

- (A) Temperature** (B) Water
- (C) Light (D) Soil

13. What are the key elements that lead to so much variation in the physical and chemical condition of different habitats?

- (A) Physico—chemical components
- (B) Temperature, water, light and soil
- (C) Abiotic factors
- (D) All of the above**

14. Habitat includes
- (A) Biotic components
 - (B) Abiotic components
 - (C) Pathogens, predators, parasites and competitors
 - (D) All of the above**
15. Ecologists assume that over a period of time, the organism had evolved adaptations to optimize its survival and reproduction in its habitat through
- (A) Predation
 - (B) Migration
 - (C) Regulation
 - (D) Natural selection**
16. The average temperature on land varies
- (A) Seasonally**
 - (B) Decreases progressively from the poles towards the equator
 - (C) Decreases progressively from mountain tops to the plains
 - (D) All of the above
17. In which of the following habitats, the average temperatures exceed 100°C?
- (A) Thermal springs
 - (B) Deep-sea hydrothermal vents
 - (C) Tropical deserts in summer
 - (D) Both A and B**
18. Read the following statements and find out the incorrect statement.
- (A) Mango tree do not and cannot grow in tropical**
 - (B) Snow leopards are not found in Kerala forests
 - (C) Tuna fish are rarely caught beyond tropical latitudes in the ocean.
 - (D) Both A and C

19. The significance of temperature to living organisms is appreciable because it affects
- (A) Kinetics of the enzymes
 - (B) Basal metabolism and activity
 - (C) Physiological functions of the organism
 - (D) All of the above**
20. How do we determine to a large extent geographical distribution of different species?
- (A) Regional and local variations
 - (B) Physico—chemical components
 - (C) The level of thermal tolerance**
 - (D) All of the above
21. Fill in the blanks:
- a. Next to temperature, ...1.... is the most important factor influencing the life of organisms.
 - b. Life on earth originated in2.... and is unsustainable without2.....
 - c. The productivity and distribution of3..... is heavily dependent on water.
 - d. For aquatic organisms the4..... of water becomes important.
- (A) 1—light, 2—water, 3—animals, 4—quantity
 - (B) 1—water, 2—air, 3—plants, 4—quality
 - (C) 1—soil, 2—water, 3—animals, 4—quantity
 - (D) 1—water, 2—water, 3—plants, 4—quality**
22. Match the columns I and II, and choose the correct combination from the options given.

Column I	Column II
Salt concentration	Example
a.<5	1. Sea
b.30—35	2. Hypersaline lagoons

c.>100 3. Island waters

(A)a—1, b—2, c—3

(B)a—3, b—1, c—2

(C)a—3, b—2, c—1

(D)a—2, b—1, c—3

23. Plants require sun light for their

(A)Photosynthesis

(B)Photoperiodic requirement for flowering

(C)Migratory activities

(D)Both A and B

24. For many animals, light is important in that they use the diurnal and seasonal variations in light intensity and duration (photoperiod) as cues for timing their

(A)Foraging activities

(B)Reproductive activities

(C)Migratory activities

(D)All of the above

25. Which is the 'celestial source' of energy?

(A)Sun

(B)Fossil fuels

(C)Wood/plants

(D)All of the above

26. How much deep in the oceans, the environment is perpetually dark and its inhabitants are not aware of the existence of Sun?

(A)>3500 m

(B)>500 m

(C)>500 feet

(D)>3500 feet

27. Which of the following is likely to be found in the deepest waters?

(A)Red algae

(B)Green algae

(C)Brown algae

(D)All of the above

28. The nature and properties of soil in different places vary; it is dependent on the

- a. Climate
- b. Weathering process
- c. Whether soil is transported or sedimentary
- d. How soil development occurred

(A) a, b and c

(B) b, c and d

(C) a, c and d

(D) a, b, c and d

29. Who determine the percolation and water holding capacity of the soils?

- a. Soil composition
- b. Grain size
- c. Aggregation
- d. pH
- f. Mineral composition
- f. Topography

(A) a, b and c

(B) d, e and f

(C) a, b, c, d and e

(D) a, b, c, d e and f

30. Which characteristics determine to a large extent the vegetation in any area?

- a. Soil composition
- b. Grain size
- c. Aggregation
- d. pH
- e. Mineral composition
- f. Topography

(A) a, b and c

(B) d, e and f

(C) a, b, c, d and e

(D) a, b, c, d, e and f

31. Who dictates the type of animals that can be supported in any area?

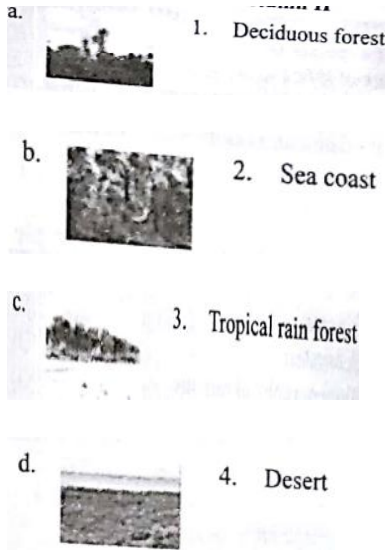
- (A) pH, mineral composition and topography
- (B) Topography, soil composition and grain size

(C) Type of vegetation

(D) Sediments characteristics

32. The following figure shows the major biomes of India. Identify them and find the correct match

Column I Column II



(A) a—1, b—3, c—4, d—2

(B) a—3, b—1, c—4, d—2

(C) a—3, b—2, c—4, d—1

(D) a—2, b—1, c—3, d—4

33. Organisms restricted to narrow range temperature are

(A) Stenothermal

(B) Eurythermal

(C) Biothermal

(D) Geothermal

34. Which one is the famous plant ecologist of India?

(A) Charles Darwin

(B) Ramdeo Misra

(C) Birbal Sahani

(D) Jagdish Chandra Bose

35. Ecology is study of relationships of
- (A) Members of a family
 - (B) Man and environment
 - (C) Organisms and environment**
 - (D) Soil and water
36. Major ecological community of plants and animals extending over large natural area is known as
- (A) Bioregion
 - (B) Biosphere
 - (C) Biota
 - (D) Biome**
37. Transition zone between two communities is
- (A) Ecotone**
 - (B) Ecad
 - (C) Ecotype
 - (D) Keystone
38. -1°C to 13°C temperature and 50 to 250 cm rainfall account for the formation of a major biome
- (A) Temperate forest
 - (B) Coniferous forest**
 - (C) Grassland
 - (D) Tropical forest
39. Organisms which can tolerate and thrive in wide range of temperature are called
- (A) Eurythermal**
 - (B) Stenothermal
 - (C) Poikilothermal
 - (D) Homoiothermal
40. Pedology refers to study of
- (A) Soil**
 - (B) Population
 - (C) Fossils
 - (D) Water
41. Study of ecology of a population/organism is
- (A) Autecology
 - (B) synecology
 - (C) Ecotype
 - (D) Demecology**

42. Niche of a species is

- (A) Place of living
- (B) Specific functions and competitive power
- (C) Habitat and specific functions**
- (D) None of the above

43. Deserts, grasslands, forests and tundra are example of

- (A) Biomes**
- (B) Ecosystem
- (C) Biogeographical regions
- (D) Biospheres

44. Biome is

- (A) The fauna of an ocean
- (B) The flora of land
- (C) Communities of organisms interacting with one another**
- (D) The part of the earth and its atmosphere which is inhabited by living organisms

45. Large unit of land having different communities is called

- (A) Biome**
- (B) Ecosystem
- (C) Niche
- (D) Biosphere

46. Geographic limit within which a population exists is called

- (A) Biome
- (B) Ecosystem
- (C) Niche
- (D) Habitat**

47. Which part of the world has high density of organisms?

- (A) Grasslands
- (B) Savannahs
- (C) Deciduous forests
- (D) Tropical rain forests**

48. Niche overlap is

- (A) Mutualism between two species
- (B) Active cooperation between two species
- (C) Two different parasites on same host
- (D) Sharing resources between two species**

49. Which one has the maximum biomass?

- (A) Temperate forest
- (B) Tropical rain forest**
- (C) Alpine vegetation
- (D) Taiga

50. Grassland with scattered trees is

- (A) savannah**
- (B) Deciduous forest
- (C) Evergreen forest
- (D) Tropical rain forest

51. Which is not correctly matched?

- (A) Laterite—Contains aluminium
- (B) Terra rosa—Most suitable for roses**
- (C) Chernozem—Richest soil
- (D) Black Cotton Soil—Rich in calcium carbonate

52. Study of inter-relationship between organisms and their environment is

- (A) Ecology**
- (B) Ecosystem
- (C) Phytogeography
- (D) Ethology

53. Match the columns I and II, and choose the correct combination from the options given.

Column I

Column II

- | | | |
|-----------------------|-------|-----------------------|
| a. 0.2-2.00 mm | (i) | Silt |
| b. less than 0.002 mm | (ii) | Clay |
| c. 0.02-0.2 mm | (iii) | Coarse sand particles |

d.0.002-0.02 mm (iv) Fine sand particlesw

(A)a—iv, b—i, c—iii, d—ii

(B)a—iii, b—ii, c—iv, d—i

(C)a—ii, b—iii, c—vi, d—i

(D)None of the above

54. Tropical forests are denser due to

(A)Wild animals

(B)High temperature and less rainfall

(C)Low temperature and excess rainfall

(D)High temperature and high rain

55. Soil carried by gravity is

(A)Alluvial

(B)Eluvial

(C)Colluvial

(D)Glacial

56. Soil rich in Fe and Al due to excessive leaching is

(A)Alluvial

(B)Laterite

(C)Loam

(D)Both A and C

57. Of all the species of insects known, nearly 70-80% are found in

(A)Tropical savannah

(B)Chapparal

(C)Tropical rain forest

(D)Deciduous forest

58. River water deposits

(A)Colluvial

(B)Alluvial soil

(C)Eolian

(D)Sandy soil

59. Water held tightly by soil particles as a thin film over their surface is

(A)Hygroscopic water

(B)Capillary water

- (C)Chemical water (D)Gravitational water
60. What is best pH of soil for cultivation?
- (A)3.4-5.4 (B)4.5-5.5
(C)5.5-6.5 (D)6.5-7.5
61. Savannah is found commonly in
- (A)U.S.A. (B)U.S.S.R
(C)Australia (D)India
62. Plains with snow, ice and frozen soil for most of the year are found in
- (A)Chaparral (B)Taiga
(C)Tundra (D)Savannah
63. The factor related to structure of earth surface is
- (A)Edaphic (B)Biotic
(C)Temperature (D)Topographic
64. Physical and chemical conditions of soil are studied under
- (A)Topographic factors (B)Edaphic factors
(C)Biotic factors (D)Climatic factors
65. Organisms living at the bottom of a lake are
- (A)Nekton (B)Benthos
(C)Plankton (D)Pelagic
66. Biotic factors refer to
- (A)Gases produced by industries
(B)Nutrient deficient soils
(C)Living organisms
(D)Fossil fuels

67. Tropical plants *Prosopis*, *Acacia* and *Capparis* belong to

- (A) Evergreen forest (B) Deciduous forest
(C) Grassland (D) Thorn forest

68. Moderate rain during summer produces

- (A) Desert (B) Grassland
(C) Scrub forest (D) Deciduous forest

69. Species diversity is lowest in ecosystem

- (A) Desert (B) Tundra
(C) Grassland (D) Deciduous forest

70. Which one has the correct sequence of increasing organizational complexity?

- (A) Population, Species, Community and Ecosystem
(B) Population, Community, Species and Ecosystem
(C) Population, Variety, Community and Ecosystem
(D) Species, variety, Ecosystem and Population

71. Tropical rain forests are found in

- (A) Andamans (B) Bihar
(C) Himachal Pradesh (D) Jammu and Kashmir

72. Deciduous forests have

- (A) Variety of grasses (B) Broad-leaved trees
(C) Narrow-leaved trees (D) Variety of crocodiles

73. Benthic animals live

- (A) Deep in sea (B) Floating
(C) Submerged (D) Active swimmers

74. Edaphic factors are related to

- (A) Soil (B) Man
(C) Animals (D) Temperature

TOPIC 2: Responses to Abiotic Factors

75. The organism in which body temperature changes with the ambient temperature and in aquatic animals, the osmotic concentration of the body fluid change with that of the ambient water osmotic concentration. These animals and plants are simply

- (A) Regulators (B) Conformers
(C) Migratory (D) Hibernates

76. Some organisms are able to maintain homeostasis by physiological (sometimes behavioural also) means which ensure constant body temperature, constant osmotic concentration, etc are called

- (A) Regulators (B) Conformers
(C) Migratory (D) Hibernates

77. Which of the following organisms are indeed capable of thermoregulation and osmoregulation?

- (A) All birds
(B) All mammals
(C) Very few lower vertebrate and invertebrate species
(D) All of the above

78. Evolutionary biologists believe that the success of mammals is largely due to their ability to maintain a

- (A) Constant body temperature
(B) Constant osmotic concentration
(C) Both A and B
(D) None of the above

79. Fill in the blanks:

1. The mechanism used by most mammals to regulate their body temperature are similar to the ones thata.... use.

2. Human maintain a constant body temperature ofb....

3. In summer body temperature is maintained byc....

4.d..... do not have any mechanism to maintain internal temperatures.

(A) a—plants, b—98.6°C, c—sweating, d—vertebrates

(B) a—humans, b—37°C, c—shivering, d—plants

(C) a—invertebrates, b—37°C, c—sweating, d—plants

(D) a—humans, b—37°C, c—sweating, d—plants

80. Thermoregulation is energetically expensive for many organisms particularly

(A) Small animals

(B) Shrews

(C) Humming birds

(D) All of the above

81. Heat loss or heat gain is the function of

(A) Surface area

(B) Body volume

(C) Body weight

(D) Body size

82. If the stressful external conditions are localized or remain only for a short duration, the organisms has some alternatives like

a. Regulate

b. Conform

c. Migrate

d. Suspend

(A) a and b

(B) b and c

(C) c and d

(D) a, b, c and d

83. Match the columns I and II, and choose the correct combination from the options given.

Column I	Column II
a. Bears	p. Diapause
b. Snail	q. Hibernation
c. Zooplankton	r. Dormancy
d. Seeds	s. Aestivation

(A) a—r, b—s, c—p, d—q

(B) a—q, b—p, c—s, d—r

(C) a—s, b—p, c—q, d—r

(D) a—q, b—s, c—p, d—r

84. Various kinds of thick-walled spores which help organisms to survive unfavourable conditions and germinate on availability of suitable environment, are found in

(A) Bacteria

(B) Fungi

(C) Lower plants/algae

(D) All of the above

85. In higher plants, which structure serve as means to tide over period of stress and also helping in dispersal

(A) Seed

(B) Vegetative reproductive structures/propagules

(C) Both A and B

(D) Spores

86. Under unfavourable conditions many zooplankton species in lakes and ponds enter

(A) Diapause

(B) Hibernation

(C) Aestivation

(D) None of above

87. Annual migration does not occur in case of

- (A) Arc Tern (B) Salamander
(C) Salmon (D) Siberian Crane

88. Hibernation occurring in certain animals

- (A) Occasional (B) Intermittent
(C) Rhythmic (D) Periodic

TOPIC 3: Adaptations

89. Any attribute of the organism (morphological, physiological and behavioural) that enables the organism to survive and reproduce in its habitat is called

- (A) Homeostasis (B) Adaptation
(C) Altitude sickness (D) Migration

90. In the polar seas, aquatica..... likeb..... have a thick layer of fat calledc..... below their skin that acts as and..... and reduces loss of body heat.

- (A) a—fishes, b—sharks, c—clasper, d—conductor
(B) a—mammals, b—seals, c—blubber, d—insulator
(C) a—fishes, b—seals, c—blubber, d—insulator
(D) a—mammals, b—seals, c—blubber, d—conductor

91. A person experienced *altitude sickness* when they go to any high altitude place like Rohtang Pass near Manali and Mansarovar in China occupied Tibet, above a height

- (A) >3500 m (B) > 3500 feet
(C) > 500 m (D) > 500 feet

92. What are the symptoms of *altitude sickness*?

- (A) Nausea (B) Fatigue
(C) Heart palpitations (D) All of the above.

93. The reason of the *altitude sickness* is

- (A) The low atmospheric pressure of high altitudes
- (B) The high atmospheric pressure of high altitudes
- (C) The low atmospheric temperature of high altitudes
- (D) Both A and C

94. In *altitude sickness*, the body compensates low oxygen availability by

- (A) Increasing red blood cell formation
- (B) Increasing the binding affinity of hemoglobin
- (C) Decreasing breathing rate
- (D) All of the above

95. Read the following statements and find out the incorrect statement.

- (A) Microbes/arcgaebacteria flourish in hot springs and deep sea hydrothermal vents where temperature far exceed 100°C.
- (B) Many fish thrive in Antarctic waters where the temperature is always below zero.
- (C) A large variety of marine invertebrates and fish live at great depths in the ocean where the pressure.
- (D) Desert lizard have physiological ability that mammals have to deal with the high temperature of their habitat.

96. Shade loving plants are called

- (A) Xerophytes
- (B) Sciophytes
- (C) Halophytes
- (D) Hydrophytes

97. Stomata open at night in

- (A) Succulents
- (B) Xerophytes
- (C) Hydrophytes
- (D) Mesophytes

98. Adaptive measure to protect against extreme heat by poikilotherms is

- (A) Hibernation (B) Sweating
(C) Aestivation (D) Coiling

99. Succulents grow in

- (A) Tropical rain forest
(B) Tundra
(C) Desert
(D) Temperate deciduous forests

100. Sunken stomata occur in

- (A) Xerophytes (B) Hydrophytes
(C) Mesophytes (D) Opsanophytes

101. In xerophytes, photosynthesis often occurs through

- (A) Root (B) Modified stem
(C) Stomata (D) Scaly leaves

102. Warm blooded animals of cold climate have small extremities. This was stated by

- (A) Bergman (B) Gloger
(C) Dollo (D) Allen

103. Which mammal excretes solid urine to avoid water loss?

- (A) Crow (B) Kangaroo Rat
(C) Camel (D) Squirrel

104. Mechanical tissue is best developed in

- (A) Hydrophytes (B) Halophytes
(C) Xerophytes (D) Mesophytes

105. Plants adapted to grow in shade are

- (A) Psammophytes (B) Sciophytes
(C) Mesophytes (D) Xerophytes

106. In submerged hydrophytes, the stomata occur

- (A) On lower surface (B) On the upper surface
(C) No where (D) On both the surface

107. Submerged hydrophytes exchange gases through

- (A) Stomata (B) Hydathodes
(C) Lenticels (D) General surface

108. Relatively more abundant animals of desert ecosystem are

- (A) Arboreal (B) Fossorial
(C) Diurnal (D) Aquatic

109. Which is dominant in desert?

- (A) Hyla (B) Leopard
(C) Tiger (D) Lizard

TOPIC 4: Populations

Population Attributes, Population Growth and Life History Variation

110. Which of the following example signifies a population?

- a. All the cormorants in a wetland
b. Rats in an abandoned dwelling
c. Teakwood trees in a forest tract
d. Bacteria in a culture plate
e. All the animals in a forest
f. Lotus plants in a pond

(A) a, b, c, d and f

(B) a, b, c, d and e

(C) a, b, c, d, e and f

(D) b, d, e and f

111. A population has certain attributes that an individual organism does not. These are

a. Birth rate

b. Death rate

c. Sex ratio

d. Age distribution

(A) a and b

(B) b and c

(C) c and d

(D) a, b, c and d

112. Natural selection acts at

(A) Organismic level

(B) Population level

(C) Species level

(D) Ecosystem level

113. In a pond there are 20 lotus plants last year and through reproduction 8 new plants are added, taking the current population to 28. What is the birth rate?

(A) 0.28 offspring per lotus per year

(B) 0.8 offspring per lotus per year

(C) 0.32 offspring per lotus per year

(D) 0.4 offspring per lotus per year

114. In a laboratory there are 40 fruitflies last week and during experiment 4 fruitflies died in a week. Calculate the death rate.

(A) 0.1 individual per fruitfly per year

(B) 0.36 individual per fruitfly per week

(C) 0.4 individual per fruitfly per week

(D) 0.1 individual per fruitfly per week

115. Per cent individuals of a given age or group is called

(A) Age distribution

(B) Age pyramid

(C) Sex ratio

(D) Both A and C

116. Match the columns I and II, and choose the correct combination from the options given.

Column I		Column II
i. Morality	1.	'b'
ii. Natality	2.	'B'
iii. Birth rates	3.	'd'
iv. Death rates	4.	'D'

(A) i—3, ii—1, iii—2, iv—4

(B) i—4, ii—1, iii—2, iv—3

(C) i—3, ii—2, iii—1, iv—4

(D) i—4, ii—2, iii—1, iv—3

117. If the age distribution is plotted for the population, the resulting structure is called

(A) Growth model

(B) Growth rate

(C) Age pyramid

(D) Ecological pyramid

118. During any ecological investigation in a population, the evaluation is in the terms of

(A) Increase in the population size

(B) Decrease in the population size

(C) Any change in the population size

(D) Constancy in the population size

119. The population size is more technically called

(A) Population gradient

(B) Population census

(C) Population pressure

(D) Population density

120. Population density is designated as

(A) 'D'

(B) 'P'

(C) 'N'

(D) 'd'

121. The most appropriate measure of population density is generally

- (A) Number (B) Biomass
(C) Per cent cover (D) All of the above

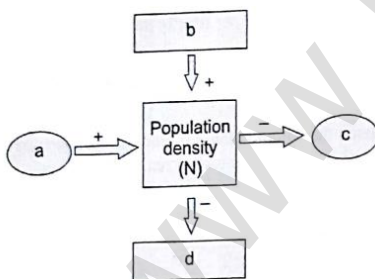
122. The population density can be measure in

- (A) Number
(B) Biomass and per cent over
(C) Relative densities
(D) All of the above

123. Although total number is generally the most appropriate measure of population density, it is in some cases either meaningless or difficult to determine as in the case of

- (A) A dense laboratory culture of bacteria in a petri dish
(B) Comparison of population density of 200 *Parthenium* plants and a single huge banyan tree with a large canopy
(C) Tiger census
(D) Both A and B

124. Recognise the figure and find out the correct matching.



- (A) a—B, b—E, c—D, d—I
(B) a—D, b—E, c—B, d—I
(C) a—D, b—I, c—B, d—E
(D) a—B, b—I, c—D, d—E

125. In an area, if there are 200 *Parthenium* plants but only a single huge banyan tree with a large canopy, the population density is measured in terms of
- (A) Number of biomass
 - (B) Number of per cent cover
 - (C) Biomass or per cent cover**
 - (D) Number, biomass or per cent cover.
126. For which of the following population, the population size measure indirectly without actually counting them or seeing them?
- (A) Fishes
 - (B) Tigers**
 - (C) Siberian cranes
 - (D) All of the above
127. The population size in nature could be low as < 10 for
- (A) *Chlamydomonas* in a pond
 - (B) Siberian cranes at Bharatpur wetlands in any year**
 - (C) Cormorants in a wetland
 - (D) All of the above
128. The size of population for any species is not a static parameter. It keeps changing in time, depending on various factors including
- (A) Food availability
 - (B) Predation pressure
 - (C) Adverse weather
 - (D) All of the above**
129. Whatever might be the ultimate reasons, the density of a population in a given habitat during a given period, fluctuates due to changes in
- (A) Two basic processes—natality and mortality
 - (B) Two basic processes—immigration and emigration
 - (C) Four basic processes—natality, mortality, immigration and emigration**
 - (D) Four basic processes—birth rate, death rate, sex ratio and age distribution

130. Match the columns I and II, and choose the correct combination from the options given.

Column I	Column II
a. $B + I > D + E$	1. 'N' increases
b. $B + I > D + E$	2. 'N' decreases
c. $B + I > D + E$	3. 'N' stable
(A) a—1, b—2, c—3	(B) a—2, b—1, c—3
(C) a—3, b—2, c—1	(D) a—1, b—3, c—2

131. Give right answer for the following:

- (a) Number of births during a given period in the population that are added to initial density: 1
- (b) Number of deaths in the population in a given period: 2
- (c) Number of individuals of the same species that have come into the habitat from elsewhere during a given time period: 3
- (d) Number of individuals who left habitat and gone elsewhere during a given time period: 4
- (A) 1—mortality, 2—natality, 3—emigratin, 4—immigration
- (B) 1—mortality, 2—natality, 4—emigration, 3—immigration
- (C) 1—mortality, 1—natality, 3—emigration, 4—immigration
- (D) 2—mortality, 1—natality, 4—emigration, 3—immigration

132. Under normal conditions, the most important factors influencing population density are

- (A) B and D
- (B) E and I
- (C) B, D and I
- (D) B, D, E and I

133. If a new habitat is just being colonized, ...1.... May contribute more significantly to population growth than2..... (where b = birth rate, E = Emigration, I = Immigration).

- (A) 1—b, 2—E
- (B) 1—I, 2—b
- (C) 1—I, 2—E
- (D) 1—b, 2—I

134. When resources are unlimited each species has the ability to realize fully its innate potential to grow in number as observed by

- (A) Lamarck while developing his theory of use and disuse of organs
- (B) Hugo de Vries while developing his theory of mutation
- (C) Darwin while developing his theory of natural selection**
- (D) All of the above

135. Match the columns I and II, and choose the correct combination from the options given

Column I	Column II
'r' values	Organism
a. 0.12	1. Human population in India in 1981
b. 0.015	2. Norway rat
c. 0.0205	3. Flour beetle
(A) a—1, b—2, c—3	(B) a—3, b—1, c—2
(C) a—2, b—3, c—1	(D) a—3, b—2, c—1

136. Who showed that even a slow growing animal like elephant could reach enormous numbers in the absence of checks?

- (A) Darwin**
- (B) Lamarck
- (C) Wallace
- (D) Both A and C

137. Which of the following is most important parameter chosen for assessing impacts of any biotic or abiotic factor on population growth?

- (A) 'r'**
- (B) 'N'
- (C) 'D'
- (D) 'B'

138. For calculating the intrinsic rate of natural increase, one can need to know the

- (A) B and D
- (B) B, D, I and E
- (C) B, b, D and d
- (D) b and d**

139. The reproductive fitness of any population is also called

- (A) Mendelian fitness, having high 'r' value
- (B) Mendelian fitness, having low 'r' value
- (C) Darwinian fitness, having low 'r' value
- (D) Darwinian fitness, having high 'r' value**

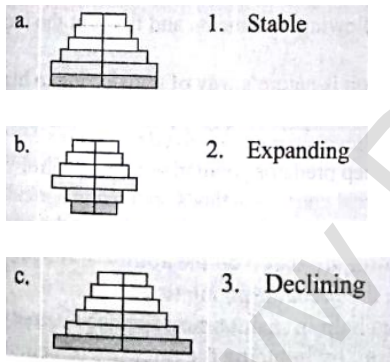
140. Ecologists suggest that life history trait of organisms have evolved in relation to the constraints imposed by the

- (A) Biotic components
- (B) Abiotic components
- (C) Both biotic and abiotic components**
- (D) None of the above

141. Match the columns I and II, and choose the correct combination from the options given.

Column I

Column II



(A) a—1, b—2, c—3

(B) a—3, b—1, c—2

(C) a—2, b—3, c—1

(D) a—1, b—3, c—2

142. In 2005, for each of the 14 million people present in a country, 0.028 were born and 0.008 died during the year. Using exponential equation, the number of people present in 2015 is predicted as

(A) 25 millions

(B) 17 millions

(C) 20 millions

(D) 18 millions

143. A population has more young individuals compared to the older individuals. What would be the status of the population after some years?
- (A) It will decline
 - (B) It will stabilize
 - (C) It will increase**
 - (D) It will first decline and then stabilize
144. What parameters are used for tiger census in our country's national parks and sanctuaries?
- (A) Pug marks only
 - (B) Pug marks and faecal pellets**
 - (C) Faecal pellets only
 - (D) Actual head counts
145. Which one of the following organisms reproduces sexually only once in its life time?
- (A) Banana plant**
 - (B) Mango
 - (C) Tomato
 - (D) Eucalyptus
146. The abundance of a species population within its habitat is called
- (A) Absolute density
 - (B) Regional Density
 - (C) Relative Density
 - (D) Niche density**
147. After exponential increase, population becomes stagnant. The growth curve is
- (A) J-Shaped
 - (B) S-Shaped**
 - (C) Fluctuating
 - (D) Circular
148. A force that acts against maximum population growth is
- (A) Population pressure
 - (B) Carrying capacity
 - (C) Saturation point

(D) Environmental resistance

149. Biggest flower belongs to a plant which is

(A) Partial root parasite

(B) Partial stem parasite

(C) Total stem parasite

(D) Total root parasite

150. Human population shows

(A) J-shaped growth curve

(B) Z-shaped growth curve

(C) S-shaped growth curve

(D) All the above

151. Number of immigration is more than emigration and death is lower than natality. Growth curve of population will show

(A) Exponential phase

(B) Lag phase

(C) Declining phase

(D) Steady phase

152. Permanent decrease in population would occur due to

(A) Migration

(B) Natality

(C) Emigration

(D) Mortality

153. Match the columns I and II, and choose the correct combination from the options given

Column I

Column II

a. Breed only once in life time

1. Bird and mammals

b. Breed many times in their lifetime

2. Oysters and pelagic fishes

c. Produce large number of small sized offsprings

3. Bamboo

d. Produce small number a large-sized offsprings

4. Pacific salmon fish

(A) a—3, b—1, c—2, d—4

(B) a—4, b—1, c—4, d—3

(C) a—3, b—4, c—2, d—1

(D) a—3 and 4, b—1, c—2, d—1

154. Scholars caught marked and released 80 fishes in a pond. Later 100 fishes were caught at random, 40 of them were marked. The number of fishes in the pond is

(A) 400

(B) 200

(C) 100

(D) 50

155. At asymptote stage, the population is

(A) Stabilised

(B) Increasing

(C) Decreasing

(D) Changing

156. Sigmoid curve is

(A) Rate of transpiration

(B) Rate of respiration

(C) Rate of photosynthesis

(D) Growth of population

157. Proportion of young individuals is highest in case of

(A) Declining population

(B) Stable population

(C) Both A and B

(D) Expanding population

158. Individuals of a species which occur in a particular area constitute

(A) Flora

(B) Fauna

(C) Population

(D) Flora and fauna

159. Abundance of a species population within its habitat is

- (A) Absolute density (B) Regional density
(C) Relative density (D) Niche density

160. Two opposite forces opening in growth and development of every population. One of them has ability to reproduce at a given rate. The opposing force is

- (A) Morbidity
(B) Fecundity
(C) Biotic potential
(D) Environmental resistance

161. Population where pre-reproductive animals occur in large number is

- (A) Declining (B) Stable
(C) Fluctuating (D) Growing

162. Increase in number of individuals in a population represents

- (A) Natality (B) Mortality
(C) Density (D) Diversity

163. Natality is

- (A) Total number of individuals present per unit area at a given time
(B) Increase in number of individuals in a population under given environmental conditions
(C) Loss of individuals due to death in a population under environmental conditions
(D) Movement of individuals into and out of population.

164. Geometric representation of age structure is a characteristic of

- (A) Biotic community (B) Population
(C) Ecosystem (D) Landscape

165. In change in population size, $N_1 = N_0 + B + I - D - E$. What do I, B, D stand for?

- (A) Immigration, mortality, natality
- (B) Immigration, natality, mortality**
- (C) Emigration, natality, mortality
- (D) Mortality, natality, immigration

TOPIC 5: Population Interactions

166. When of the following natural habitat is inhabited just by a single species?

- (A) A pond
- (B) A dense forest
- (C) A desert/Tundra
- (D) Can't possible**

167. In nature, plants, animals and microbes interact in various ways to form a/an

- (A) Population
- (B) Community**
- (C) Ecosystem
- (D) Biome

168. The interacting species (A and B) live closely together in

- (A) Predation, parasitism and competition
- (B) Mutualism, competition and amensalism
- (C) Predation, competition and commensalism
- (D) Predation, parasitism and commensalism**

169. Read the following statements and find out the incorrect statement.

- a. Predation in nature's way of transferring to higher trophic levels the energy fixed by plants
- b. Prey keep predator population under control
- c. Biological control methods adopted in agricultural pest control are based on the ability of the prey to regulate the predator population
- d. Predators help in maintaining species diversity in a community by inducing the intensity of competition among competing prey species

- (A) a and b
- (B) b and c

(C) b, c and d

(D) None of the above

170. The prickly pear cactus in the early 1920's introduced into

(A) American Pacific Coast

(B) Rocky sea coasts of Scotland

(C) Galapagos Islands

(D) Australia

171. Match the columns I and II, and choose the correct combination from the options given

Column I	Column II
a. '+'	1. Detrimental
b. '-'	2. Neutral
c. '0'	3. Beneficial
(A) a—1, b—2, c—3	(B) a—3, b—1, c—2
(C) a—2, b—3, c—1	(D) a—2, b—1, c—2

172. In the rocky intertidal communities of the American Pacific Coast which is an important predator

(A) Barnacle *Balanus*(B) Barnacle *Chthamalus*

(C) Both A and B

(D) Starfish *Pisaster*

173. In a field experiment, when all the starfish *Pisaster* were removed from an enclosed intertidal area, more thana.... species ofb..... become extinct withinc..... because ofd.....

(A) a—200, b—vertebrates, c—a year, d—interspecific predation

(B) a—10, b—vertebrates, c—a decade, d—interspecific predation

(C) a—10, b—invertebrates, c—a decade, d—interspecific competition

(D) a—10, b—invertebrates, c—a year, d—interspecific competition

174. The monarch butterfly is highly distasteful to its predator (bird) because of a special chemical present in its body. The butterfly acquires this chemical during its

- (A) Larval stage by feeding on a poisonous weed
- (B) Caterpillar stage by feeding on poisonous seed
- (C) Caterpillar stage by feeding on a poisonous weed**
- (D) Any of the above

175. How many insects are known to be phytophagous?

- (A) 25%**
- (B) 50%
- (C) 32%
- (D) 18%

176. Match the columns I and II, and choose the correct combination from the options given.

Column I	Column II
a. Camouflaged	1. <i>Acacia</i>
b. Poisonous	2. <i>Calotropis</i>
c. Thorns	3. Monarch butterfly
d. Cardiac glycosides	4. Frogs

- (A) a—4, b—3, c—1, d—2**
- (B) a—3, b—4, c—2, d—1
- (C) a—4, b—2, c—1, d—3
- (D) a—3, b—4, c—1, d—2

177. In some shallow South American lakes visiting flamingoes and resident fishes compete for their common food the

- (A) Phytoplankton
- (B) Zooplankton**
- (C) Insects
- (D) Both A and B

178. In feeding efficiency of one species might be reduced due to the interfering and inhibitory presence of the other species, even if resources (food and space) are abundant then it is called

- (A) Resource partitioning
- (B) Competitive release
- (C) Interference competition**
- (D) Competitive exclusion

179. The following figure shows



- (A) Fig flower is pollinated by moth
- (B) Orchid flower is pollinated by bee
- (C) Yucca flower is pollinated by wasp
- (D) Fig flower is pollinated by wasp**

180. The process in which the fitness of one species (measured in terms of 'r') is significantly lower in the presence of another species, is called

- (A) Predation
- (B) Parasitism
- (C) Commensalism
- (D) Competition**

181. Abingdon tortoise in Galapagos Islands became extinct within1.... after2..... were introduced on the island, apparently due to the greater browsing efficiency of the3.....



(A) 1—a year, 2— Darwin finches, 3—tortoise

(B) 1—a decade, 2—goats, 3—tortoise

(C) 1—a year, 2—goats, 3—goats

(D) 1—a decade, 2—goats, 3—goats

182. Which one provide the evidence for the occurrence of competition in nature?

(A) Resource partitioning

(B) Competitive release

(C) MacArthur experiment

(D) All of the above

183. A species whose distribution is restricted to a small geographical area because of the presence of a competitively superior species, is found to expand its distributional range dramatically when the competing species is experimentally removed. This is the observation of

(A) Resource partitioning

(B) Competitive release

(C) Interference competition

(D) Competitive exclusion

184. Two closely related species competing for the same resources cannot co-exist indefinitely and the competitively inferior one will be eliminated eventually. This is the statement of

(A) Connell's elegant field experiment

(B) Gause's Competitive Exclusion Principle

(C) MacArthur experiment

(D) Competitive release

185. Match the columns I and II, and choose the correct combination from the options given.

Column I	Column II
a.Connell	1. Exclusion
b.MacArthur	2. Barnacle
c.Gause	3. Warblers
(A)a—1, b—2, c—3	(B)a—3, b—1, c—2
(C)a—1, b—3, c—2	(D)a—2, b—3, c—1

186. More recent studies point out that species facing competition might evolve mechanisms that promote co-existence rather than exclusion. One such mechanism is

- (A) Resource partitioning
- (B) Competitive release
- (C) Interference competition
- (D) All of the above

187. If two species compete for the same resource, they could avoid competition by

- (A) Choosing different times for feeding
- (B) Different foraging pattern
- (C) Behavioural differences in their foraging activities
- (D) All of the above

188. Who showed that five closely related species of warblers living on the same tree were able to avoid competition and co-exist due to behavioural differences in their foraging activities?

- (A) Gause
- (B) Connell
- (C) MacArthur
- (D) Verhulst—Pearl.

189. In general,a..... andb..... appear to be more adversely affected by competition thanc.....

- (A) a—herbivores, b—carnivores, c—plants
- (B) b—herbivores, c—carnivores, a—plants

(C)c—herbivores, a—carnivores, b—plants

(D)c—herbivores, b—carnivores, a—plants

190. When certain exotic species are introduced into the geographical area, they become invasive and start spreading fast because the invaded land does not have its natural

(A)Competitors

(B)Predators

(C)Parasites

(D)Symbionts

191. The following figure shows



(A)Fig flower is pollinated by moth

(B)Orchid flower is pollinated by free

(C)Yucca flower is pollinated by wasp

(D)Fig flower is pollinated by wasp

192. Read the following statements and find out the incorrect statement.

a.Parasitic mode of life ensures free lodging and meals so parasitism has evolved in so many taxonomic groups from plants to higher vertebrates.

b.Many parasites have evolved to be host specific, i.e. they can parasitise only a single species of host.

c.The life-cycle of parasites are often complex, involving one or two intermediate host or vectors to facilitate parasitisation of its secondary host.

d.All of the parasites harm the host.

e.Lice on dogs and ticks on humans are familiar examples of ectoparasites.

(A)a, b and c

(B)b, c and d

(C)c, d and e

(D)a, b and d

193. The human liver fluke belongs to

- (A) Cestoda
 (B) Trematoda
 (C) Gestoda
 (D) Turbellaria

194. Match the columns and choose the correct options.

Column I	Column II
a. Mutualism	p. Ticks on dogs
b. Commensalism	q. <i>Balanus</i> and <i>Chathamalus</i>
c. Parasitism	r. Sparrow and any seed
d. Competition	s. Orchid epiphyte on mango branch
e. Predation	t. <i>Ophrys</i> and bee

(A) a-t, b-s, c-p, d-q, e-r

(B) a-q, b-p, c-t, d-s, e-r

(C) a-r, b-q, c-p, d-t, e-s

(D) a-s, b-r, c-q, d-p, e-t

195. To complete its life-cycle human liver fluke depends on

- (A) One intermediate host—snail
 (B) One intermediate host —snail
 (C) Two intermediate hosts—snail and sheep
 (D) Two intermediate hosts—snail and fish

196. What is the effect of the parasite on host?

- (A) Parasite may reduce the survival, growth and reproduction of the host
 (B) Parasite reduce the population density of host
 (C) Parasite may render the host more vulnerable to predation by making it physically weak
 (D) All of the above.

197. Many marine fishes are infested with ectoparasitic

- (A) Barnacles
(B) Copepods
(C) Ticks
(D) Mites

198. The breeding season of koel (cuckoo) and crow is

- (A) Spring to summer
(B) Winter to spring
(C) Summer to winter
(D) Winter to summer

199. In case of brood parasitism, the host and parasite respectively are

- (A) Crow and koel
(B) Koel and crow
(C) Both A and B conditions are possible
(D) Can't be predicted

200. The most spectacular and evolutionary fascinating examples of mutualism are found in

- (A) Sea anemone and clown fish relationship
(B) Barnacle and whale relationships
(C) Plant—animal relationships
(D) All of the above

201. Plants offer rewards or fees to seed dispersers in the form of

- (A) Nectar
(B) Pollen grain
(C) Juicy and nutritious fruits
(D) All of the above

202. Tight one-to-one relationship between plant and pollinator is found in

- (A) Fig and wasp
(B) Yucca and moth

(C) *Amorphophallus* and pollinator

(D) All of the above

203. Orchids show a bewildering diversity of floral pattern and attract the pollinating agent which is

(A) Bees

(B) Bumblebees

(C) Bats

(D) Both A and B

204. Which of the following plant do not offer reward and employs sexual deceit to get pollination done by a species of bee?

(A) *Ophrys species*

(B) Mediterranean orchid

(C) *Pronuba*

(D) Both A and B

205. Which part of the *Ophrys* flower bears an uncanny resemblance to the female of the bee in size, colour and markings?

(A) Sepal

(B) Petal

(C) Stamen

(D) Both A and B

206. The *Ophrys* is pollinated by the phenomenon of the

(A) Camouflaging

(B) Pseudocouplation

(C) Resource partitioning

(D) Parasitism

207. Recognise the table and find out the correct statement.

Interspecific population interactions

Species A	Species B	Nature of interaction
+	+	a
-	-	b
+	- (Prey)	d
+	- (Host)	c

+	0	e
-	0	f

(A) a—competitin, b—predation, c—commensalims, d—parasitism, e—amensalism, f—mutualism

(B) b—competitin, c—predation, f—commensalims, d—parasitism, e—amensalism, a—mutualism

(C) b—competitin, d—predation, e—commensalims, c—parasitism, f—amensalism, a—mutualism

(D) b—competitin, d—predation, c—commensalims, e—parasitism, f—amensalism, a—mutualism

208. A group of animals of a species that live in a well-defined geographical area, share or complete for similar resources, potentially interbreed and thus constitute a

(A) Community

(B) Population

(C) Biome

(D) Ecosystem

209. Which statement is false about predators?

(A) Predators keep prey population under control

(B) Predators help in maintaining species diversity in a community

(C) If a predator is not efficient, the prey population will become extinct

(D) Tiger is an example of predator

210. Match the columns and find the correct option.

Interaction	Example
1. Predation	a. <i>Cuscuta</i> and Hedge plants
2. Commensalism	b. <i>Balanus</i> and <i>Chathamalus</i>
3. Paraitism	c. Cactus and Moth
4. Competition	d. <i>Orchid</i> and Mango

(A) 1—c, 2—d, 3—a, 4—b

(B) 1—d, 2—c, 3—b, 4—a

(C) 1—a, 2—c, 3—b, 4—d

(D) 1—c, 2—d, 3—b, 4—a

211. Select the incorrect statement.

(A) Orchid epiphytic on Mango is commensal.

(B) Bird laying eggs in the nest of another for incubation shows brood parasitism.

(C) Most animals and plants maintain a constant internal temperature

(D) Small animals are rare in polar regions.

212. The phenomenon of one organism being benefited without affecting the other is

(A) Scavenging

(B) Amensalism

(C) Commensalism

(D) Symbiosis

213. Gause law is related to

(A) Predation

(B) Parasitism

(C) Competitive exclusion

(D) Coexistence

214. There are two ways of exploitation. One way is parasitism, the other one is

(A) Antibiosis

(B) Competition

(C) Predation

(D) Commensalism

215. Which are correct categories with one exception?

Items	Category	Exception
(A) UAA, UAG, UGA	Stop codons	UAG
(B) Typhoid, Pneumonia, Diphtheria	Bacterial diseases	Diphtheria
(C) <i>Plasmodium</i> , <i>Cuscuta</i> , <i>Trypanosoma</i>	Protozoan Parasites	<i>Cuscuta</i>
(D) Kangaroo, Koala Wombat	Australian marsupials	Wombat

216. Browsing of animals is an example of

(A) Commensalism

(B) Predation

(C) Parasitism

(D) Amensalism

217. Alien species introduced into lake Victoria that was responsible for the extinction of cichlid species is

- (A) African Catfish (B) Murrels
(C) Water Hyacinth (D) Nile perch

218. One species is harmed whereas the other is unaffected. Such type of interaction is called

- (A) Commensalism (B) Amensalism
(C) Parasitism (D) Predation

219. Parasitic phanerogams absorb water and solute from host plant by

- (A) Mycorrhiza (B) Clinging roots
(C) Adventitious roots (D) Haustoria

220. *Zoochlorella* in *Hydra* produces an association called

- (A) Commensalism (B) Parasitism
(C) Mutualism (D) Predation

221. In commensalism

- (A) Both partners are benefitted
(B) Both partners are harmed
(C) Weaker is benefitted while stronger unharmed
(D) None of the above

222. Which ones are true about interdependence?

- (a) One is benefitted and other unaffected in mutualism.
(b) Both partners are benefitted in commensals.
(c) One kills and feeds on another in predation.
(d) Both partners are benefitted in symbiosis.
(A) a and b only (B) a and c only

(C) b and c only

(D) c and d only

223. Animals have innate ability to escape from predation. Select the incorrect example.

(A) Colour change in *Chameleon*

(B) Enlargement of body by swallowing air in Puffer fish

(C) Poison fangs of snakes

(D) Melanin in moths

224. Match the columns and choose the correct combination.

Column I**Column II**

(i) Mutualism

(p)

Beneficial to a, no effect for b

(ii) Competition

(q)

Beneficial to both a and b

(iii) Parasitism

(r)

Beneficial to a and inhibitory for b

(iv) Predation

(s)

Beneficial to a and harmful to b

(v) Parasitism

(t)

Harmful to both a and b

(A) i—t, ii—s, iii—p, iv—q, v—r

(B) i—p, ii—r, iii—q, iv—t, v—s

(C) i—q, ii—t, iii—s, iv—r, v—p

(D) i—r, ii—p, iii—q, iv—s, v—r

225. A plant growing on another plant without drawing any nourishment is

(A) Ectoparasite

(B) Epiphyte

(C) Symbiont

(D) Saprophyte

226. Community is

(A) Group of independent, interacting populations of same species

(B) Group of independent and interacting populations of same species in specific area

(C) Group of independent and interacting populations of different species in a specific area

(D) Group of independent and interacting populations of different species

227. Two different types of plant species living together at a place represent

(A) Plant coenosis

(B) Zoocoenosis

(C) Plant community

(D) Ecotype

www.Padasalai.Net