Ravi Maths Tuition

11 Organisms and Populations

12th Standard

Biology

Multiple Choice Question 98 x 1 = 98

1) Select the statement which explains best parasitism.

(a) One organism is benefitted. (b) Both the organisms are benefitted

(c) One organism is benefitted, other is not affected (d) One organism is benefitted, other is affected.

2) Lichens are well known combination of an alga and a fungus where fungus has

(a) an epiphytic relationship with the alga (b) a parasitic relationship with the alga

(c) a symbiotic relationship with the alga (d) a saprophytic relationship with alga

3) Maximum growth rate occurs in

(a) senescent phase (b) lag phase (c) exponential phase (d) stationary phase

4) Zone of atmosphere near the earth surface is

(a) Stratosphere (b) Mesosphere (c) Troposphere (d) Thermosphere

5) In which one of the following habitats does the diurnal temperature of soil surface vary most?

(a) Forest (b) Desert (c) Grassland (d) Shrub land

6) Photosynthetically active radiation (PAR) represents the following range of wavelength

(a) 450-950 nm (b) 340-450 nm (c) 400-700 nm (d) 500-600 nm

7) A terrestrial animal must be able to

(a) Conserve water (b) Actively pumps salts out through the skin

(c) Excrete large amounts of salt in urine (d) Excrete large amounts of water in urine

8) What is a keystone species?

(a) A common species that has plenty of biomass, yet has a fairly low impact on the community's organization

(b) A race species that has minimal impact on the biomass and on other species in the community

(c) A dominant species that constitutes a larger proportion of the biomass and which affects many other species

(d) A species which makes up only a small proportion of the total biomass of community, yet has a huge impact on the community's organization and survival.

9) The term ecology was coined by

(a) Odum (b) E. Munch (c) Tansley (d) Reiter

10) Animals have the innate ability to escape from predation. Examples for the same are given below. Select the incorrect example.

(a) colour change in chamaeleon (b) enlargement of body size by swallowing air in puffer fish

(c) poison fangs in snakes (d) melanism in months

11) The ability of the venus fly trap to capture insects is due to

(a) specialized 'muscle-like' cells (b) chemical stimulation by the prey

(c) a passive process requiring no special ability on the part of the plant

(d) rapid turgor pressure changes

12) The presence of diversity at the junction of territories of two different habitats is known as

(a) bottle neck effect (b) edge effect (c) junction effect (d) pasteur effect

13) Small fish get struck near the bottom of a shark and derives its nutrition from it? This kind of association is called as

(a) symbiosis (b) commensalism (c) predation (d) parasitism

14) Pneumatophores are present/common in

(a) xerophytes (b) hygrophytes (c) mesophytes (d) halophytes

15) The role of an organism in the ecological system is known as:

(a) habitat (b) herbivory (c) niche (d) interaction

16) Which one of the following correctly represents an organism and its ecological niche?

(a) Vallisneria and pond (b) direct locust (Scistocera) and desert (c) plant lice (aphids) and leaf
(d) vultures and dense forest

17) Adaptation to low temperature and freezing in animal occurs due to the production of :

(a) Antifreeze proteins (b) Chaperonins (c) Proline (d) Analine

18) Annual migration does not occur in case of

(a) arctic tern (b) salmon (c) Siberian crane (d) salamander

19) The formula for exponential population growth is

(a) $dN/dt = \gamma N$ (b) $dt/dN = \gamma N$ (c) $dN/\gamma N = dt$ (d) $\gamma \quad N/dN = dt$

20) Niche overlap indicates

(a) mutualism between two species (b) active cooperation between two species
(c) two different parasites on the same host
(d) sharing of one or more resources between the two species

21) Praying mantis is a good example of

(a) camouflage (b) mullerian mimicry (c) warning colouration (d) social insects

22) Animals undergo inactive stage during winter is known as

(a) aestivation (b) hibernation (c) adaptation (d) acclimitisation

23) Keystone species deserve protection because these

(a) are capable of surviving in harsh environmental conditions
(b) indicate presence of certain minerals in the soil (c) have become rare due to overexploitation
(d) play an important role in supporting other species.

24) Geometric represent of age structure is a characteristic of

(a) population (b) landscape (c) ecosystem (d) biotic community

25) The popultation of an insect species show an explosive increase in numbers during rainly season followed by its disappearance at teh end of the season. What does this show?

(a) the food plants mature and die at the end of the rainy season
(b) its population growth curve is of J-type (c) the population of its predators increase
(d) S-shaped or sigmoid growth of this insect.

26) A high density of elephant population in an area can result in

(a) intra-specific competition (b) inter-specific competition (c) predation on one another
(d) mutualism

27) Humus is present in

(a) horizon-A (b) horizon-O (c) horizon-B (d) horizon-C

28) Popluation density of terrestrial organism is measured in terms of individual per

(a) meter^3 (b) meter^4 (c) meter (d) meter^2

29) Consider the following four (1-4) statements about certain desert animals such as kangaroo rat
1. They have dark colour and high rate of reproduction and excrete solid urine.
2. They do not drink water, breathe at a slow rate to conserve water and have their body covered with thick hairs.
3. They feed on dry seeds and do not require drinking water.
4. They excrete very concentrated urine and do not use water to regulate body temperature.
Which of the above statements for such animals are true?

(a) 3 and 1 (b) 1 and 2 (c) 3 and 4 (d) 2 and 3

30) Match the following with correct combination

Column I	**Column II**
A. Camouflag	1. Dendrobates purnilio
B. Batesian mimicry	2. Horse-shoe bat
C. Warning colouration	3. Monarch butterfly
D. Echolocation	4.Praying mantis

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

31) Match the following with correct combination

Column I	**Column II**
A. Mutualism	1. Tiger and Deer
B. Commensalism	2. Cuscuta and Cissus
C. Parasitism	3. Sucker fish and shark
D. Predation	4. Crab and sea anemone

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

32) The change in population size at a given time interval t, is given by the expression
$N_t = N_0 + B + I - D - E$
I, B and D stand respectively for

(a) rate of immigration, mortality rate, natality rate (b) rate of emigration, natality rate, mortality rate
(c) mortality rate, rate of immigration, natality rate
(d) morality rate, natality rate, rate of immigration
(e) rate of immigration, natality rate, mortality rate

33) The amount of fresh water of the earth frozen as polar or glacial ice is

(a) 0.5% (b) 0.02% (c) 0.01% (d) 1.97% (e) 2.5%

34) The eqn. $\frac{\Delta N_n}{\Delta N_t} = B$ represent which of the following?

(a) natality (b) growth rate (c) mortality (d) all of these

35) In the sigmoid growth curve, the upper asymptote represents the period od

(a) establishment (b) positive acceleration (c) negative acceleratin (d) equilibrium

36) An association between two individuals or populations where both are benefitted and where neither can survive without the other is

(a) commensalism (b) amensalism (c) protocooperation (d) mutualism

37) According to Allen's rule, mammals in cold regions have___ to conserve body heat.

(a) smaller extremities (legs, tails and ears) (b) longer extremeities (c) larger body mass
(d) smaller body mass

38) Ornithophily refers to pollination by which of the following:

(a) insects (b) birds (c) snails (d) air

39) Plant species having a wide range of genetical distribution evolve into a local population known as

(a) ecotype (b) biome (c) ecosystem (d) population (e) ephemerals

40) Lime is added to the soil which is too

(a) sandy (b) salty (c) alkaline (d) acidic

41) The least porous soil among the following is

(a) loamy soil (b) silty soil (c) clayey soil (d) peaty soil

42) The greatest problem of water conservation is to reduce the amount of

(a) precipitation (b) run off water (c) ground water (d) evaporation

43) Industrial melanism is an example of

(a) defensive adaptation of skin against UV radiations (b) drug resistance
(c) protective resemble with the surronding (d) darkening of skin due to industries

44) Niche is defined as the

(a) position of species in a community in relation to other species (b) place where organism lives
(c) place where organism lives and performs its duty (d) place where population perform their duties

45) If in a population, natality is balanced by mortality then there will be

(a) decrease in population grwoth (b) zero population growth (c) increase in population growth
(d) over population

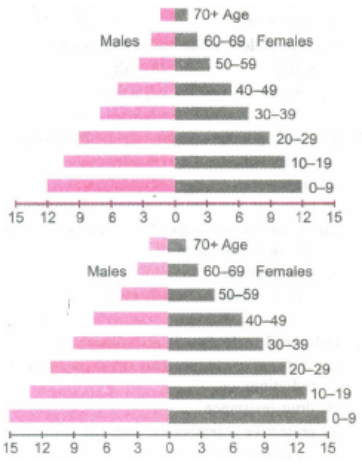
46) Animals from colder climates generally have smaller limbs. This is called

(a) Niche rule (b) Allen's rule (c) Ehrlich rule (d) none of these

47) Xerophytes are mostly

(a) succulents (b) water related (c) mesophytes (d) none of these

48) A country with a high rate of population growth took measures to reduce it. The figure shows age-sex pyramids of population A and B twenty years apart. Select the correct interpretation about them.



(a) 'A' is the earlier pyramid and no change has occurred in the growth rate.
(b) 'A' is more recent and shows slight reduction in the growth rate.
(c) 'B' is earlier pyramid and shows stabilized growth rate
(d) 'B' is more recent showing that population is very young

49) What would be the per cent growth or birth rate pe individual per hour for the same population mentioned in the question (Question 10 at Page 95)?

(a) 100 (b) 200 (c) 50 (d) 150

50) 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 stabilise (c) It will increase (d) It will first decline and then stabilise

51) Select the statement which best explains commensalism

(a) One organism is benefitted. (b) Both the organisms are benefitted

(c) One organism is benefitted; other is not affected.

(d) One organism is benefitted; other is affected

52) Community is defined as aggregation of:

(a) Individuals of the same kind (b) individuals of different kinds (c) Individuals of a population

(d) Populations of different species

53) Parasite can be explained as an organism which depends on others.

(a) for food (b) for shelter (c) for both food and shelter (d) for reproduction

54) What parameters are used for tiger census in our country's national parks sanctuaries?

(a) Pug marks only (b) Pug marks and faecal pellets (c) Faecal pellets only (d) Actual head counts

55) Which of the following would necessarily decrease the density of a population in a given habitat?

(a) Natality > mortality (b) Immigration > emigration (c) Mortality and emigration

(d) Natality and immigration

56) A protozoan reproduces by binary fission. What will be the number of protozoans in its population after six generations?

(a) 128 (b) 24 (c) 64 (d) 32

57) 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

58) Amensalism is an association between two species where:

(a) one species is harmed and other is benefitted (b) one species is harmed and other is unaffected

(c) one species is benefitted and other is unaffected (d) both the species are harmed

59) Lichens are the associations of :

(a) bacteria and fungus (b) algae and bacterium (c) fungus and algae (d) fungus and virus

60) Which of the following is a partial root parasite?

(a) Sandal wood (b) Mistletoe (c) Orobanche (d) Ganoderma

61) Which one of the following organisms reproduces sexually only once in its life time?

(a) Banana plant (b) Mango (c) Tomato (d) Eucalyptus

62) Which one of the following in one of the characteristics of a biological community?

(a) Sex-ratio (b) Stratification (c) Natality (d) Mortality

63) Which one of the following is most appropriately defined?

(a) Host is an organism which provides food to another organism

(b) Amensalism is a relationship in which one species is benefitted the other is unaffected.

(c) Predator is an organism that catches and kills other organisms for food

(d) Parasite is an organism which always lives inside the body of other organism and may kill

64) The species, though insignificant in number, determine the existence of many other species in a given ecosystem. Such is known as

(a) extinct species (b) keystone species (c) endemic species (d) sacred species

65) Populations are said to be sympatric when

(a) two populations are isolated but occasionally come together to interbreed

(b) two populations share the same environment but cannot interbreed

(c) two populations live together and freely interbreed to produce sterile offspring

(d) two populations are physically isolated by natural barriers

66) Animals that rely on the heat from the environment, rather than of metabolism, to raise their body temperature are, in the strict sense, called

(a) ectothermic (b) poikilothermic (c) homeothermic (d) endothermic

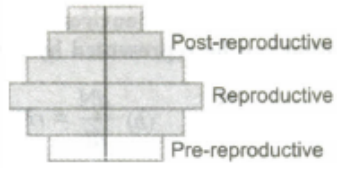
67) A large regional unit characterized by a major vegetation type and associated fauna found in a specific climate zone constitutes

(a) ecosystem (b) biological community (c) biome (d) habitat

68) Cold blooded animals fall under the category of

(a) ectotherms (b) psychotherms (c) endotherms (d) thermophiles

69) What type of human population is represented by the given age pyramid?



(a) vanishing population (b) stable population (c) expanding population (d) declining population

70) Consider the following statements (A-D) each with one or two blanks:
(A) Bears go into(1) during winter to (2) cold weather.
(B) A conical age pyramid with a broad base represents (3) human population.
(C) A wasp pollinating a fig flower is an example of(4).
(D) An area with high levels of species richness is known as (5).
Which one of the following options gives the correct fill ups for the respective blank numbers from (1) to (5) in the statements?

(a) (3)-stable, (4)-commensalism, (5) marsh (b) (1)-aestivation, (2)-escape, (3)-stable, (4)-mutualism

(c) 3-expanding, (4)-commensalism, (5)-diversity park

(d) (1)-hibernation, (2)-escape, (3)-expanding, (5)-hot spot

71) The logistic population growth is expressed by the equation

(a) $dt/dN = N\gamma(\frac{K-N}{K})$ (b) $dN/dt = \gamma N(\frac{K-N}{K})$ (c) $dN/dt = \gamma N$ (d) $dN/dt = \gamma N(\frac{K-N}{N})$

72) Cuscuta is an example of

(a) ectoparasitism (b) brood parasitism (c) predation (d) endoparasitism

73) The animals that rely on the heat from environment than metabolism to raise their body temperature are, in strict sense, called

(a) ecothermic (b) poikilothermic (c) homeothermic (d) endothermic

74) The carrying capacity of environment for a given population can be represented by the equation

(a) $dN = \gamma N - \frac{N}{K}$ (b) $\frac{dN}{dt} = \gamma N - \frac{N}{K}$ (c) $\frac{dN}{dt} = \gamma N - \frac{1}{K}$ (d) $\frac{dN}{dt} = \gamma N(1 - \frac{N}{K})$

75) Some organism are tolerant to a narrow range of salinity

(a) eurhaline (b) stenohaline (c) neither(a) nor (b) (d) saline

76) Animals from colder climates generally have shorter limbs. This is called

(a) Allen's rule (b) Johnson's rule (c) Arber's rule (d) Niche rule

77) It natality is balanced by mortality in a population at a given time, there will be a / an

(a) decrease in the population size (b) increase in the population size (c) zero population growth (d) population explosion

78) Mycorrhiza is an example of

(a) ectoparasitism (b) mutualism (c) endoparasitism (d) predation

79) The interspecific interaction in which one partner is benefitted and the other is unaffected (neutral), is called

(a) amensalism (b) mutualism (c) competition (d) commensalism

80) Individuals of one kind, i.e., one species occupying a particular geographic area, at a given time form a/an

(a) community (b) biome (c) population (d) deme

81) The formula of exponential population growth curve, is

(a) dN /dt = rN (b) dt /dN = rN (c) dN / rN = dt (d) rN / dN = dt

82) Match the terms in Column I with those in Column II.

Column I	Column II
A. Amensalism	1. The interspecific interaction, where both are equally benefitted.
B. Parasitism	2. The interspecific interaction, where one is benefitted and one is neutral
C. Mutualism	3. The interspecific interaction, where one is harmed and the other is neutral.
D. Commensalism	4. The interspecific interaction, where one is benefitted and one is harmed.
E. Competition	

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

83) Match the terms in Column I with their descriptions in Column II.

Column I	Column II
A. Homeostasis	1. Animal which can tolerate a wide range of temperature
B. Conformers	2. The number of births in a given population at a given time
C. Natality	3. Per capita births in a given population.
D. Eurythermal	4. Maintenance of a relatively constant internal environment
	5. Animals which change their body temperature according to the ambient temperature.

(a) A - 4, B - 5, C - 2, D - 1 (b) A -5, B - 4, C - 2, D - 1 (c) A -5, B - 4, C - 1, D - 2 (d) A - 4, B - 2, C - 5, D - 1

84) Which of the following does not relate to population attributes?

(a) Mortality (b) Number of educated people (c) Sex ratio (d) Population size

85) The bell-shaped polygonal pyramid indicates

(a) low percentage of pre-reproductive individuals (b) low percentage of young individuals (c) high percentage of old individuals (d) moderate percentage of young individuals

86) A biologist studied the population of rats in a barn. He found that the average natality was 250, average mortality 240, immigration 20 and emigration 30. The net increase in population is

(a) 15 (b) 0 (c) 10 (d) 5

87) Match the following columns.

COLUMN I(ATTRIBUTES OF POPULATION GROWTH)	**COLUMN II (FEATURES)**
A. Mortality	1. Individuals of same species going out from population.
B. Immigration	2. Individuals of same species coming in population.
C. Emigration	3. Numbers of deaths in population during given period.

(a) A-1, B-3, C-2 (b) A-2, B-3, C-1 (c) A-3, B-2, C-1 (d) A-2, B-1, C-3

88) A population growth curve is given below. It indicates

(a) Exponential growth curve (b) Logistic growth pattern (c) J-shaped curve (d) Both (a) and (c)

89) Logistic growth occurs when there is

(a) no resistance from increasing population (b) unlimited food (c) fixed carrying capacity

(d) All of the above

90) The equation of the exponential growth curve of the population has 'r which mean

(a) (a) extrinsic rate of natural increase

(b) (b) an important parameter for assessing impacts of only biotic factors on population growth

(c) (c) for Norway rat, it values 0.15 (d) (d) for flour beetle, it values 0.12

91) Which is correctly labelled as per the given diagram?

(a) B-Logistic curve (b) C-Carrying capacity (c) C-Exponential curve (d) A-Carrying capacity

92) Important attributes belonging to a population, but not to an individual are (i) birth rate and death rate (ii) male and female (iii) birth and death (iv) sex-ratio

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

93) Many copepods live on the body surface of marine fish. This relationship is an example of

(a) commensalism (b) parasitism (c) amensalism (d) mutualism

94) Interaction between clown fish living among the stinging tentacles of sea anemone is an example of

(a) amensalism (b) parasitism (c) mutualism (d) commensalism

95) A tight one-to-one relationship between many species of fig tree and certain wasps is an example of

(a) commensalism (b) parasitism (c) amensalism (d) mutualism

96) The Abingdon tortoise in Galapagos Island became extinct within a decade after goats were introduced on the Island due to

(a) superiority of goats (b) greater browsing efficiency of goats (c) higher value

(d) competitve release

97) If '+' sign is assigned to beneficial interaction, '-' sign to detrimental and '0' sign to neutral interaction, then the population interaction represented by '+' '-' refers to

(a) mutualism (b) ammensalism (c) commensalism (d) parasitism

98) Through resource partitioning

(a) two species can compete for the same prey

(b) slight variation in the niche allow closely related species to co-exist in the same habitat

(c) competitive exclusion results in the success of superior species

(d) two species undergo character displacement

Fill up / 1 Marks 16 x 1 = 16

99) Species that can tolerate wide range of salinity are called ----------

100) Emergent land plants that can tolerate the salinity of the sea are called ----------

101) What do we study in ecology?

102) How thermoregulation is achieved in the polar bears?

103) Give examples of following categories:
(a) Solitary animals
(b) Monogamous
(c) Polygamous
(d) Flocks
(e) Herds
(f) Female leader of herd
(g) Polymorphic
(h) Colonial.

104) Fill in the blanks:(a) The aggregation of individuals of species is called _____
(b) The relationship where one organism is benefitted, while the other is neither benefitted nor harmed, is referred as _____
(c) Organisms preying on animals are called _____
(d) An association of two species in which both species are benefitted is called _____

105) The organisms which can tolerate and thrive in a wide range of temperature, are called _____.

106) The salinity (measured in parts per thousand) in the sea is _____.

107) _____ is any attribute of an organism (morphological, physiological and behavioural) that enables it to live and reproduce in the given area.

108) _____ refers to the number of births during a given period of time that are added to the initial density.

109) In a logistic growth curve, the final phase is an _____.

110) _____ fish breed only once in their life time.

111) An orchid growing as an epiphyte on a mango tree, is an example of _____.

112) _____is an important process as it facilitates energy transfer through various organisms.

113) _____ showed that five closely related species of warblers living on the same were able to avoid competitions and co-exist.

114) Zooplanktons enter _____ , a state of suspended development under unfavourable conditions.

True or False 5 x 1 = 5

115) Zooplanktons enter a state of suspended development, called diapause, under unfavourable conditions.

(a) True (b) False

116) The success of mammals is due to their ability to change their body temperature according to their surroundings.

(a) True (b) False

117) SmaU animals like shrews and humming birds are rarely found in polar regions.

(a) True (b) False

118) Organisms living in water bodies (lake, sea, river) do not face any water related problems.

(a) True (b) False

119) dN/dt = rN is the equation describing logistic growth

(a) True (b) False

1 Marks 215 x 1 = 215

120) Why are green algae not likely to be found in the depest strata of the ocean?

121) Why are green plants not found beyond a certain depth in the ocean?

122) Name a 'Photoperiod' - dependent process, one each in plants and in animals.

123) Mention how bears escape from stressful time in winter.

124) How are closely related species of warblers able to co-exist in a competitive environment?

125) How do snails escape from the stressful time in summer?

126) How do animals like fish and snails avoid summer-related unfavorable conditions?

127) Name the interspecific interaction in which one is detrimental while the other is neutral.

128) Write what the phytophagous insects feed on.

129) What is the interaction between Cuscuta and shoe-flower bush called?

130) What is an interaction called, when an orchid grows on a mango plants?

131) Name the type of interaction between a whale and the barnacles growing on its back.

132) Name the interaction between sea anemone and the hermit crab that grows on it.

133) Comment on the interaction between a clown fish living among the tentacles of a sea anemone.

134) Mention the effect of global warming on the geographical distribution of stenothermals like amphibians.

135) Pollinating species of wasps show mutualism with specific fig plants. Mention the benefits the female wasps derive from the fig trees from such an interaction.

136) Comment on the interaction between certain species of fig trees and wasps.

137) Why are some organisms called eurythermals and some others stenohaline?

138) Mention any two activities of animals which get cues from diurnal and seasonal variations in light intensity.

139) If 8 individuals in a laboratory population of 80 fruit died in a week, then what would be the death rate of the population for the said period?

140) In a pond, there were 200 frogs. 40 more were bron in a year. Calculate the birth rate of the population.

141) Why do predators avoid eating monarch butterfly? How does the butterfly develop this protective features?

142) How do spines help cactus survive in the desert? Give two methods.

143) How does comouflage help an insect?

144) Give one example where animal-plant interaction involves co-evolution.

145) When and why do some animals like frogs hibernate?

146) When and why do some animals go into hibernation?

147) When and why do some animals like snails go into aestivation?

148) Which of the two, stenothermals or eury-thermal, show wide range of distribution on earth and why?

149) Mention any two significants roles predation plays in nature.

150) Between amphinbians and birds, which will be stable to cope with global warming? Give reason.

151) How do herbs and shrubs survive under the shadow of big canopied trees in forests?

152) List any two physiological responses that help you to gradually get acclimatised to high altitudes, when you go from the plains.

153) Why many of the freshwater animals cannot live for long in sea water or vice-versa?

154) Define homeostasis.

155) Give an example where percentage cover is a more meaningful measure of the population size.

156) Give one example where population estimation of an organism is done indirectly without actually counting the organisms.

157) In a pond, there were 24 lotus plants. 8 new plants were added by way of reproduction in one year. Calculate the birth rate of the lotus plants.

158) What does ecological niche of an organism represent?

159) Name the association in which one species produces poisonous substance or a change in environmental conditions that is harmful to another species.

160) What would be the growth curve pattern, when the resources are unlimited?

161) In an association of two animal species, one is a termite which feeds on wood and the other is a protozoan Trichonympha present in the gut of the termite. What type of association they establish?

162) What is interaction between two species called?

163) What will happen to a well-growing herbaceous plant in the forests, it it is transplanted outside the forest in a park?

164) If a population of 50 Paramoecium present in a pool increases to 150 after an hour, what would be the growth rate of the population?

165) What is ecology at the organismic level?

166) Name the two factors that cause the formation of major biomes.

167) Name the most ecologically relevant environmental factor.

168) Where are tuna fish found?

169) What are stenothermal organisms?

170) Name the major factor that determines the geographical distribution of organisms.

171) Name the celestial source of energy for plants (organisms).

172) Which variety of algae inhabit the deep sea?

173) Why are small plants growing in forests adapted to photosynthesis under low light intensity?

174) Name the factors that determine the water-holding capacity of soil.

175) What determines the type of benthic animals in an aquatic ecosystem?

176) What is migration?

177) Name the National park in India where migratory birds arrive in winter from Siberia.

178) Define adaptation.

179) What is meant by Allen's Rule?

180) Mention the adaptations the mammals of colder seas have.

181) Why do people living in high altitude have more haemoglobin/high RBC count?

182) Why is population ecology considered an important area of ecology?

183) Define population density.

184) Name the two methods that form the basis of tiger census.

185) Define natality.

186) Give the integral from of equation of exponential growth of a population.

187) When does a population growth curve assume J-shape?

188) Write the equation for describing the Verhulst-Pearl logistic growth.

189) Write name is given to the typw of growth that assumes a sigmoid curve?

190) Name two organisms (one plant and one animed) which breed only once in their life time.

191) Why have life history variations evolved?

192) Name the type of interaction, that is detrimental to both the interacting species.

193) Define predation.

194) What type of interaction is shown by a sparrow eating the seeds?

195) Why is the problem of predation in plants more severe than that in animals?

196) Why did the Abingdon tortoise in Galapagos Islands become extinct?

197) What is meant by 'competitive release'?

198) Define parasitism.

199) Name the intermediate hosts of human liver fluke.

200) Species that can tolerate narrow range of temperature are called ----------

201) What are eurythermic species ?

202) Define stenohaline species.

203) What is commensalism?

204) What is mycorrhiza ?

205) Why do high altitude areas have brighter sunlight and lower temperatures as compared to the plains.

206) What is homeostasis ?

207) Define aestivation.

208) What is diapause and its significance?

209) What would be the growth rate pattern, when the resources are unlimited?

210) What is high altitude sickness ? Write its symptoms.

211) Give a suitable example for commensalism

212) Define ectoparasite and endoparasite and give suitable examples.

213) What is brood parasitism? Explain with the help of an example.

214) What is the basic unit of ecology?

215) Define habitat and niche.

216) List key elements that lead to variations in the physical and chemical conditions of different habitats.

217) List any two unique habitats

218) What are ectotherms?

219) What is osmoregulation? Name the osmoregulatory apparatus of human environment.

220) What are osmoconformers? Give one example.

221) What is significance of adaptations?

222) What causes animal variations in the intensity and duration of temperature?

223) Why do plants in the water logged soil?

224) What are the major sources of water on the earth?

225) List two physical barriers which check interbreeding amongst population.

226) What is metapopulation?

227) Give the equation for representing J-shaped growth curve.

228) What does stratification of community depict?

229) From where are individual organisms derived?

230) Apart from mammals what class of animals has highly developed societies.

231) List the factors affecting the population size.

232) List two negative interactions between two species.

233) Why is the polar region not a suitable habitat for tiny humming birds?

234) In a pond there were 30 Hydrilla plants. Through reproduction 10 new Hydrilla plants were added in a year. Calculate the birth rate of population.

235) How is 'stratification' represented in a forest ecosystem?

236) Give an example of an organism that enters 'diapause' and why?

237) Name two main type of environmental factors.

238) What does the term "biota" mean?

239) What are omnivores?

240) What are stenothermal animals?

241) Give two example of homeotherms.

242) The ecological levels of the organization, in terms of complexity, are arranged in the order....

243) The kangaroo rat and camel adapt to dry and hot conditions in the deserts by....

244) What are eurythermal organisms?

245) Name the bird which undertakes migration from pole to south pole and back.

246) Name two dominant plant species of mangrooves.

247) What are ephemerals?

248) How does green alga Dunaliella tolerate hypersaline conditions?

249) Define thermocline.

250) Given the example of each of the following:
(a)Batesian mimicry
(b)Mullerian mimicry
(c)Aggressive mimicry
(d)Feigning death mimicry

251) What are ecotypes?

252) Shade plants are also termed....

253) Sun plants are also termed....

254) Plants adapted to water scarcity and heat are called....

255) Name any two free floating hydrophytes.

256) Define heterophylly

257) Name the aquatic plant which reveals heterophylly.

258) What are mycorrhizae?

259) Name two animals depicting metamorphic migrations.

260) Name the animals showing periodic migrations.

261) Name the animal which finds its path using echolocation phenomenon.

262) What is the carrying capacity of environment?

263) Given the formula for determining the population density of a place.

264) Whate is zero population growth?

265) How many phases are there in an S-Shaped growth curve?

266) What does the sigmoid growth curve of a population indicate?

267) What does a J-shaped growth curve of the population mean?

268) What is the literal meaning of the term symbiosis?

269) Which organisms help termites in the digestion of cellulose?

270) Name the organisms that from lichens.

271) Name a blue-green alga and a bacterium which fix atmospheric nitrogen

272) what is the source of penicillin?

273) Name the pathogen that causes dysentery.

274) Give name of two insectivorous plants.

275) mention one larvicidal fish.

276) What type of relationship exists between sea anemone and hermit crab.

277) Mention the host of Taenia solium

278) Give two alternate terms for biotic community.

279) How nature contols aphid infestation of plants?

280) How long a primary succession taken to complete?

281) Which bacteria live on the human skin?

282) Name two artificial biotic communities

283) 'Green algae are not likely to be found in the deepest strata of the ocean'. Give atleast one reason.

284) Name two 'photoperiod' dependent processes, one each in plants and in animals.

285) Aquatic animals that change the osmotic concentration of their body fluids according to the environment are known by which name?

286) Name the amino acid which is normally accumulated by xerophytes.

287) Name a plant group which exhibits vivipary.

288) Why do small mammals of the of the polar region have short ears and short limbs?

289) Mention the adaptation of mammals in polar seas

290) How do fishes in Antarctica region remain active in sea water?

291) An exotic variety of prickly pear introduced in Australia turned out to be invasive. How was it brought under control?

292) What are the organisms that feed on plant sap and other plant parts called?

293) Why the Calotropis plants are not grazed by goats and cattle?

294) Mention how closely related species of warblers are able to co-exist in a competitive environment.

295) Name the two intermediate hosts on which the human liver fluke depends to complete its life cycle so as to facilitate parasitisation of its primary host.

296) Give the name of two parasitic plants and two parasitic animals.

297) Name the interaction that exists between sucker fish and shark.

298) Name the kind of interaction between alga and fungus

299) Name the type of association that the genus Glomus exhibits with higher plants.

300) Why are mango tress unable to grow in temperate climate?

301) How do seed-bearing plants tide over dry and hot weather conditions?

302) Provide an instance where the population size of a species can be estimated indirectly, without actually counting them or seeing them

303) Name the type of interaction that exists between barnacles and whale.

304) State the type of interaction that exists between ticks and dogs.

305) Define stages zero population growth rate. Draw an age pyramid for the same.

306) In a pond there were 200 frogs. 40 more frogs were born in a year. Calculate the birth rate of the population.

307) Why are cattle and goats not seen browsing on calotropis growing in the field?

308) Name two interspecific interactions where one partner is neutral i.e. not affected.

309) When and Where will you found pseudo copulation?

310) What helps the fishes to survive in different water conditions?

311) Explain Gause's Cometitive exlusion principle.

312) Define the terms 'acceleration' and 'deceleration' with respect to logistic growth curve of population.

313) Name the association between fungus and roots of higher plants.

314) What do you understand by ecophene?

315) State the term used for shade plants.

316) Who is considered as the 'Father of Ecology' in India?

317) What is the advantage of homeostasis to organisms that exhibit it?

318) Which feature of mammals, is the success rate of them, attributed to?

319) Why have many animals not evolved thermo regulation?

320) What are partial regulaters?

321) When and why do animals like frog/bear hibernate?

322) Define mortality.

323) Mention any two reasons why plants depend on other organisms for their survival, even though they make their own organic food.

324) What term is given to the predators of plants.

325) How are closely related species of warblers able to coexist in a competitive environment ?

326) Why has parasitism evolved in many taxonomic groups of organisms?

327) Name the interaction that exists between Cuscuta and shoe-flower plant ?

328) What is coevolution in parasitism?

329) Mention the term used to describe a population interaction between an orchid and a forest tree.

330) Name the biome that has (a) the maximum and (b) the least annual mean precipitation / rainfall.

331) Name a part or an organ of our body which is a unique habitat for hundreds of species of microbes.

332) What is homepstasis ?

333) If N is the population density at time t, mention the formula to show its density at time t+1.

334) What would be the growth rate pattern, when the resources are unlimited?

Find the odd one 3 x 1 = 3

335) Aestivation, Migration, Hibernation, Diapause.

336) Parasitism, Predation, Commensalism, Amensalism.

337) Ticks, Lice, Copepods, Tapeworm

Assertion and reason 27 x 1 = 27

338) **Assertion:** Microclimate generally differs from the prevailing regional climatic conditions.
Reason: Microclimate represents the climatic conditions that prevail at local scale or in areas of limited size.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

339) **Assertion:** Phytoplanktons grow in abundance in the profundal zone oflake.
Reason: Profundal zone is illuminated by light which supports growth of phytoplanktons.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

340) **Assertion:** No two species can occupy the same ecological niche in a habitat.
Reason: A habitat can contain only one ecological niche.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

341) **Assertion:** Aerenchyma is present in the leaves and petioles of hydrophytes.
Reason: Aerenchyma imparts buoyancy to the hydrophytes.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

342) **Assertion:** Ectotherms are able to remain active under cold conditions.
Reason: Ectotherms are able to maintain a constant internal temperature, even when the temperature outside fluctuates.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

343) **Assertion:** Many mangrove plants possess high levels of organic solutes.
Reason: This is an adaptation to cope with the conditions of high salt concentration and osmotic potential.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

344) **Assertion:** With increase in population size, environmental resistance tends to increase.
Reason: This is a nature's way to check the expression of biotic potential.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

345) **Assertion:** The soil profiles of grassland, forest and desert biomes differ from each other.
Reason: Soil profile develops due to weathering process, accumulation of organic matter and leaching of mineral matter.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

346) **Assertion:** Heliophytes, generally have low photosynthetic, respiratory and metabolic activities.
Reason: This is an adaptation of heliophytes to high intensity of light.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

347) **Assertion:** Biotic potential is realised only when the environmental conditions are limiting.
Reason: Under such conditions only, the population size can increase at the maximum rate.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

348) **Assertion:** Many plants growing in oligotrophic soils possess mycorrhizae.
Reason: Mycorrhizae help in efficient absorption of nutrients.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

349) **Assertion:** Batesian mimicry is a protective mimicry.
Reason: Viceroy butterfly shows Batesian mimicry.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

350) **Assertion:** Predation and parasitism are considered to be negative interactions.
Reason: Predators and parasites limit the population of their host species.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

351) **Assertion:** Generally the intraspecific competition is more intense than interspecific competition.
Reason: Intraspecific competition occurs when the resources are in short supply.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

352) **Assertion:** Cuscuta is an example of holoparasite.
Reason: Cuscuta does not depend on other plants for nutrition requirements.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

353) **Assertion:** Amensalism is a negative interaction between two living individuals.
Reason: In amensalism, allochemics are secreted by one individual.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

354) **Assertion:** Mycorrhizal relation exists between Boletus and Pinus.
Reason: It is a symbiotic interaction.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

355) **Assertion:** Mimicry is the resemblance of one organism to another.
Reason: Mimicry may be protective or aggressive.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

356) **Assertion:** Kangaroo rat can live without drinking water.
Reason: This is an adaptation to water scarcity in arid conditions.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

357) **Assertion:** Emigration is outward movement of some individuals from local population.
Reason: Emigration is caused by occurrence of deficiencies and calamities.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

358) **Assertion (A):** Natality rate increases the population size and population density.
Reason (R): Natality increases the number of individuals in an area by births.
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true and R is not the correct explanation of A.
(c) A is true, but R is false.
(d) A is false, but R is true.

359) **Assertion (A):** Predation is an interspecific interaction with a feeding strategy.
Reason (R): Predators and their prey maintain fairly stable population through time and rarely one population become abundant or scarce.
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true and R is not the correct explanation of A.
(c) A is true, but R is false.
(d) A is false, but R is true.

360) **Assertion (A):** Leaf butterfly and stick insect show mimicry to dodge their enemies.
Reason (R): Mimicry is a method to acquire body colour blending with the surroundings.
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true and R is not the correct explanation of A.
(c) A is true, but R is false.
(d) A is false, but R is true.

361) **Assertion (A):** The life cycle of parasites are often complex.
Reason (R): They involve two or more inremediate hosts to facilitate parasitisation.
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true and R is not the correct explanation of A.
(c) A is true, but R is false.
(d) A is false, but R is true.

362) **Assertion (A):** In mutualism, both the populations are benefitted and neither can survive under natural condition without other. **Reason (R):** Both populations are benefitted by the association, but their relationships are not obligatory. (a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true and R is not the correct explanation of A.
(c) A is true, but R is false.
(d) A is false, but R is true.

363) **Assertion (A):** Fig species and wasp shows tightly linked relationship. **Reason (R):** Angiosperms and insects are co-evolved to perform a plant pollinator interaction. (a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true and R is not the correct explanation of A.
(c) A is true, but R is false.
(d) A is false, but R is true.

364) **Assertion (A):** In commensalism, one organism is benefitted and other is unaffected. **Reason (R)** Cattle egret bird and cattle is an example of commensalism. (a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true and R is not the correct explanation of A.
(c) A is true, but R is false.
(d) A is false, but R is true.

2 Marks 226 x 2 = 452

365) If a population growing exponentially doubles in size in three years. What is the intrinsic rate of increase (r) of the population?

366) List the attributes that populations possess but not individuals.

367) Name important defence mechanisms in plants against herbivory.

368) Define population and community.

369) What are the different vertical zones of ocean on the basis of light for photosynthesis?

370) What is the ecological principle behind the biological control method of managing pest insects?

371) An orchid plant is growing on the branch of mango tree. How do you describe this interaction between the orchid and the mango tree?

372) Most living organisms cannot survive at temperatures above 45 ^{o}C. How are some microbes able to live in habitats with temperatures exceeding 100^{o} C?

373) Select the statement which explains best parasitism:
(a) One organism is benefitted.
(b) Both the organisms are benefitted.
(c) One organism is benefitted, other is not affected.
(d) One organism is benefitted, other is affected.

374) How does Monarch butterfly defend itself from predators? Explain.

375) Why are a fig tree and its partner wasp considered a good example of mutualism?

376) Explain why very small animals are rarely found in polar region.

377) Why are small animals rarely found in the polar regions? Explain.

378) Very small-sized animals are rarely found in polar regions. Give two reasons.

379) Why do clown first and sea-anemone pair up? What is this relationship called?

380) The 'clown' fish lives among the tentacles of sea anemone. What is this interaction between them called and why?

381) Some organisms suspend their metabolic activities to survive in unfavorable conditions. Explain with the help of any four examples.

382) How do desert lizards cope with temperature variations in their environment? Explain.

383) Write the normal body temperature of humans. How is it maintained during summers?

384) When is an organism called a 'conformer'? Explain with the help of an example.

385) Explain the response of all communities to environment over time.

386) Bear hibernates, whereas some species of zooplanktons enter diapause to avoid streesful esternal conditions. How are these two ways different from each other?

387) How does our body adapt to low oxygen availability at high altitudes?

388) Why do we experience shivering during winters when the temperature is very low?

389) How does the floral pattern of Mediterranean Orchid, Ophrys guarantee cross pollination?

390) How doea the Mediterranean orchid, Ophrys ensure is pollination by bees?

391) How do seals adapt to their natural habitat? Explain.

392) Mention the changes the koel must have undergone in order to achieve brood parasitism, during the course of evolution.

393) Explain the defence mechanisms evolved in preys to avoid overpopulation of their predators.

394) Egrets are often seen along with grazing cattle. How do you refer to this interaction? Give a reason for this association.

395) (a) What is 'r' in the population equation given below:
$dN/dt = rN$.
(b) How does the increase and the decrease in the value of 'r' affect the population size?

396) (a) How is Cuscuta adapted to be a parasitic plant?
(b) Why do cattle avoid browsing on Calotropis plants? Explain.

397) How does the human body maintain a constant temperature both in summers and winners? Explain.

398) How do organisms which cannot migrate tend to overcome adverse environmental conditions? Explain taking one example each from vertebrates and angiosperms, respectively.

399) In a pond, there were 40 lotus plants, After a year, the number rose to 56. Calculate the birth rate of lotus plants.

400) Name the interaction in each of the following:
(a) Cuckoo lays her eggs in the crow's nest.
(b) Orchid grows on a mango tree.
(c) Ticks live on the skin of dogs.
(d) Sea anemone is often found on the shells of hermit crab.

401) Name the interaction in each of the following;
(a) Cuscuta growing on a shoe-flower tree.
(b) Mycorrhizae living on the roots of higher plants.
(c) Clown fish living among the tentacles of sea anemone.
(d) Koel laying its eggs in crow's nest.

402) Name the interaction in each of the following:
(a) Ascaris worms living in the intestine of humans.
(b) Sucker fish attached to the shark.
(c) Smaller barnacles disappeared when Balanus dominated in the coast of Scotland.
(d) Wasp pollinating fig inflorescence.

403) How is diapause different from hibernation?

404) If a marine fish in placed in a frest water aquarium, will the fish be able to survive Why or why not?

405) Define phenotypic adaptation. Give one example.

406) Write a short note on the adaptations of plant to water scarcity.

407) List the various abiotic environmental factors.

408) Distinguish between ectotherms and endotherms.

409) Write a short note on the behavioural adaptations in animals.

410) Categorise the following plants into hydrophytes, halophytes, mesophytes and xerophytes.
(a) Salvinia
(b) Opuntia
(c) Rhizophora
(d) Mangifera

411) The density of a population in a habitat per unit area is measured in different units. Write the unit of measurement against the following.
(a) Bacteria : _____
(b) Banyan : _____
(c) Deer : _____
(d) Fish : _____

412) Define 'zero population growth rate'. Draw an age pyramid for the same.

413) In an aquarium two herbivorous species of fish are living together and feeding on phytoplanktons. As per the Gause's principle, one of the species is to be eliminated in due course of time, but both are surviving well in the aquarium. Give possible reasons.

414) Name the four levels of organisation that ecology is basically concerned with.

415) What are the key elements that lead to so much of variation in the physical and chemical conditions of different habitats?

416) How does temperature affect the organisms?

417) How is light important to animals?

418) Mention two physical properties and two chemical properties of soil that determine the type of plants in a given area.

419) How do kangaroo rats live in the absence of water in the North American deserts?

420) Mention any two adaptations the animals of colder regions have to minimize heat loss.

421) Differentiate between hibernation and aestivation with an example of each.

422) What is meant by sex ratio? Is it a characteristi of individual or population?

423) Differentiate between population size and population density.

424) Biomass is a more meaningful measure of population size. Explain with an example.

425) Differentiate between immigration and emigration.

426) How do predators help in maintaining species diversity in a community? Give an example.

427) Why are predators considered 'prudent in nature'? Explain.

428) Name the most common morphological defence shown by plants. Give two examples of plants showing this.

429) Name any four chemicals that plants produce for their defence against herbivores, but are extracted by man on a commercial scale.

430) Give two evidences for the occurence of competition.

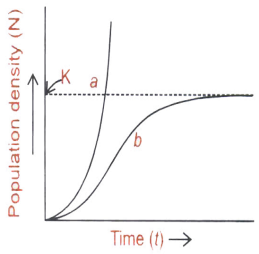
431) What is Gause's competitive exclusion principle? Give an example.

432) What is Resource partitioning? Give an example.

433) In the following table, the ecological units are mentioned on the first column vertically and their attributes are mentioned horizontaly. Match the ecological units and their attributes and put a tick in the blanks within the table.

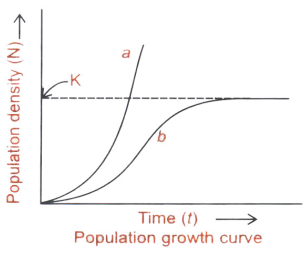
Attribute → Ecological unit ↓	**Age**	**Flow of energy**	**Natality**	**Predator-prey relationship**
Individual organism				
Population				
Community				
Ecosystem				

434) A population of 100 spotted deer was living without any carnivores in an enclosure of a few hectares of rich tropical forest land. Deer census was taken after a few years. Now study the graph given below and answer the questions that follow:

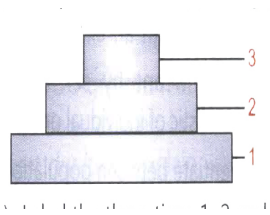


(a) Identify the curve that represents the deer population.
(b) Is it a realistic one? Justify.

435) Identify the curves 'a' and 'b' shown in the graph given below. List the conditions responsible for growth patterns 'a' and 'b'.



436)



(a) Label the three tiers, 1, 2 and 3 given in the above age pyramid.
(b) What type of population growth is represented by the above age pyramid?

437) If a freshwater fish is placed in an aquarium containing sea water, will the fish be able to survive? Explain giving reasons.

438) Why do all the freshwater organisms have contractile vacuoles whereas majority of marine organisms lack them?

439) Define heliophytes and sciophytes. Name plant from your locality that is either heliophyte or sciophyte.

440) Why do submerged plants receive weaker illuminations than exposed floating plants in a lake?

441) In a sea shore, the benthic animals live in sandy, muddy and rocky substrata and accordingly developed the following adaptations.
(a) Burrowing
(b) Building cubes
(c) Holdfasts/peduncle
Find the suitable substratum against each adaptation.

442) Categories the following plants into hydrophytes, halophytes, mesophytes and xerophytes. Give reasons for your answers.
(a) Salvinia
(b) Opuntia
(c) Rhizophora
(d) Mangifera.

443) In a pond, we see plants which are free floating, rooted-submerged, rooted-emergent, rooted with floating leaves. Write the type of plant against the following examples:
(a) Hydrilla
(b) Typha
(c) Nymphaea
(d) Lemna
(e) Vallisneria

444) Give the scientific names of any two microorganisms inhabiting the human intestine.

445) What is tree line?

446) Show how do organism interact with the physical environment with a simple sketch.

447) What is the most concrete and easily observable unit in the environment?

448) Define a species. What is difference between a species and a population?

449) How do you differentiate habitat from environment?

450) List the physical conditions which determine the nature of a habitat.

451) List the biological factors of environment

452) Differentiate habitat and microhabitat.

453) What is the difference between climate and weather?

454) Write a short note on microclimate.

455) What are the effects of organisms on habitat?

456) Show the zones in lake water as determined by gardients of light, oxygen and temperature.

457) Depict the temperature based thermal stratification in lakes.

458) Differentiate eurythermal, stenothermal and euryhaline animals.

459) What is soil?

460) What is top soil?

461) Write a brief note on soil importance.

462) What is humus?

463) What are
(a) Hydrophytes
(b) Xerophytes?

464) Mention two adaptations the mammals of colder regions have, to minimise the loss of body heat.

465) How do desert lizards maintain a fairly constant body temperature?

466) How do human beings maintain a constant body temperature despite changes in the surrounding?

467) List the different kinds of plant communities.

468) Explain how buoyant conditions are obtained by aquatic plants.

469) Why has camel survived and bred in desert but not frog?

470) How does the burrowing habit help desert animals to survive in scarcity of water?

471) What are
(a) ephemerals
(b) succulents?
Give an example of each.

472) How is the halophyte Rhizophora adapted to survive in its habitat? Explain.

473) Explain the following terms:
(a) Mimicry
(b) Acclimatisation

474) What are three criteria that are required to define population?

475) Explain the term population with reference to ecology. Define metapopulation.

476) List the various factors that regulate the size of population of plants in a unit area.

477) Give example of two isolating mechanisms.

478) List the characteristics of population.

479) Distinguish between population and community.

480) Members of the population do not breed with other population. Why?

481) Explain J-Shaped pattern of population growth.

482) Compare J-shaped pattern with the S-shaped pattern of population growth.

483) Explain population density.

484) What is demography?

485) Write a note on natality.

486) Differentiate natality rate and death rate.

487) How does age distribution help in study of population.
(b) How does an age pyramid, for human population at a given point of time helps in the policy makers in planning the future?

488) How does population size increase or decrease?

489) Discuss life history traits of an organism have evolved in relation to the constraints imposed by biotic and abiotic factors in their habitat.

490) What is predator-prey relationship? Give example.

491) Discuss role of predators in an ecosystem.

492) Many prey organisms have developed different defence mechanism. Give a few examples.

493) "Herbivores are the predators of plants". Discuss a few defence mechanisms of plants against herbivory.

494) What is parasitism? Define parasite, host. What are kinds of parasite?

495) Define mutualism. Give examples. Define mutualism.

496) Justify the statement "Predators and scavengers are markedly different.".

497) Differentiate the following:
(i) Mutualism and Commensalism.
(ii) Commensalism and amensalism.
(iii) Predators and Parasites.

498) A moss plant is unable to complete its life cycle in a dry environment. State reason.

499) Explain parasitism and co-evolution with the help of one example of each.

500) Plants that inhabit a rain-forest are not found in wetlands explain.

501) In certain seasons we sweat profusely while in some other season we shiver. Explain.

502) Give an example for:
(a) an endothermic animal
(b) an endothermic animal
(c)an organism of benthic Zone.

503) Name one organism from each of the 3 categories of organisms regarding their mode of obtaining food.

504) What are day-neutral plants?

505) What are crepusucular animals?cite an example.

506) Give the meaning and examples of epizoic animals.

507) Define the term 'adaptation.'

508) Define the following terms;(a)migration (b) Stratosphere (c)community (d)Biosphere

509) Define the following terms: (a) Mimicry (b)Acclimatization (c) Ectotherms (d)Endotherms

510) Distinguish between habitat and ecological niche.

511) Given the ecological adaptation of succulents.

512) Write adaptations of submerged, rooted hydrophytes.

513) What are heliophytes? Given their major characteristics.

514) Write characteristics of A-horizon of soil.

515) Briefly give characteristic zones of a aquatic body,e.g., lake.

516) Give the formula for the change in population size.

517) How do the genus and community differ?

518) what are antagonistic interactions. Cite a few examples.

519) Give two examples of symbiosis among humans.

520) What are saprobionts? give examples.

521) How do protocooperation and mutualism resemble and differ?

522) What is allelopathy? Cite one example.

523) what are hyperparasites? Mention a specific case.

524) Differentiate between saprotrophs and phagotrophs.

525) What is meant by the term plankton?

526) How is a monoculture disadvantageous?

527) List the ecological principles operating in a pond.

528) What are producers and consumers?

529) What is a mimic?

530) How is a biotic community named? given examples.

531) The 'clown' fish lives among the tentacles of sea anemone.What is this interaction? Give a reason for this association

532) Give two example each of the following:
(i) Ephemerals (drought escapers)
(ii) Succulents (drought resistants)
(iii) Free floating hydrophytes
(iv) Submerged floating hydrophytes
(v) Mangrove plants

533) List the features that make a stable biological community.

534) Why do people suffer from altitude sickness after reaching the high altitude regions? How does their body acclimatise after a couple of days?

535) List any four characteristics that are employed in human population census.

536) Construct an age pyramid which reflects a stable growth status of human population.

537) Write the exponential equation for J-shaped growth form.

538) Draw labelled diagrams of stable and declining age pyramids of human population.

539) What are the different ways in which parasite can alter the population of hosts?

540) Lianas are vascular plants rooted in the ground and maintain erectness of their stem by making use of other trees for support.They do not maintain direct relation which those trees. Discuss the type of association the lianas have with the trees.

541) In an association of two animal species, one is a termite which feeds on wood and the other is a protozoan Trichonympha present in the gut of the termite. What type of association they establish?

542) Describe the mutual relationship between the fig tree and wasp and comment on the phenomenon that operates in their relationship.

543) Lichen is considered as a good example of obligate mutualism. Explain.

544) What advantage does the sea anemone get in the sea anemone-hermit crab interaction as facultative mutualis. Give an alternative term for this kind of mutualism.

545) What is mutualism? Mention any two examples where the organisms involved are commercially exploited in agriculture.

546) Why are the plants that inhabit a desert not found in a mangrove? Give reasons.

547) Heat loss or heat gain depends upon the surface area of the organism's body. Explain with the help of a suitable example.

548) Shark is eurythermal while polar bear is stenothermal. What advantage does the former have and what is the constraint the later has?

549) How do mammals living in colder regions and seals living in polar regions able to reduce the loss of their body heat?

550) Koel is clever enough to lay eggs in a crew's nest. Write the reason for this peculiar behaviour. Name the type of interaction.

551) Many fresh Water animals cannot survive in marine environment. Explain

552) Why do algae and fungi shift to sexual mode of reproduction just before the onset of adverse conditions?

553) Differentiate between commensalism and mutualism by taking one example each from plants only.

554) Apart from being part of the food chain, predators play other important roles. Mention any two such roles supported by examples

555) Construct an age pyramid which reflects an expanding growth status of human population

556) Flowers have different adaptations for pollination (essential for reproduction), one of them being colour. But night blooming flowers are generally white in colour. Why?

557) In the early 1920's, in Australia, the prickly pear cactus caused havoc by spreading rapidly over millions of hectares of rangeland. How it was brought under control. What term is used for such methods of controlling the prey?

558) Most of the living organisms try to maintain the constancy of their internal environment in terms of optimal temperature and osmotic concentration. What is the terminology used for this type of constancy. How the following organisms do maintains it and also specifies the terms for that -:
a) Mammals
b) All plants
c) Birds in Siberia
d) Bacteria, Fungi & Lower Plants

559) Generally thermo regulation is energetically expensive for many organisms. So, many smaller animals are rarely found in extreme hot or cold climatic condition. Why? Write two specific reasons.

560) A person working in office try to perform his/ her level best at normal room temperature and also wishes to maintain it by using AC, or fans or heaters. But a labourer works well even under adverse climatic condition. How could his body do it?

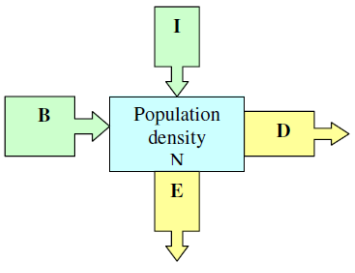
561) Some living organisms respond to external environment by changing their morphplogy or physiology or behavioral pattern. What is the terminology for this? How the desert animal like kangaroo rat is capable of meeting all its water requirements?

562) Green plants prepare their food either by C3 or C4 pathway but most of the desert plants have a special photosynthetic pathway called CAM. What is the reason for such type of adaptation?

563) Many mammals from colder climates generally have shorter ear and limbs in comparison to the mammals of other biome . Why? Which general principle is followed?

564) At high altitudes places like Manali or Mansarover we suffer from altitudes sickness this is because in low atmospheric pressure, body does not get enough oxygen, but gradually the problem is over. How did our body solve this problem?

565) Observe this diagram and answer the following question.



a) What is the terminology for B& E?
b) If B + I is more then D + E then what will happen to population density?
c) What are the most important factors which influence a population density of an area under normal condition?
d) If a habitat is being colonised recently then which factor contribute more to the population growth ?

566) Abingdon tortoise in Galapagos Island became extinct with in a decade after goatswere introduced on the island. Why? What could be principle behind this situation?

567) Mutualism often involves co-evolution of the mutualist . Explain this statement taking example of plant animal relationship?

568) Name the type of population interaction in each of the following 1,2,3,4.

Species A	**Species B**	**Type of interaction**
+	0	1
-	-	2
-	0	3
+	+	4

569) Now a day's animals are coming out of the forest and create problems in the nearby areas. Give the possible reasons.

570) Increasing population in India is the cause of failure behind many planning of Govt. Study of the population attributes helps the country in this situation. Give your Opinion.

571) Enumerate the adaptations that help halophytes to survive in salty conditions.

572) Can youthink of a feweurythermal and stenothermal animals ?

573) In recent years, there has been a growing concern about the gradually increasing average global temperature. If this trend continues, would you expect the distributional range of some species to be affected? Give reasons to support your answer.

574) Among the red, green and brown algae that inhabit the sea, which is likely to be found in the deepest water? Why?

575) If you have a dense laboratory culture of bacteria in a petridish, what is the best measure to report its density?

576) Niche is a part of habitat'. Explain with the help of an example.

577) Why are small birds like humming birds not found in polar regions? Explain

578) When you go for a treck / trip to any high altitude place, you are advised to take it easy and rest for two days. Comment giving reasons

579) How is predation different from competition ?

580) Differentiate between predators and parasites.

581) Mention the characteristics found in endoparasites.

582) How is commensalism different from predation, though one of the partners is benefitted in each of them?

583) Explain mutualism with the help of an example.

584) Substantiate with the help of one example that in an ecosystem mutualists
(i) tend to co-evolve and
(ii) are also one of the major causes of biodiversity loss.

585) How do plants tide over stressful environmental conditions?

586) A specific plant species was introduced into Australia in 1920 and later it became invasive spreading over millions of hectares of rangeland.
(a) Name the plant that was introduced into Australia and mention the reason for its uncontrollable growth.
(b) State how its spread was eventually brought under control.

587) Population density need not necessarily be measured in numbers only. Explain

588) Factors like immigration and emigration collectively determine how fast a population grows. Comment.

589) Sex ratio is defined as the number of females per 1000 males in the population. It is important to know about sex ratio. Give reason.

590) Do only closely related species compete for resources that are same? If no, comment.

3 Marks 94 x 3 = 282

591) (a) Write the importance of measuring the size of a population in a habitat or an ecosystem.
(b) Explain with the help of an example how the percentage cover is a more meaningful measure of population size than mere numbers.

592) Explain brood parasitism with the help of an example.

593) (a) List any three ways of measuring population density of a habitat.
(b) Mention the essential information that can be obtained by studying the population density of an organism.

594) List three symptoms of high altitude sickness and state three adaptations to overcome it.

595) Water is very essential for life. Write any three features both for plants and animals, which enable them to survive in water-scarce environment.

596) How do organisms cope with stressful environmental conditions, which are localised or of short duration?

597) How do organisms like fungi, zooplanktons and bears overcome the temporary, short-lived climatic stressful conditions? Explain.

598) Why is predation required in a community of different organism?

599) Write a short note on effect of temperature or water scarcity and the adaptations of animals.

600) Write a short note on adaptations of desert plants and animals.

601) Give and example for:
(a) An endothermic animal.
(b) An ectothermic animal.
(c) An organism of benthic zone.

602) Give one example for each of the following:
(a) Migratory animal
(b) Predator animal
(c) Phytophagous animals
(d) Camouflaged animal
(e) Chemical defense agent.

603) An individual and a population has certain characteristics. Name these attributes with definitions.

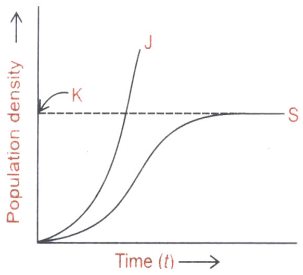
604) Name six major terrestrial biomes of the world.

605) Describe any three reproductive strategies that organisms have evolved in relation to a particular set of selective pressures.

606) Competition does not always occur between closely related species for the same resources. Substantiate the statement with examples.

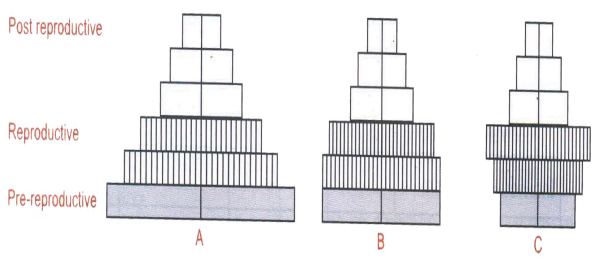
607) Mutualism often involves co-evolution of the mutualists. Describe taking the example of animal plant (wast-fig) relationship.

608) A forest hardly has any carnivores. Census of herbivorous mammals was taken and plotted as a graph shown.



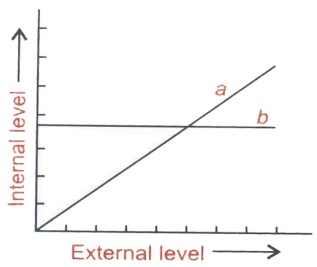
Identify the curve that will explain the population growth of herbivores. Give reason for your answer.

609) Study the three different age pyramids for human population given below and answer questions that follows:



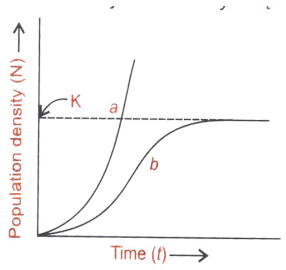
(a) Write the names given to each of these age pyramids.
(b) Mention the one which is ideal for human population and why?
(c) What would be the growth rate pattern when the resources are limited?

610) The following graph represents the organismic response to certain environmental condition (e.g., temperature):



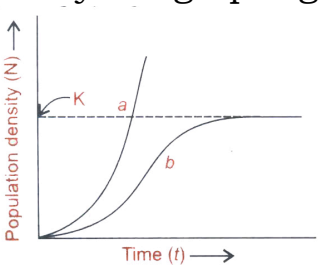
(i) Which one of these , 'a' or 'b', depicts conformers?
(ii) What does the other line graph depict?
(iii) How do these organisms differ from each other with reference to homestasis?
(iv) Mention the category to which humans belong.

611)



Study the population growth curves shown above.
(i) Identify curves 'a' and 'b'.
(ii) Mention the conditions responsible for the curves 'a' and 'b' respectively.
(iii) Give the necessary equation for the curve 'b'.

612) Study the graph given below:



(i) What does the curve 'a' represent in the graph? What does 'K' stand for?
(ii) Which one of the two curves is considered a more realistic one for most of the animal population?
(iii) Which curve would deplict the population of a species of deer if there are no predators in the habitat? Why is it so?

613) A population of paramoecium caudatum was grown in a culture medium. After 5 days, the culture medium became over-crowed wth paramoecium and had depleted nutrients. What will happen to the population and what type of growth curve will the population attain? Draw the growth curve.

614) If the population growing exponentially doubles in size in 3 years, what is the intrinsic rate of increase (r) of the population?

615) Distinguish between the following:
(a) Hiberation and aestivation
(b) Ectotherms and endotherms.

616) Define the following terms and give one example for each:
(a) Symbiosis (b) Mimicry.

617) Explain the following terms:
(a) Acclimatization
(b) Ectotherms
(c) Endotherms

618) Write a note on consumers.

619) Why are decomposers essential in nature?

620) Name the kind of interaction between the following
(a) Birds and Cattle
(b) Termites and flagellates
(c) Alga and fungus
(d) Plasmodium and humans

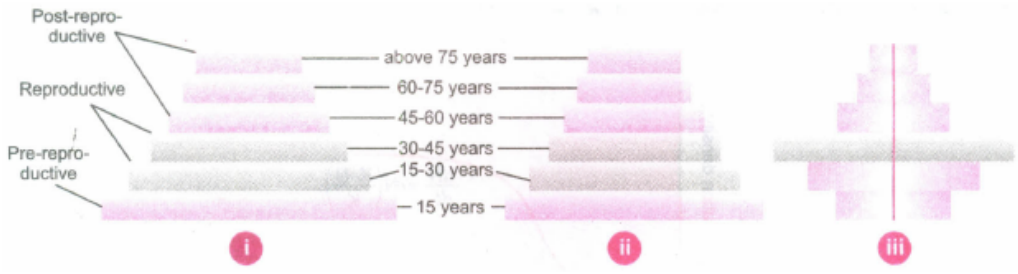
621) (i) Oxylophytes are the plant growing on _____and chasmophytes are the plants growing in _____
(ii) Antarctic fish (Trematomus) can tolerate below 0^oC temperature by accumulating_____ or _____that lower freezing point of their body fluids.
(iii) Fishers showing migrations from sea water to fresh water for spawning are termed _____fishes while those migrations from fresh water to seawater are called _____ fishes.
(iv) Lemna is a_____ hydrophyte and Cerophyllum is a_____hydrophyte.
(v)Intraspecific interactions are of two types. These may be_____.or _____

622) Why is the thermoregulation more effective achieved in larger animals than in smaller ones?

623) Match the items give in column I with appropriate items (one or more) of column II

Column I	Column II
(i) cacti	(a) Sciophytes
(ii) Shade loving plants	(b) Plants growing in saline environment
(iii) Halophytes	(c) Monarch butterfly and queen monarch
(iv) Batesian mimicry	(d) Bats
(v) Mullerian mimicry	(e) Monarch butterfly, viceroy butterfly
(vi) Echolocation	(f) Xerophytes
	(g) Avicennia

624) Study the 3 representative figures of age pyramid relating to human population given below and answer the question:



(a) Mention the names given to 3 kinds of age profiles (i),(ii) and (iii).
(b) Which one of them is ideal for a population and why?
(c) How do such age-profile studies help policy makers get concerned about our growing population and prepare for future planning

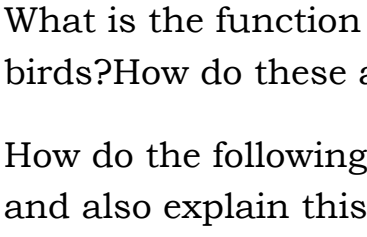
625) Fill in the blanks:
(i) Population dispersion has two main patterns. these are _____ and_____
(ii) The number of individuals of a species present per unit area or volume at a given time is _____
(iii) _____is the natural ability of a population to increase at its maximum rate under ideal conditions.
(iv) Populations have characteristic patterns of growth with time .Two contrasting types of growth forms are_____and._____
(v) The interaction between individuals of same species are termed .... interactions and those between individuals of different species are termed_____interactions.
(vi) Termites and flagellates illustrate _____type of interspecific interaction,
Similarly, female mosquitoes and man illustrate_____type of interspecific interaction.
(vii) Succession that starts on a bare rock is called _____and that which begin on sand is called._____

626) (a) Write an equation for Verhulst Pearl logistic Growth where
N = Population density at a time t
r = Intrinsic rate of natural increase
K = Carrying capacity
(b) Draw a graph for a Population whose population density has reached the carrying capacity.
(c) Why is the logistic growth model considered a more realistic one for most animal populations?
(d) Draw a growth curve where resources are not limiting to growth of a population.

627) Match the items given in column I with those given (one or more) in column II.

Column I	**Column II**
(i) Crustose lichen	(a) Commensalim
(ii) Interspecific interaction	(b) Mutualism
(iii) Rhizobium and Leguminous plants	(c) Pioneer community
(iv) Bombykol	(d) Parental care
(v) Intraspecific intreaction	(e) Sex attractant
	(f) Amensalism
	(g) lithosere

628) In the given picture what is the relationship between (1) and (2) with respect to population interaction and between (3) and (4) with respect to trophic levels?



629) In a pond, we see plants which are free-floating; rotted -submerged; rooted emergent; rooted with floating leaves.Write the type of plant against each of them.

Plant Name Type

(a) Hydrilla .....
(b) Typha .....
(c) Nymphaea.....
(d) Lemna .....
(e) Vallisnaria.....

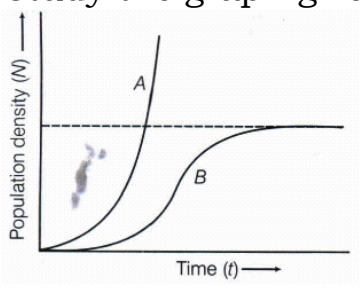
630) The range of tolerance to the variations in each environmental factor varies greatly in different species.Name the terms used for species.
(i) Which live in regions of nearly uniform temperature throughout the year and showing narrow range of tolerance to temperature changes.
(ii) Which live in areas where temperature changes significantly at different times of the year and showing wide range of tolerance to temperature changes.

631) What is the function of hairy coat in most mammals, blubber in whales and seals, and feathers in birds?How do these animals regulate their body temperature?

632) How do the following animals avoid predation from predators?Name the behavioural adaptation in each and also explain this behaviour.
(i) Tenebrinoid beetles
(ii) Praying mantis
(ii) Viceroy butterfly

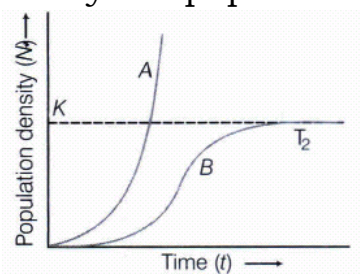
633) How do snails, seeds, bears, zooplanktons, fungi and bacteria adapt to conditions unfavourable for their survival?

634) Study the graph given below and answer the questions that follow.



(i) Write the status of food and space in the curves A and B.
(ii) In the absence of predators, which one of the two curves would appropriately depict the prey population?
(iii)Time has been shown on X-axis and there is a parallel dotted line above it. Give the significance of this dotted line.

635) Study the population growth curve in the graph given below and answer the following questions.



(i) Identify the growth curves 'A' and 'B'.
(ii) Which one of them is considered a more realistic one and why?
(iii) If $\frac{dN}{dt} = rN(\frac{K-N}{K})$ is the equation of the curve B, what does K stand for?
(iv) What is symbolised by N?

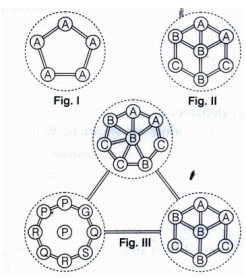
636) Explain the S-shaped pattern of population growth. How is J-shaped pattern different from it and why?

637) Why are coral reefs not found in the regions from West Bengal to Andhra Pradesh but are found in Tamil Nadu and on the East coast of India?

638) Why do all the fresh water organisms have contractile vacuoles whereas majority of marine organisms lack them?

639) In nature, leeches attach themselves to the cow grazing in the field (shown in figure I). In some medical treatments, doctors attach leeches onto accumulation of blood (shown in figure II).
(i) State the type of interaction in figure I and II.
(ii) Under what conditions the doctors advice leech therapy?
(iii) Why are leeches used for treating patients?

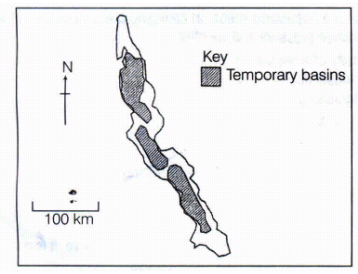
640) Comment on the following figures: I, II and III. In these, A,B,C,D,G,P,Q,R,S are different species.



641) What is 'predation'? Explain with the help of suitable examples why is it required in a community with rich biodiversity.

642) Parasitism is an interaction between two individuals, where in the parasite gets the benefit at the expense of host. the parasites are further divided as ectoparasite (live outside the host), e.g. human body lice and endoparasite (live inside the body), e.g. Plasmodium. With reference to the above statements answer the questions that follow.
(i) Plasmodium, a diagenetic parasite is known to cause which disease in humans?
(ii) What do you understand by the term schizogony?
(iii) Name the vector of this parasite

643) In Lake Tanganyika in Africa, there are six species of fish of the genus Tropheus and a much larger number of distinctly coloured subspecies of each of the six species. Tropheus species are small fishes that are confined to isolated rocky habitats around the shores of Lake Tanganyika.



Recent research has compared DNA sequence data from these various species and subspecies and linked this with geological data on the lake. This suggests that some 1.25 million years ago, when the lake first filled, the six species evolved during the primary radiation phase. They arose from river dwelling ancestors and then filled all available niches. Secondary radiations into the many subspecies occurred during the last 2,00,000 years.

Sometime during this period, the water level in the lake fell, resulting in the formation of three separate lake basins. These basins persisted for level rose again.

Figure shown above is an outline map of the lake and the location of the three temporary basins caused by lowering of lake levels.

(i) Define the terms

(a) species

(b) niche

(ii) Explain how natural selection could have caused the evolution of the six closely related species in the primary radiation.

644) Explain co-evolution with reference to parasites and their hosts. Mention any four special adaptive features evolved in parasites for their parasitic mode of life.

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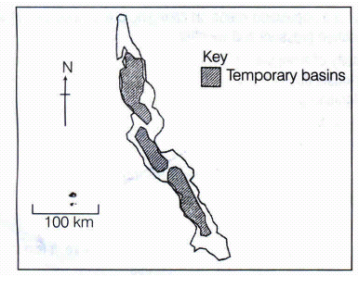

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(i) Define the terms

(a) species

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(ii) Explain how natural selection could have caused the evolution of the six closely related species in the primary radiation.

646) Give reason

(i) Population of different species are not capable of breeding with each other.

(ii)Intraspecfic competiton is more intense than interspecific competition.

(iii)Parasites tend to loose certain organs.

647) Certain species of waps are seen to frequently visit flowering fig trees. What type of interaction is seen between them and why?

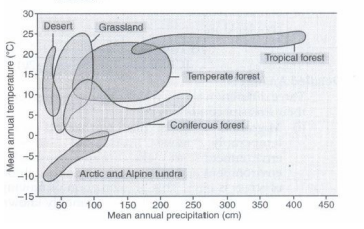
648) Fill in the blanks

Species A	Species B	Type of Interaction	Example
+	-	____	____
+	+	____	____
+	___	Commensalism	___

649) Explain by taking three different examples how do certain organisms pull through the adverse conditions when unable in migrate under stressful period

650) Why are certain organisms called regulators or conformers? Explain with the help of one example of each

651) The graph given below shows the distribution of biomes:



(a)What do the 'X' and 'Y' axes represent?
(b) Identify the 'grassland' and 'coniferous forest' biomes, from the above figure.
(c)Why is 'F' located at the given position in the graph?

652) Explain with the help of suitable examples the three different ways by which organisms overcome their stressful conditions lasting for short duration.

653) (a) State how the constant internal environment is beneficial to organisms
b) Explain any two alternatives by which organisms can overcome stressful external conditions

654) Write the basis on which an organism occupies a space in its community/natural surroundings.

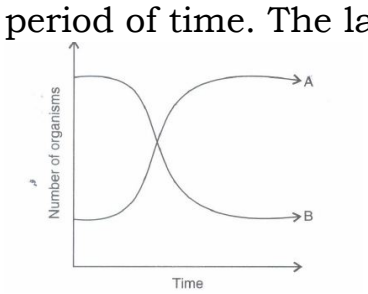
655) Name and explain the type of interaction that exists in mycorrhizae and between cattle egret and grazing cattle.

656) Predation is usually referred to as a detrimental association. State any three positive roles that a predator plays in an ecosystem.

657) During the school trip to 'Rohtang Pass', one of your classmates suddenly developed 'altitude sickness'. But, she recovered after sometime.
(a) Mention one symptom to diagnose the sickness.
(b) What caused the sickness?
(c)How could she recover by her self after sometime?

658) How does predation differ from parasitism?

659) Two types of aquatic organisms in a lake show specific growth patterns as shown below, in a brief period of time. The lake is adjacent to an agricultural land extensively supplied with fertilizers.



Answer the questions based on the facts given above:
(i) Name the organisms depicting the patterns A and B.
(ii) State the rea on for the growth pattern seen in A.
(iii) Write the effects of the growth patterns seen above.

660) (a) Write the parasitic adaptations the parasites have evolved in accordance with their lifestyles.
(b) Hosts and parasites tend to co-evolve. Explain.

661) (a) Explain the birth rate and death rate in population with the help of an example.
(b) What is age pyramid?

662) Draw and explain a logistic curve for a population of density (N) at time (t) whose intrinsic rate of natural increase is (r) and carrying capacity is (k).

663) Why are small animals not found in polar regions. Explain.

664) (i) 'Organisms may be conformers or regulators'. Explain this statement and give one example of each.
(ii) Why are there more conformers than regulators in the animal world?

665) Name and explain three adaptations of mangroves to the conditions prevailing in Sunderbans (West Bengal).

666) State any three methods by which animals cope with the temporary unfavourable conditions in their habitat when they cannot migrate.

667) Write the formula for the change in population density.

668) 'Predation is beneficial in long run'. Comment.

669) Name two basic types of competition among organisms. Which one of them is more intense and why?

670) How are eurythermal animals different from stenothermal animals? Give an example of each.

671) Different animals respond to changes in their surrounding in different ways. Taking one example each, explain 'some animals undergo aestivation while others hibernation.' How do fungi respond to adverse climatic conditions.

672) Highlight the differences and a similarity between the following population interactions: Competition, predation and commensalism.

673) Highlight the differences between the population interactions given below. Give an example of each.
(a) Parasitism (b) Amensalism (c) Mutualism

674) Explain with the help of an example, each of the three population interactions, where the organisms live closely together ?

675) Mention three physical properties and three chemical properties of soil, that determine the type of vegetation in a given region.

676) Study the population growth curve given below and answer the questions that follows.
(i) Identify A and B in the graph.
(ii) When and why do such curves occur in a population?

677) Logistic model is more realistic in nature. Justify.

678) 'Some species of insects and frogs have evolved with various specific features that help them from being detected.'
(i) Justify the statement giving reasons.
(ii) Mention any two such features.

679) (i) Give an example of a genus of fungi that forms mycorrhizal association with plants. (ii) How does the plant drive benefits from this association?

680) What are the different attributes of population? What is meant by sex ratio? Is it a characteristic of an individual or a population?

681) Identify the type of pyramid given above. Write the identifying feature on the basis of which you identified it.

682) Observe the schematic representation given and answer the following questions.
(i) Identify A and B.
(ii) Calculate the growth rate of bacteria in a curd sample, where 1 million bacteria increased to 2 million, within a period of one hour.

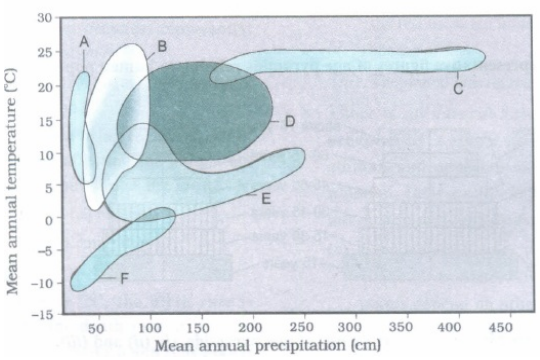
683) The graphs given below, A and B represent population of elephants in two different National Parks (a hypothetical situation) at different times.
Study the graphs and comment upon the pattern of growth observed. Mention the possible reason for such patterns seen in nature.

684) Study the table showing the population interaction between species 'Z' and 'Y", respectively. Assign the appropriate '+'/'-' signs for 'A', 'B', 'D', 'E' and respective interactions for 'C' and 'F.

SPECIES 'Z'	**SPECIES 'Y'**	**NAME OF INTERACTION**
A	B	Mutualism
-	-	C
D	E	Parasitism
+	0	F

Case Study Questions 28 x 4 = 112

685) The graph given below shows the distribution of the major biomes of the world.



Answer the following questions based on the graph.

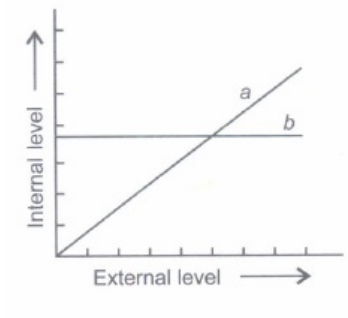
(a) Identify the biomes A, D, E, F.

(b) Which of the biomes shows the maximum range of

(i) Mean annual precipitation

(ii) Mean annual temperature?

686) The graph given below depicts the organismic response to changing external environmental conditions. According to their response, the organisms are grouped into two types.



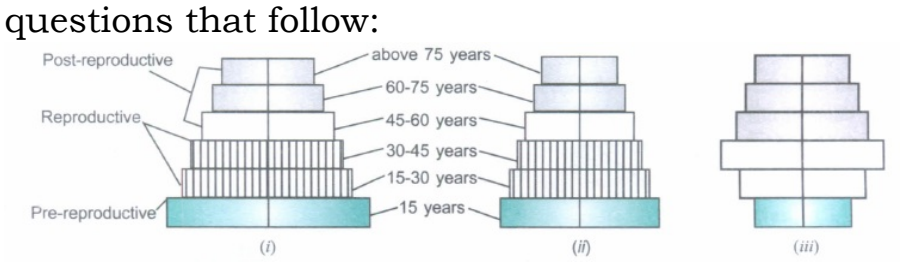
Answer the following questions.

(a) Name the group of organisms, which will show pattern A. Give an example.

(b) ame the group of organisms, which will show pattern B. Give an example.

(c) Define homeostasis.

687) Study the three representative figures of age pyramids relating to human population and answer the questions that follow:



(a) Wrrte'the names given to the three kinds of age pyramids, (I), (il) and (iil).

(b) Give reason for each, why you have named them so.

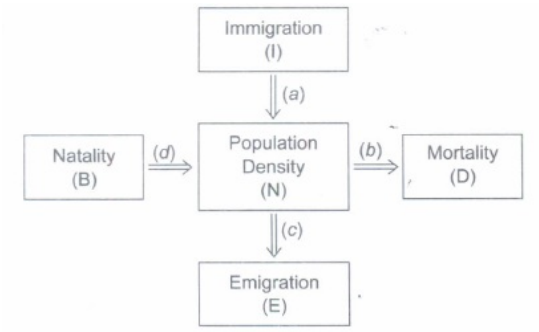
688) 'The population of a metro city experiences fluctuations in its population density over a period of time'.

(a) When does the population in a metro city tend to increase?

(b) When does the population in a metro city tend to decline?

(c) If 'N' is the population density at the time 't', write the population density at the time 't + l'.(Delhi 2020).

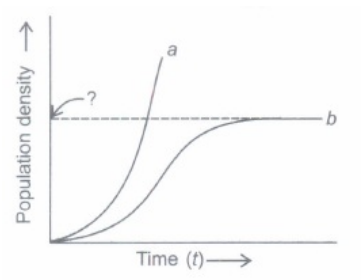
689)



(I) Which of the above process(es) represent(s) an increase in population?
(ii) Which ofthe above process(es) represent(s) a decrease in population?
(iii) If a new habitat is just being colonised, out of the four process(es) affecting the population growth, which one contributes the most?

690) If in a population of size 'N', the birth rate is represented as 'b' and the death rate as 'd', the increase or decrease in 'N' during a unit time period 't' will be
$dN/dt = (b - d) \times N$
The equation given above can also be represented as
$dN/dt = r \times N$, where $r = (b - d)$.
(a) What does 'r' represent in the above?
(b) Write anyone significance of calculating 'r' for any population.
(c) In a pond there are 100 frogs. 20 more were born in a year. Calculate the birth rate of this population.

691)



Study the population growth curves shown in the graph and answer the following questions.
(i) Identify the growth curves 'a' and 'b'.
(ii) Which one of them is considered more realistic and why?
(iii) What does the dotted line in the graph indicate?

692) There is no natural habitat on earth, which is occupied by a single species. In nature, plants, animals and microbes do not and cannot live in isolation. Interspecific interactions arise from the interaction of populations of two different species.
(a) Even a plant species, which makes its own food cannot live alone. Give two examples, where plants depend on other species for survival.
(b) Name the type of interspecific interaction seen in each of the following examples.
(i) Disappearance of smaller barnacles when Balanus dominated intertidal area of the sea coasts of Scotland.
(ii) Clown fish living among the stinging tentacles of sea anemone.
(iii) The Wasp species pollinating a fig inflorescence.
(iv) Cuscuta growing on hedge plants.

693) Study the table given below and answer the questions that follow:

Species A	Species B	Name of Interaction
(+)	(+)	(*a*)
(–)	(–)	(*b*)
(0)	(–)	(*c*)
(+)	(0)	(*d*)

(+ = Beneficial interaction)
(- = Detrimental interaction)
(0 = Neutral interaction)
(i) Identify the type of interaction (a), (b), (c) and (d).
(ii) Why are predators 'prudent' in nature?

694) It is generally believed that competition occurs only when closely related species compete for the same resources that are limiting.
Give two examples to show that the above statement is not always true.

695) Read the following and answer the questions given below:

Unlike animals, plants cannot runaway for their defence, so, they have evolved on surprising variety of morphological and chemical defence against the herbivores. Thorns are the most common physical means of defence. Many plants secrete and store chemicals that make herbivore sick when they are eaten, inhibit feeding or digestion, disrupt its reproduction or even kill it. Some plants produce highly poisonous chemicals and that is why no cattle or goats browse on those plants. A large variety of chemical substances that we extract from plants on a commercial scale are produced by them actually as defence against grazer and browser.

(i) Why we never see cattle or goats browsing on weed Calotropis?

(a) It produces highly poisonous tannins **(b) It produces quinine which is bitter in taste.**

(c) It produces poisonous cardiac glycosides. **(d) It bears prickles.**

(ii) Which of the following is most likely to sick by consuming chemicals produced by plants?

(a) Frog (b) Goat (c) Human (d) Pigeon

(iii) Plant evolve different morphological and chemical defences against

(a) prey (b) predator (c) commensalism (d) mutualism

(iv) **Assertion:** Some plant functions as predator in nature.

Reason: Phytophagous insects feed on plant sap.

(a) Both A and Rare true and R is the correct explanation of A

(b) Both A and R are true, but R is not the correct explanation of A

(c) A is true, but R is false

(d) Both A and R are false

696) **Read the following and answer any four questions from (i) to (v) given below:**

Kangaroo rat seldom drinks water. It has thick coat to minimise evaporative desiccation. The animal seldom comes out of its comparatively humid and cool burrow during the day time. 90% of its water requirement is met from metabolic water (water produced by respiratory breakdown of fats) while 10% is obtained from its food. Loss of water is minimised by producing nearly solid urine and faeces. As the animal faces acute water scarcity, it develops two types of adaptations: reducing water loss and ability to tolerate desert conditions.

(i) Kangaroo rat is a

(a) partial regulators (b) partial conformer (c) regulator (d) conformer

(ii) Metabolic water refers to

(a) water required for metabolic activities **(b) water present in intercellular fluid**

(c) water produced during oxidation of fat or carbohydrate **(d) water taken in, to promote metabolism.**

(iii) Desert animals minimise water loss by

(a) producing highly concentrated urine **(b) promoting maximum reabsorption of water in kidney tubules**

(c) possessing one of the longest loop of Henle in kidney tubules **(d) all of these.**

(iv) Assertion : Kangaroo rat can tolerate and thrive in wide temperature range and is known as stenothermal.

Reason: Kangaroo rats go into hibernation during winter to escape cold weather.

(a) Both assertion and reason are true and reason is the correct explanation of assertion. **(b) Both assertion and reason are true but reason is not the correct explanation of assertion.**

(c) Assertion is true but reason is false. **(d) Both assertion and reason are false.**

(v) The adaptations in an organism are meant for

(a) optimum primary production **(b) optimum life span** **(c) optimum mobility** **(d) optimum survival and reproduction.**

697) **Read the following and answer any four questions from (i) to (v) given below:**

Organism P has thick lips and tongue so that it can easily feed on the commonly available spiny plants. Organism Q has thick layer of insulating fat under the skin. It was strong hooves to walk steadily on steep surfaces and lives in burrows during winters. Organism R has bright colours and sticky pads on its fingers and toes. It lives on trees.

(i) Which of the following is correct habitat for organisms P regarding its adaptation?

(a) Grassland biome (b) Desert biome (c) Tropical rainforest (d) Tropical deciduous forest

(ii) Which of the following is correct match regarding organism Q and its habitat?

(a) Tundra - Polar bear **(b) Tropical rain forest - Deer** **(c) Grassland - Bighorn sheep** **(d) Desert - Camel**

(iii) Which of the following is incorrect regarding organisms R's habitat?

(a) The vegetation shows stratification

(b) Epiphytic growth is rich

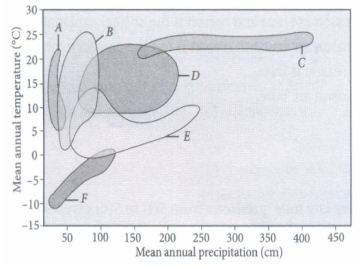
(c) Standing crop is highest

(d) Deep rooted shrubs are common due to abundant sunlight.

(iv) The dominant plants in habitat where P lives could be

(a) Opuntia (b) Nymphaea (c) Deodar (d) both (a) and (c).

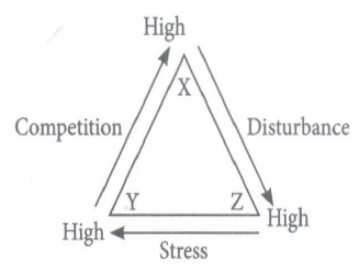
(v) Organisms P,Q and R respectively most likely occur in



(a) F, B and A (b) C, A, E (c) A, F and C (d) B, D and A.

698) **Read the following and answer any four questions from (i) to (v) given below:**

During teaching about various environmental factors, a teacher draw a figure that depicts like history strategies for three plant species (X, Y and Z) along 3 axes - strength of competition with other organisms, level of disturbance in the habitat and level of environmental stress in the habitat. Species X grows in habitats where competition among species is high but disturbance and stress are low. Species Y grows in habitats with high environmental stress but with low intraspecies competition. Species Z grows in highly disturbed habitats with low environmental stress.



(i) Which of the following is correct regarding plant type X?

(a) It has slow growth rate.

(b) It lives in area with high probability of severe environmental changes.

(c) It has good competitive ability at low population densities near the carrying capacity.

(d) None of these

(ii) Environmental stress occurs through

(a) very low temperature **(b) drought** **(c) nutrient deficiency** **(d) all of these.**

(iii) Select the correct option regarding plant type X, Y and Z.

(a) X type of plants are likely to be trees. **(b) Y type of plants could be desert plants.**

(c) Z type of plants could be herbaceous plant. **(d) All of these**

(iv) Y type of plants grow under high stress and

(a) produce large number of seeds in a short time after rains **(b) have rapid growth**

(c) produce less number of seed in a long time after rain **(d) both (a) and (b).**

(v) **Assertion:** Plant growth rate is high in area of high stress and high disturbance.

Reason: High stress and high disturbance promote breeding capacity in plants.

(a) Both assertion and reason are true and reason is the correct explanation of assertion. **(b) Both assertion and reason are true but reason is not the correct explanation of assertion.**

(c) Assertion is true but reason is false. **(d) Both assertion and reason are false.**

699) **Read the following and answer any four questions from (i) to (v) given below:**

Regular change in temperature that occurs at specific intervals of time is called thermoperiodicity. It is of two types-diurnal and seasonal thermoperiodicity. Diurnal periodicity refers to temperatures of day and night. It determines periods of annual activity. In season periodicity different temperature prevails in different seasons of the year. They favour different aspects of plant and animal life termed as phenology. For example in wheat, leaf growth requires a temperature of 10°-25° C. Apple requires temperature below 7°C for a period of 800 hrs before flowering and fruiting can occur. Low temperature is required for germination of some seeds as well as flowering in some plants. It also determines growth, reproduction, colour and morphology of animals. Both low and high temperature cause stress in organisms which is overcome by particular adaptations.

(i) Some plants require low temperature treatment for flowering. This phenomenon is known as

(a) photoperiodism (b) vernalisation (c) thermoperiodism (d) none of these.

(ii) Animals found in arctic zones are called

(a) microtherms (b) megatherms (c) mesotherms (d) hekistotherms.

(iii) Which of the following parts of wheat plant grows maximum in temperature around 10°-25°C ?

(a) Root (b) Seeds (c) Leaf (d) Stem

(iv) "Different temperatures prevail in different seasons of the year:' It represents

(a) diurnal thermoperiodicity (b) seasonal periodicity (c) homeostasis (d) thermoregulation.

(v) **Assertion:** Low and high temperature causes stress in organisms.

Reasons: Organisms show specific adaptations to overcome stressful condition.

(a) Both assertion and reason are true and reason is the correct explanation of assertion.

(b) Both assertion and reason are true but reason is not the correct explanation of assertion.

(c) Assertion is true but reason is false.

(d) Both assertion and reason are false.

700) Read the following and answer any four questions from (i) to (v) given below:

In many species of fig trees, there is a tight one-to-one relationship with the pollinator species of wasp. It means that a given fig species can be pollinated only by its 'partner' wasp species and no other species. The wasp pollinates the fig inflorescence while looking for suitable egg-laying sites. In return for the favour of pollination, the fig offers the wasp some of its developing seeds as food for the developing wasp larvae.

(i) The interaction between fig trees and wasp is an example of

(a) mutualism(b) commensalism(c) amensalism(d) parasitism.

(ii) All the given interactions are similar to interaction between fig trees and wasp, except

(a) plant and animal relation for pollination

(b) association of algae and fungi in lichens

(c) association of cattle egret and grazing cattle

(d) association of fungi and roots of higher plants in mycorrhiza.

(iii) In which of the following interactions both partners are adversely affected?

(a) Parasitism(b) Mutualism(c) Competition(d) Predation

(iv) In relationship between fig and wasp

(a) one benefitted other harmed (b) both are benefitted

(c) one benefitted other unaffected(d) one inhibited, other unaffected.

(v) **Assertion:** Fig and wasp cannot complete their life cycle without each other.

Reason: They show mutualistic relationship.

(a) Both assertion and reason are true and reason is the correct explanation of assertion.

(b) Both assertion and reason are true but reason is not the correct explanation of assertion.

(c) Assertion is true but reason is false.

(d) Both assertion and reason are false.

701) Read the following and answer any four questions from (i) to (v) given below:
A desert lizard (an ectotherm) and a mouse (an endotherm) are placed inside a chamber at 15°C and their body temperature [T(L) for the lizard and T(M) for the mouse] and metabolic rates [M(L) for lizard and M(M) for the mouse] are monitored.

(1) Which of the following is correct regarding T(L), M(L), T(M) and M(M)?

(a) T(L) and M(L) will fall while T(M) and M(M) will increase

(b) T(L) and M(L) will increase while T(M) and M(M) will fall

(c) T(L) and M(L) will fall, T(M) will remain same and M(M) will increase

(d) T(L) and M(L) will remain same, T(M) and M(M) will decrease

(ii) It can be said that some animals in their evolutionary development preferred to be ectotherms than endotherms. Which of the following can be the best suited reason for it?

(a) The metabolic reactions of these organisms can occur at a very wide range of temperature.

(b) Maintaining homeostasis is an energetically expensive process.

(c) The enzymes of these organisms are functional at high temperatures.

(d) Both (b) and (c)

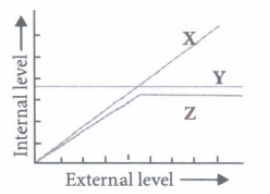
(iii) Organisms that can maintain a constant internal temperature are called

(a) homoeothermic (b) poikilothermic (c) oligothermic (d) heterothermic.

(iv) An animal that survives at temperature of 10°C and 40°C both can be placed under the category of

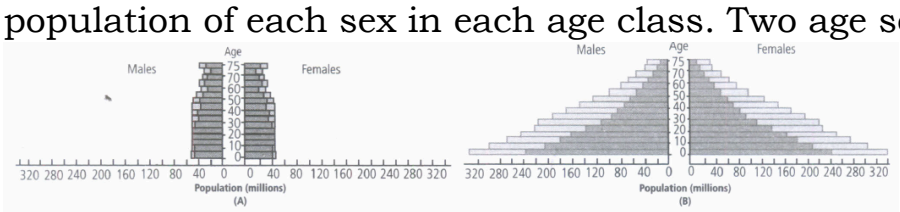
(a) ectotherm (b) endotherm (c) modifiers (d) migratory organisms

(v) Study the graph carefully arid select the correct option.



(a) X could be desert lizard (b) Y could be mouse. (c) Z could be desert lizard (d) Both (a) and (b)

702) Read the following and answer any four questions from (i) to (v) given below:
Age sex structure of a population can be depicted in the form of a pyramid by plotting the percentage of population of each sex in each age class. Two age sex pyramids are as follows.



(i) Which of the following is correct regarding pyramid B?

(a) It represents stable population. **(b) It represents expanding population.**

(c) It represents declining population. **(d) Both (a) and (b)**

(ii) Total number of individuals of a species per unit area per unit time is called

(a) population size (b) population density

(c) demography **(d) population dynamics.**

(iii) Which of the following is correct regarding age sex pyramid A and B?

(a) A represents the age sex pyramid of developed country.

(b) B represents the age sex pyramid of developing country.

(c) A represents rapidly growing population.

(d) Both (a) and (b)

(iv) A population with a large proportion of older individuals than younger ones will likely to

(a) grow larger first and then decline **(b) continue to grow indefinitely**

(c) decline **(d) none of these.**

(v) **Assertion:** Bell shaped age pyramid represents a stable population.

Reason : In a stable population, proportion of individuals in reproductive age group is higher than the individuals in pre-reproductive age group.

(a) Both assertion and reason are true andreason is the correct explanation of assertion.

(b) Both assertion and reason are true but reason is not the correct explanation of assertion.

(c) Assertion is true but reason is false.

(d) Both assertion and reason are false.

703) **Read the following and answer any four questions from (i) to (v) given below:**

Growth of a population with time shows specific and predictable patterns. Two types of growth pattern of population are exponential and logistic growth. When resources in the habitat are unlimited each species has the ability to realise fully its innate potential to grow in number. Then the population grows in exponential fashion. When the resources are limited growth curve shows an initial slow rate and then it accelerates and finally slows giving the growth curve which is sigmoid.

(i) Which of the following statement is incorrect?

(a) Exponential growth occurs in organism such as lemmings.

(b) Logistic growth is more realistic.

(c) Exponential growth has two phases lag and log.

(d) In logistic growth, population passes well beyond the carrying capacity of ecosystem.

(ii) Which of the following equations correctly represents the exponential population growth curve?

(a) $dN/dt = rN$

(b) $dN/dt = rN\left(\frac{K-N}{K}\right)$

(c) $N_t = N_o e^{rt}$

(d) Both (a) and (c)

(iii) Which of the following equations correctly represents Verhulst -Pearl logistic growth?

(a) $dN/dt = rN\left(\frac{K-N}{K}\right)$ **(b)** $dN/dt = \frac{rN}{K}$

(c) $dN/dt = \frac{N(K-N)}{K}$ **(d)** $dN/dt = \frac{r(K-N)}{K}$

(iv) The population growth is generally, described by the following equation:

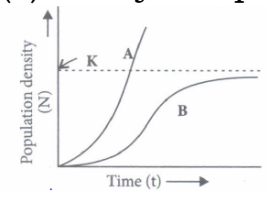
$\frac{dN}{dt} = rN\left(\frac{K-N}{K}\right)$

What does 'r' represent in the given equation?

(a) Population density at time 't' **(b) Intrinsic rate of natural increase**

(c) Carrying capacity **(d) The base of natural logarithm**

(v) Study the population growth curves (A and B) in the given graph and select the incorrect option.



(a) Curve A' shows exponential growth, represented by equation. $\frac{dN}{dt} = rN$

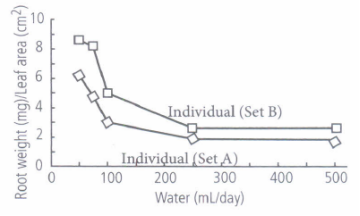
(b) Curve 'B' shows logistic growth, represented by equation $\frac{dN}{dt} = rN\left(\frac{K-N}{K}\right)$

(c) Exponential growthcurve is considered as more realistic than the logistic growth curve.

(d) Curve A' can also be represented by equation $N_t = N_o e^{rt}$**.**

704) **Read the following and answer any four questions from (i) to (v) given below:**

Ananya is a biologist, her research guide assigned project, i.e., to determine the effect of intra-specific competition on the growth of sapling of Eucalyptus. For this, she designed an experiment in which two sets of pots were used. In the first set (set A) only 1 sapling was planted per pot and in the other set (set B) 16 saplings were planted per pot. To check for the effect of intra-specific competition on allocation of resources, a decreasing amount of water was added to each set. The results have been graphically indicated. Which of the following conclusions can indicated as follows:



(i) Which of the following statements can be concluded from the given study?

(a) More resources are allocated to the root during low water conditions.

(b) Competition for water among individuals of a population causes more root growth as compared to individuals who are growing alone.

(c) Lesser leaves are formed under low water conditions.

(d) Root growth is higher in individual grown singly as compared to individuals in populations.

(ii) Which of the following associations is an example of competitions?

(a) Cuscuta and hedge plant **(b) Balanus and Cathamalus** **(c) Cactus and moth** **(d) Orchid and mango**

(iii) If '+ ' sign is assigned to beneficial interaction, '-' sign to detrimental and 0 sign to neutral interaction, then the population interaction of competition refers to

(a) +, + (b) -, - (c) +, - (d) +, 0.

(iv) Intraspecific competition is more severe due to

(a) similar needs (b) similar adaptations (c) common resources (d) all of these.

(v) **Assertion:** Two members of a competing species may co-exist.

Reason: Different individuals of a species have different resource requirements.

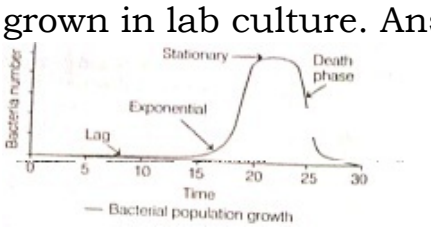
(a) Both assertion and reason are true and reason is the correct explanation of assertion.

(b) Both assertion and reason are true but reason is not the correct explanation of assertion.

(c) Assertion is true but reason is false.

(d) Both assertion and reason are false.

705) Observe the given graph representing bacterial population growth comprising of all three phases, when grown in lab culture. Answer the following questions.



(i) The exponential growth occurs when there is

(a) a great environmental resistance

(b) no environmental resistance

(c) no biotic potential

(d) a fixed carrying capacity

(ii) The maximum growth of bacteia will occur in

(a) stationary phase (b) lag phase

(c) exponential phase (d) senescent phase

(iii) Which of the following is not an example of the growth pattern as shown in the above graph?

(a) Spread of virus **(b) Growth of weed**

(c) Patient count during pandemic **(d) Growth of yeast**

706) Read the following passage and answer the questions given below.

On earth in any natural habitat of any species, the minimal requirement is one or more species on which it can feed. Even a plant species, which makes its own food, cannot survive alone, it needs soil microbes to breakdown the organic matter in soil and return inorganic nutrients for absorption. And then how will the plant manage pollination without an animal agent. Thus, it is obvious that in nature, plants, animals and microbes do not and cannot live in isolation, but interact in various ways to form a biological community. These interactions can be interspecific and intraspecific.

(i) The population interaction in which free-living organisms that catches, kills and devours individuals of other species is called

(a) parasitism (b) predation

(c) amensalism (d) commensalism

(ii) Which interaction confers benefits to both the interacting species?

(a) Parasitism (c) Commensalism

(b) Mutualism (d) Amensalism

(iii) Refer to the given table that summarises the interactions between two organisms (organism 1 and organism 2). Identify the types of interactions (A, B and C) and select the correct answer.

	EFFECTS ON ORGANISM2			
Effects on organism 1		Benefit	Harm	No benefit
	Benefit	Mutualism	Predation	Commensalism
	Harm	A	B	Amensalism
	No effect	Commensalism	Amensalism	-

I. A can be either predation or parasitism.

II. B can be either conmmensalism or amensalism.

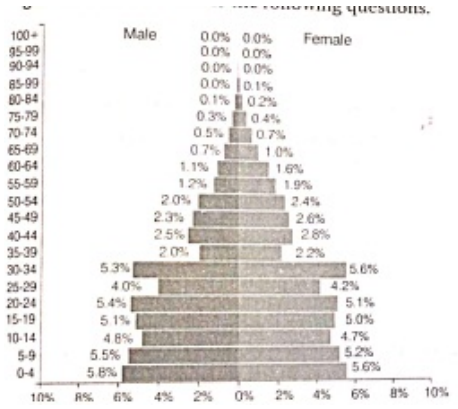
III. B can be competition.

Codes

(a) I and II (b) II and III

(c) III and IV (d) I and III

707) The given graph shows the population of a state according to the age group. Consider the graph given below and answer the following questions.



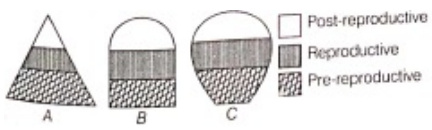
(i) What information can be inferred form the above graph?

(ii) This kind of graph is often referred to as expanding in terms of age pyramid. How far do you agree? Give reason.

(iii) What according to you can be the reason for this expanding population? State any two.

or

(iii) Suppose that a line graph is made taking any one of the two individuals (male/female) will the graph then follow an exponential growth? Why?

708) 

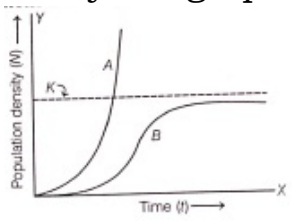
With reference to the above schematic representation of A, B and C, answer the following questions.

(i) What is depicted in all these three figures?

(ii) Which of the above mentioned structures, shows expanding population and why?

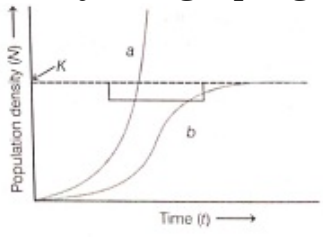
(iii) Which shape is obtained for zero population growth rate?

709) Study the graph given below and answer the questions that follows



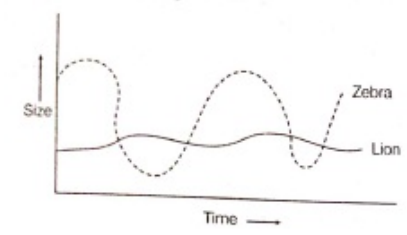
(i) Write the status of food and space in the curves A and B.
(ii) In the absence of predators, which one of the two curves would appropriately depict the prey population?
(iii) Time has been shown on X-axis and there is a parallel dotted line above it. Give the significance of this dotted line.

710) Study the graph given below and answer the questions that follows.



(i) The curve b is described by the following equation:
$\frac{dN}{dt} = rN\left\{\frac{K-N}{K}\right\}$
What does K stand for in this equation? Mention its significance.
(ii) Which one of the two curves is considered a more realistic one for most of the animal populations?
(iii) Which curve would depict the population of a species of deer if there are no predators in the habitat?

711) The following represents a general graph of interaction that happens between zebras and lions time in Savanna. The zebra population is represented in dotted line and the simple line shows the lion population.



(i) What relationship does the above graph show?
(ii) The above interaction influences organisms at two ecological levels. Explain briefly.
(iii) Humans consuming sprouts is also an example of predation. Do you agree.
or
(iii) All predators are animals. Comment.

712) A child felt stomach ache, nausea and loss of appetite. He consulted a doctor. The doctor prescribed him stool test. After the report of stool test, doctor told that he was infected with roundworm a parasite.
(i) What kind of parasite (exo or endo) is roundworm?
(ii) What is the source of this parasites?
(iii) What measures can be taken to prevent infection of roundworms?

5 Marks 62 x 5 = 310

713) List any three important characteristics of a population and explain.

714) With the help of suitable diagram describe the logistic population growth curve.

715) Define the following terms and give one example for each.
(a) Commensalism
(b) Parasitism
(c) Camouflage
(d) Mutualism
(e) Interspecific competition.

716) Study the table given below and answer the questions that follow:

SPECIES A	SPECIES B	NAME OF INTERACTION
(+)	(+)	(a)
(-)	(-)	(b)
(+)	(-)	(c)
(+)	(0)	(d)

\+ = Beneficial interaction

\- = Detrimental interaction

0 = Neutral interaction

Identify a, b, c and d in the given table and explain any three of them with the help of an example each.

717) Study the table given below in regard to population interactions and answer the questions that follow:

SPECIES A	SPECIES B	NAME OF INTERACTION
(-)	(0)	(a)
(+)	(-)	(b)
(-)	(-)	(c)
(+)	(+)	(d)
(+)	(0)	(e)

[Note : (+) plus = Beneficial interaction

(-) minus = Detrimental interaction

(0) zero = Neutral interaction **]**

(a) Identify the interactions (a) to (e)

(b) Explain each one of them.

718) (a) why are herbivores considered similar to predators in the ecological context? Explain.

(b) Differentiate between the following interspecific interactions in a population:

(i) Mutualism and competition

(ii) Commensalism and Amensalism.

719) (a) Explain with the help of a graph, the population growth curve when resources are

(i) limiting and

(ii) not limiting.

(b) 'Nature has a carrying capacity for a species'. Explain.

720) List the different ways by which organisms cope or manage with abiotic stresses in nature. Explain any three ways listed.

721) (a) List any four abiotic components that lead to variations in the physical and chemical conditions of different habitats.

(b) Explain the impact of these components on the distribution of organisms in different habitats.

722) Define commensalism. Describe any four examples.

723) How do parasites cause harm the host? Name the two categories. Differentiate between them with examples.

724) What is mutualism? Describe any four examples.

725) Organisms remain as individuals but interact as a group with other organisms and physical habitats and behave as population, community, ecosystem, etc.

(a) What according to you, are the factors that account for the formation of major biomes?

(b) Name any four major biomes of India.

(c) What value is learnt from this statement?

726) Water is the most important factor influencing the life of organisms. Life on earth originated in water and cannot be sustained without water. Organisms living in water bodies (ocean, lake, river, etc.) also face water-related problems.

(a) How are aquatic animals affected by the quality of water? Explain.

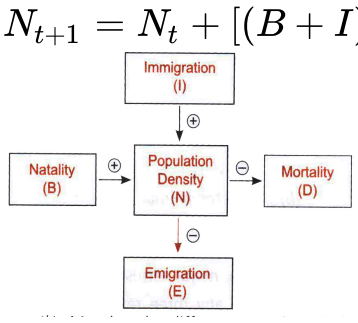
(b) Mention any four adaptations the desert plants have, to live there successfully.

(c) Represent the value learnt.

727) No species can exist alone in a habitat. Any species has a minimal requirement of at least one more species, on which it can feed. Interspecific interactions arise from the interaction of populations of two different species.
(a) What term is given to the interaction, where one species is benefitted and the other is neutral?
(b) Give four examples of the above kind of interaction.
(c) How do you call the interaction where one species is neutral and the other is harmed? Give an example of such an interaction.
(d) What value do you learn from this?

728) 'Struggle for existence and survival of the fittest' is Darwin's theory of Natural selection. Interspecific competition, a potent force in organic evolution, is generally believed to occur between closely related species for the same resources, that are limiting, but this is not entirely true.
(a) Give an example where totally unrelated species could compete with each other.
(b) Resources need not be limiting for competition to occur. Justify with an example.
(c) What value is learnt from this?

729) (a) Explain the equation:
$N_{t+1} = N_t + [(B + I) - (D - E)]$ on the basis of the flow chart given below:



(b) Mention the different ways by which the population density of different species can be measured.

730) Comment on the following figure: I, II and III, A, B, C, D, G, P, Q, R, S are species.

731) The following diagrams are the age pyramids of different populations. Comment on the status of these populations.

732) Comment on the growth curve given below.

733) Give one example for each of the following:
(i) Eurythermal plant species_____.
(ii) A hot water spring organism _____.
(iii) An organism seen in deep ocean trenches _____.
(iv) An organism seen in composite pit_____.
(v) A parasitic angiosperm _____.
(vi) A stenothermal plant species _____.
(vii) Soil organism _____.
(viii) A benthic animal Soil organism _____.
(ix) Antifreeze compound seen in antarctic fish Soil organism_____.
(x) An organism which can conform Soil orga.niam_____.

734) Explain how tolerance to environmental factors determines distribution of species.

735) What is adaptation? Describe the adaptation of plant and animal in desert.

736) How are concepts of biotic potential, environmental resistance and carrying capacity related to population growth?

737) What is competition? Why it is not true always? Explain competitive release and Gause's competitive exclusive principle. Write contribution of Mac Arthur.

738) Where would you expect more species biodiversity-in tropics or polar regions? Give reasons in support of your answer.

739) Give below is a graph depicting organismic response to changing external conditions. According to their response the organisms are grouped into two types. Name the type which will show
(i) pattern A and
(ii) pattern B.

740) Ramesh always liked to visit a forest near his ancestral village.In addition to a variety of plants,it was inhabited by many birds and animals.He observed that each animal was living in a particular sets of conditions.He enquired from his teacher the reason for this specificity.
Read the above passage and answer the following questions:
(i) What is habitat?
(ii) What did ecological importance of variations in habitats?
(iii) Why did Ramesh always like to visit forest?

741) Comment on the following figures 1,2 and 3 : A,B,C,D,G,P,Q,R,S are species

742) Ram saw that in his village farmers always used to plough the field before sowing seeds of any crop.He discussed his observation with his grandfather who explained that this practice helps to improve productivity by providing better aeration, water absorption and availability of nutrients to plants.
Read the above passage and answer the following questions:
(i) What is soil?
(ii) Which factors of soil affect soil fertility?
(iii) What value is displayed by Ram?

743) One day, Geetha a biology student ,asked his teacher ,"why scientists generally talk about presence of water on other planets"?He replied that water is one of the most important factors for supporting life on the earth as well as on other planets.
Read the above passage and answer the following questions:
(i) What is the importance of water?
(ii) List important characteristic features of water?
(iii) Why was Geeta curious to find answer to such queries?

744) While walking in the garden, Amit got hurt by a thorn present on a twig bearing beautiful rose flowers. He started analysing role of different parts of rose plant such as leaves, flowers etc.but was not able to understand the need of throns on the rose plant.
Read the above passage and answer the following questions:
(i) Why plants produce thorns/spines-like structure on their body?
(ii) What is meant by adaptation?
(iii) What are other methods of adaptations of organisms in specific environments?

745) Does light factor affect the distribution of organisms? Write a brief note giving suitable examples of either plants or animals.

746) In a biology class, teacher was telling the students that the structures/components and their functions in a watch can be compared with various lenels of organisation we find in nature. Radhika was surprised and asked teacher to explain it. Teacher got impressed with Radhika's interest and explained that there is a systematic arrangement of smaller and simpler components into larger one in a hierarchy or pyramid having different levels where each level and itself is formed of components of lower level and itself becomes part of hgher level for achieving a common goal.
(i) What are the four levels of biological organisation found in nature?
(ii) What is the basic unit of ecological organisation
(iii) Define community
(iv) What value are shown by Radhika?

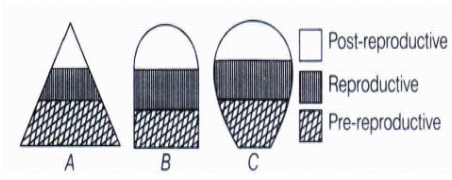
747) Himani while watching a TV programme based on life in polar region observed that all animals in polar regions possess larger size. Also, smaller animals are not found in that region. She asked about this surprising fact to her teacher.
(i) why smaller animals (e.g. humming birds) are rarely found in polar regions?
(ii) What are the adaptations shown by polar animals?
(iii) What are the chief characteristics of polar region animals?
(iv) What values are shown by Himani?

748) Ramesh visited a National Park on a school trip where he saw tiger eating a deer. He got disturbed and asked his teacher why is he doing so. His teacher replied that it is natural population controlling phenomenon.
(i) Which type of interspecific interaction is found between tiger and deer?
(ii) State the role of predators
(iii) What other type of population interaction are seen in nature?
(iv) State the values of Ramesh towards animals

749) A group of students visited a botanical garden, where they saw fungus growing on roots of higher plants only. They were confused seeing it then, their teacher told them that it is an interspecific interaction in which both species can be benefitted.
(i) Write the name of this particular association
(ii) How both are benefitted from each other?
(iii) State use of this interaction to a farmer
(iv) What values are shown by students

750) (i) List the different attributes that a population has and not an individual organism.
(ii) What is population density? Explain any three different ways the population density can be measured, with the help of an example each.

751) The following diagrams are the age pyramids of different populations. Comment on the status of these populations.



752) A population od Paramecium caudatum was grown in a culture medium. After 5 days the culture medium became overcrowded with Paramecium and had depleted nutrients.
What will happen to the population and what type of growth curve will the population attain?Draw the growth curve.

753) Ramesh went to an excursion trip to Kumaun hills, along with his classmates, under an escort teacher. On reaching the destination, he all of a sudden started feeling nausea, heart pulpitation and fatigued. One of his friends and a classmate suggested him to take rest for some time.
Answer the following questions on the basis of above information::
(i) Suggest the reason of his not feeling well suddenly
(ii) Why did his friend advise him to take rest for some time?
(iii) What values were exhibited by his friend?

754) (a) Name the two growth models that represent population growth and draw the respective growth curves they represent
(b) State the basis for the difference in the shape of these curves.
(c)Which one of the curves represents the human population growth at present? Do you think such a curve is sustainable? Give reason in support of your answer

755) (a) Represent diagrammatically three kinds of age-pyramids for human populations.
(b) How does an age pyramid for human population at given point of time helps the policy-makers in planning for future.

756) (i) What is population density? Why are ecologists interested in measuring it?
(ii) Write the different ways of measuring population density. Explain any two with the help of specific examples.

757) 'Analysis of age pyramids for human population can provide important inputs for long-terms planning