

SECTION 1 - SECTION 1

Question No.1

☐

Assume that in terms of 'genetic fitness' the 'benefit' of performing an altruistic act to a relative is 500 units and the 'cost' involved is 150 units. Following the Hamilton's rule, the act should be performed if the relative is a

- ☐ Only brother
- ☐ only step-sister
- ☐ brother or step-sister
- ☐ nephew or niece

Question No.2

☐

Genetic variation can occur as a result of

- ☐ Random mutations in genes.
- ☐ Exon shuffling and gene duplication.
- ☐ Horizontal gene transfer.
- ☐ All of these

Question No.3

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Divergence in morphology that is a result of competition is termed

- ☐ amensalism.
- ☐ competitive exclusion.
- ☐ character displacement
- ☐ resource partitioning

Question No.4

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Blue baby syndrome is caused due to

- ☐ Excess heavy metals in drinking water
- ☐ Excess nitrates in drinking water
- ☐ Excess sulphate in drinking water
- ☐ Excess nitrites in drinking water

Question No.5

☐

Carbon sequestration is a strategy used to control

- ☐ Pollution
- Desertification

- ☐
- ☐ Global Warming
- ☐ Population Explosion

Question No.6

☐

Who defined the evolution as “descent with modification,”

- ☐ Weismann
- ☐ Dobzhansky
- ☐ Lamarck
- ☐ Darwin

Question No.7

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Which group of vertebrates comprises the highest number of endangered species?

- ☐ Fishes
- ☐ Birds
- ☐ Mammals
- ☐ Reptiles

Question No.8

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In the context of diversity patterns of species, which one of the following statements is INCORRECT?

- ☐ Gamma diversity is the regional diversity found among range of communities/habitats in a geographical region
- ☐ Alpha diversity is the regional diversity found among range of communities in a geographical region
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Question No.9

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Humming birds and Hawk illustrate

- ☐ Adaptive radiation
- ☐ Convergent evolution
- ☐ Organic evolution
- ☐ Parallel evolution

Question No.10

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Sexual selection results in variation in the reproductive success of males, often due to female choice with particular phenotypes. This type of sexual selection occurs because

- ☐ males are a limiting resource for females
- ☐ inappropriate mating results in similar reduction in fitness of female and males
- ☐ cost of breeding is higher for female as compare to males
- ☐ male cannot compete with other males

Question No.11



The long feather train of a peacock is quoted as an example supporting

- ☐ The red queen hypothesis
- ☐ Haldane's rule
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- ☐ Zahavi's handicap principle

Question No.12



_____ improves the efficiency of solid waste management

- ☐ Waste Processing
- ☐ Disposal
- ☐ Compositing
- ☐ Collection

Question No.13



The polluting strength of sewage is usually characterized by its

- ☐ Eutrophication
- ☐ Ozone content
- ☐ Nitrogen content
- ☐ BOD

Question No.14



Which is a secondary air pollutant?

- ☐ PAN
- ☐ SO₂
- ☐ NO₂
- ☐ SPM

Question No.15

The amount of energy that is fixed during photosynthesis is known as ☐

- ☐ trophic-level transfer efficiency
- ☐ net primary production.
- ☐ Bio-magnification.
- ☐ gross primary production

Question No.16

Bioremediation is ☐

- ☐ process that uses microbes or plants to detoxify contaminated habitats.
- ☐ a process that restores a disturbed habitat to its original state.
- ☐ the legislation requiring rehabilitation of a disturbed habitat.
- ☐ the legislation requiring rehabilitation of a disturbed habitat.

Question No.17

In ants, which employ a haplodiploid mating system, fathers are related to sons by $r =$ ☐

- ☐ 0.5
- ☐ 0
- ☐ 0.75
- ☐ 0.125

Question No.18

_____ is the most soluble gas in seawater ☐

- ☐ CO_2
- ☐ N_2
- ☐ O_2
- ☐ CO

Question No.19

Which of the following greenhouse gasses has got highest atmospheric life time ☐

- ☐ CH_4
- ☐ N_2O
- ☐ CO_2
- ☐ CFCs

Question No.20

Which of the following coal type has more carbon?

- ☐ Bituminous
- ☐ Wood coal
- ☐ Anthracite
- ☐ Lignite

Question No.21

The process of mating of individuals, which are more closely related than the average of the population to which they belong, is called _____

- ☐ Inbreeding
- ☐ Hybrid vigor
- ☐ Hybridization
- ☐ Heterosis

Question No.22

Which gas does not contribute to global warming through its greenhouse effects?

- ☐ Carbon dioxide
- ☐ Methane
- ☐ Nitrous oxide
- ☐ Nitric oxide

Question No.23

The synthesis of Darwin's theory of natural selection with the Mendelian theory of heredity is known as _____

- ☐ Neo-Darwinism
- ☐ The synthetic theory of evolution
- ☐ The modern synthesis
- ☐ All of these

Question No.24

Identify the correctly matched pair

- ☐ Montreal Protocol - Global warming
- ☐ Stockholm Convention – Ground water protection
- ☐ Kyoto protocol – Climatic change
- ☐ Basal Convention – Biodiversity Conservation

Question No.25

An intermediate developmental stages in the ecological succession is called

- ☐ Climax
- ☐ Sere
- ☐ Nudation
- ☐ Ecesis

Question No.26

One Dobson Unit (DU) refers to a layer of ozone that would be _____ mille meter thickness at standard temperature and pressure

- ☐ 0.0001
- ☐ 0.1
- ☐ 0.001
- ☐ 0.01

Question No.27

Automobile catalytic converter helps to control emissions of

- ☐ Carbon dioxide and hydrogen
- ☐ Carbon monoxide and hydrogen
- ☐ Carbon monoxide and nitrogen dioxide
- ☐ Carbon monoxide and carbon dioxide

Question No.28

A change in one or more characteristics of a population that is heritable and occurs from one generation to the next is called

- ☐ Evolution.
- ☐ Sexual selection.
- ☐ Natural selection.
- ☐ Inheritance of acquired characteristics

Question No.29

Secondary sewage treatment involves

- ☐ physical removal of solids from polluted water by filtration and sedimentation
- ☐ removal of microbial pathogens by chlorination or ozonation
- ☐ removal of chemical remains by precipitation
- ☐ removal of dissolved organic compounds by activated sludge or trickling filter

Question No.30

☐

The idea that an altruistic gene will be favoured if $r > C/B$, where r is the coefficient of relatedness, B is the benefit to the recipient of altruism and C is the cost introduced to the donor, is known as

- ☐ Red queen hypothesis
- ☐ competitive exclusion principle
- ☐ Hamilton's rule
- ☐ handicap principle

Question No.31

☐

An ecosystem gradually merges with an adjoining one through a transitional zone is called

- ☐ Shore effect
- ☐ Ecological footprint
- ☐ Ecotone
- ☐ Ecological niche

Question No.32

☐

Which of the following National Parks has the highest density of tigers among protected areas in the world?

- ☐ Manas
- ☐ Jim Corbett
- ☐ Kaziranga
- ☐ Keoladeo Ghana

Question No.33

☐

In some species of new world monkeys, only female reproduce in a group. one or more younger female have supresses reproduction and assist reproductive female. This is an example of

- ☐ Sexual selection
- ☐ Reciprocal altruism
- ☐ Kin Selection
- ☐ Group Selection

Question No.34

☐

Compared to K-selection, r-selection favours

- ☐ rapid development, smaller body size and early, semelparous reproduction

- ☐ slow development, smaller body size and late, iteroparous reproduction
- ☐ slow development, larger body size and late, iteroparous reproduction
- ☐ rapid development, smaller body size and early, iteroparous reproduction

Question No.35

☐

Boron is needed in plants for

- ☐ Protein synthesis
- ☐ Water uptake and transport
- ☐ Structural integrity to the cell wall
- ☐ Chlorophyll synthesis

Question No.36

☐

The wildlife of Andaman is similar with the wildlife of _____ whereas the Nicobar fauna are similar to _____

- ☐ Sumatra, Malaysia
- ☐ Burma, Sumatra
- ☐ Malaysia, Burma
- ☐ Burma, Malaysia

Question No.37

☐

The middle value of an ordered array of numbers is the

- ☐ Mid Point
- ☐ Median
- ☐ Mean
- ☐ Mode

Question No.38

☐

Biological species concept was introduced by _____

- ☐ Ernst Mayr
- ☐ Charles Darwin
- ☐ Charles Lyell
- ☐ Edward O. Wilson

Question No.39

☐

Which of the following is not an in-situ conservation method?

- ☐ Biosphere reserves

- ☐ Wild life sanctuaries
- ☐ National Parks
- ☐ Zoo

Question No.40

☐

Which of the following is not a sustainable development goal?

- ☐ Ensure healthy lives and promote wellbeing for all at all ages
- ☐ End poverty in all its forms everywhere
- ☐ Eliminate racism in all its forms
- ☐ Take urgent action to combat climate change and its impacts

Question No.41

☐

Which are the main gases present in Sun?

- ☐ Argon and Helium
- ☐ Hydrogen and Carbon Dioxide
- ☐ Hydrogen and Helium
- ☐ Hydrogen and Argon

Question No.42

☐

According to 2014 IUCN Red List, which of the following vertebrate classes has the largest percentage of threatened species?

- ☐ Mammals
- ☐ Amphibians
- ☐ Birds
- ☐ Reptiles

Question No.43

☐

The change of the lighter-coloured variety of peppered moth (*Biston betularia*) to its darker variety (*Biston carbonaria*) is due to _____

- ☐ Genetic isolation
- ☐ Mutation
- ☐ Spatial and temporal Isolation
- ☐ Temporal isolation

Question No.44

☐

Arrange in sequence the function associated with EIA
i) Prediction

- ii) defining the scope
- iii) Identification
- iv) impact evolution and analysis

- ☐ ii and iv
- ☐ iii and iv
- ☐ ii, iii, i and iv
- ☐ ii and iii

Question No.45

☐

A general increase in the average body mass of animal population within a species with the latitude is known as

- ☐ Alle effect
- ☐ Allen's rule
- ☐ Bergmann's rule
- ☐ Hamilton's rule

Question No.46

☐

Young lakes are often clear and with little plant life. Such lakes are called

- ☐ Lotic
- ☐ Oligotrophic
- ☐ lentic
- ☐ Eutrophic

Question No.47

☐

Which of the following statements is INCORRECT about a keystone species?

- ☐ Removing a keystone species can effect successive trophic levels causing a trophic cascade
- ☐ Removing a keystone species can reduce species richness of a community
- ☐ Species other than consumers can be a keystone species
- ☐ Keystone species has influence on a community proportionate to its abundance

Question No.48

☐

Nitrogen cycle in soil follows the pattern of

- ☐ Dead organisms → ammonia → nitrite → nitrate → nitrogen
- ☐ Dead organisms → nitrate → ammonia → nitrogen
- ☐ Nitrate → Nitrite → plants → animals
- ☐ Nitrite → nitrate → ammonia → plants

Question No.49☐

The tiny, passively drifting planktons are called as

- ☐ Diatoms
- ☐ Spores
- ☐ Fingerlings
- ☐ Nekton

Question No.50☐

The *Philosophie Zoologique* (1809) is the contribution of _____

- ☐ Jean-Baptiste Lamarck
- ☐ Maupertuis
- ☐ Charles Darwin
- ☐ Erasmus Darwin

Question No.51☐

Theory of inheritance of acquired characters was given by _____

- ☐ Oparin
- ☐ Lamarck
- ☐ De Vries
- ☐ Darwin

Question No.52☐

The modification of behavior based on prior experience is called

- ☐ A fixed action pattern
- ☐ Learning.
- ☐ Adjustment behaviour
- ☐ Navigation.

Question No.53☐

Geographic hotspots are those areas rich in

- ☐ endemic species.
- ☐ habitats.
- ☐ species
- ☐ rare species.

Question No.54☐

Macroevolution refers to the evolutionary changes that

- ☐ Create new species and groups of species
- ☐ Occur over long periods of time.
- ☐ Cause changes in allele frequencies.
- ☐ Occur in multicellular organisms.

Question No.55☐

Hybrid breakdown occurs when species hybrids

- ☐ do not develop past the early embryonic stages.
- ☐ produce offspring that express the traits of only one of the original species.
- ☐ are infertile
- ☐ are fertile but produce offspring with reduced viability and fertility.

Question No.56☐

When temperature of ocean rises

- ☐ It absorbs less N_2
- ☐ It absorbs more CO_2
- ☐ It absorbs more N_2
- ☐ It absorbs less CO_2

Question No.57☐

Which of the following statements best describes an endangered species?

- ☐ a species that has disappeared in a particular community but is present in other natural environments
- ☐ a species that is in danger of becoming extinct throughout all or a significant portion of its range
- ☐ a species that is extinct
- ☐ a species that is likely to become extinct in a portion of its range

Question No.58☐

Cryptosporidiosis is a _____ disease

- ☐ Air borne
- ☐ Respiratory
- ☐ Vector borne
- ☐ Water borne

Question No.59

Buffon's Law applied to plants as well as to animals, and also applied to any region of the world that was separated from others by _____

- ☐ Altitudes
- ☐ Latitudes
- ☐ Barriers of geography or climate
- ☐ Longitudes

Question No.60

Multidimensional niche concept was introduced by _____

- ☐ Charles Darwin
- ☐ Edward O. Wilson
- ☐ G. E. Hutchinson
- ☐ Robert H. MacArthur

Question No.61

_____ play a major role in global climate regulation

- ☐ Molluscs
- ☐ Planktons
- ☐ Bacteria
- ☐ Fishes

Question No.62

Which method of solid waste disposal is known as hygienic method?

- ☐ Landfilling
- ☐ Composting
- ☐ Pulverization
- ☐ Incineration

Question No.63

Which state of Cr (Chromium) is most toxic?

- ☐ Cr³⁺
- ☐ Cr⁶⁺
- ☐ Cr⁵⁺
- ☐ Cr⁴⁺

Question No.64

Name of the common Indian bird that is generally seen in groups (aggregation)

- ☐ Bulbul
- ☐ Warbler
- ☐ Babbler
- ☐ Sun bird

Question No.65

The phenomenon of increased effect of chemicals on predators in a food chain is known as

- ☐ Biomagnification
- ☐ Bio-toxicity
- ☐ Biodegradation
- ☐ Bioaccumulation

Question No.66

The evolution of one species into two or more species is

- ☐ Microevolution.
- ☐ Punctuated equilibrium
- ☐ Gradualism.
- ☐ Cladogenesis.

Question No.67

Identify the correct sequence of atmospheric layers from the ground level

- ☐ Thermosphere → mesosphere → stratosphere → troposphere
- ☐ Mesosphere → stratosphere → Troposphere → thermosphere
- ☐ Troposphere → stratosphere → mesosphere → thermosphere
- ☐ Stroposphere → Troposphere → mesosphere → thermosphere

Question No.68

Which of the species characteristic that not make them more prone to extinction are listed below,

- ☐ High trophic status
- ☐ High sexual dimorphism
- ☐ High degree of specialization
- ☐ Short life span

Question No.69☐

N₂ fixation takes place in specialized cells called

- ☐ Heterocyst
- ☐ Microcyst
- ☐ Homocyst
- ☐ Mesocyst

Question No.70☐

Exxon Valdez ship disaster led large scale oil spill in

- ☐ 1898
- ☐ 1989
- ☐ 2000
- ☐ 1889

Question No.71☐

Eutrophication of water bodies caused by

- ☐ Nutrient Enrichment
- ☐ Toxic Chemical Accumulation
- ☐ Heavy Metal Accumulation
- ☐ Nutrient Depletion

Question No.72☐

Which of the following belongs to second generation photovoltaic cell

- ☐ Quantum dots
- ☐ Amorphous silicon
- ☐ Porous silicon
- ☐ Crystalline silicon

Question No.73☐

Itai-itai disease is caused by

- ☐ Arsenic
- ☐ Mercury
- ☐ Cadmium
- ☐ Lead

Question No.74

Which of the following groups have only two wings? ☐

- ☐ Butterfly, housefly, fruitfly
- ☐ Housefly, fruitfly, mosquito
- ☐ Dragonfly, butterfly, fruit fly
- ☐ Honey bee, beetle, ant

Question No.75

Barnacles on a whale is an example of ☐

- ☐ Symbiosis
- ☐ Commensalism
- ☐ Mutualism
- ☐ Amensalism

Question No.76

The colorimetric methods are usually based on the following ☐

- ☐ Hydration-reduction process
- ☐ Molecular density effect
- ☐ Charge separation
- ☐ Complex-formation reaction

Question No.77

Lichen comes under ☐

- ☐ Amensalism
- ☐ Commensalism
- ☐ Mutualism
- ☐ Parasitoids

Question No.78

Contribution of various greenhouse gases to the global warming in decreasing order ☐

- ☐ Methane, Carbon dioxide, CFCs
- ☐ Carbon dioxide, Methane, CFCs
- ☐ Methane, CFCs, Carbon dioxide
- ☐ Carbon dioxide, CFCs, Methane

Question No.79

☐ An episodic (every 3-5 years) warm current usually appears off the coasts of Ecuador and Peru is

- ☐ El Nino
- ☐ Eolian
- ☐ La Nino
- ☐ Rip currents

Question No.80

☐ The "Red Queen Hypothesis" is related to _____

- ☐ The evolutionary arms race between the host and the parasite.
- ☐ Mate selection process by a female in a lek.
- ☐ The elimination by deleterious mutations by sexual reproduction.
- ☐ The mating order in the harem of a polygamous male.

Question No.81

☐ Animals found in every part of the world are said to be _____, while those which restricted are called as _____

- ☐ Cosmopolitan, Stenotopic
- ☐ Discontinuous, Ubiquitous
- ☐ Stenotopic, Cosmopolitan
- ☐ Cosmopolitan, Endemic

Question No.82

☐ The instrument that measures temperature, pressure, and humidity at various altitudes in the atmosphere is

- ☐ Barograph
- ☐ Altimeter
- ☐ Aneroid barometer
- ☐ Radiosonde

Question No.83

☐ A species whose life history strategies allow for high intrinsic rates of increase (r-strategist) will also exhibit the following EXCEPT :

- ☐ Short period of exponential population growth (r).
- ☐ Reproductive strategy that involves random mating, semelparity and little or no parental investment.
- ☐ Survivorship that show density-dependent mortality, typically exhibiting Type 1 or 2 survivorship curves.

- ☐ High tolerance for both environmental instability and low quality resources.

Question No.84

☐

Which of the following order is correct?

- ☐ Snail-Seagull-Whelk-Seaweed
- ☐ Seagull-Whelk-Snail-Seaweed
- ☐ Seaweed-Snail-Whelk-Seagull
- ☐ Seaweed-Whelk-Snail-Seagull

Question No.85

☐

Which one of the following conditions is NOT likely to favour male monogamy?

- ☐ When the female guards her mate against seeking other females to mate.
- ☐ When the male wants to spend more time for foraging.
- ☐ When the male has to assist the mate in brood and nestling care.
- ☐ When the male has to guard his mate against mating by another male.

Question No.86

☐

Which is the simple food chain

- ☐ Lichen-toad-slug-snake-eagle
- ☐ Lichen-Slug-toad-snake-eagle
- ☐ Slug-lichen-toad-snake-eagle
- ☐ Algae-snake-fox-tiger-eagle

Question No.87

☐

Systematics and the Origin of Species was published in 1942 by_____

- ☐ Sewall Wright
- ☐ J.B.S.Haldane
- ☐ Ernst Mayr
- ☐ Richard Goldschmidt

Question No.88

☐

Which country is the pioneer in use of Geothermal energy for space heating

- ☐ Germany
- ☐ Iceland
- ☐ Japan

- ☐ Australia

Question No.89

☐

Theory of evolution by natural selection was proposed by_____

- ☐ Charles Darwin
☐ Jean-Baptiste Lamarck
☐ Weismann
☐ Dobzhansky

Question No.90

☐

Ecology is the study of relationships between living and nonliving parts of the world said by

- ☐ Lamark
☐ David Cooper
☐ Charles Darwin
☐ Ernst Haeckel

Question No.91

☐

Forest Conservation Act passed in India in ____

- ☐ 1980
☐ 1978
☐ 1981
☐ 1979

Question No.92

☐

The process of burning of solid waste at high temperature is called

- ☐ Heating
☐ Boiling
☐ Incineration
☐ Autoclaving

Question No.93

☐

Blue green algae is also called as

- ☐ Haptophytes
☐ Dinophysis
☐ Coccoliths
Cyanophyceae



Question No.94



'Nature would never limit growth', said by

- ☐ Wordsworth
- ☐ Malthus
- ☐ Barnett and Morse
- ☐ Roosevelt

Question No.95



Respiratory roots are known as

- ☐ Hydathodes
- ☐ Pneumatophores
- ☐ Prop roots
- ☐ Tap roots

Question No.96



According to the competitive exclusion hypothesis,

- ☐ one species that competes with several different species for resources will be excluded from the community.
- ☐ two species that use the exact same resource show very little competition.
- ☐ two species with the same niche cannot coexist.
- ☐ all competition between species results in the extinction of at least one of the species.

Question No.97



In Lack's study of British passerine birds, different species seem to segregate based on resource factors, such as location of prey items. This differentiation among the niches of these passerine birds is known as

- ☐ resource partitioning
- ☐ competitive exclusion.
- ☐ character displacement
- ☐ intraspecific competition

Question No.98



Cobalt

- ☐ gives plants mechanical strength and may help minimize water loss and increase disease resistance

- ☐ reduces fruit bud formation
- ☐ is essential for the symbiotic relationship between legumes and their associated Rhizobia bacteria
- ☐ decreases in stem length and a resetting of terminal leaves

Question No.99

☐

A community with many individuals but few different species would exhibit

- ☐ high species diversity.
- ☐ high stability.
- ☐ low abundance and high species complexity
- ☐ low species richness and high abundance

Question No.100

☐

Nitrogen fixation is the process

- ☐ by which bacteria convert nitrate to gaseous nitrogen.
- ☐ by which plants and animals take up nitrates
- ☐ by which atmospheric nitrogen is converted to ammonia or ammonium ions
- ☐ that converts organic nitrogen to ammonia

Examination: **Ph.D Ecology and Environmental Sciences**

SECTION 1 - SECTION 1

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Assume that in terms of 'genetic fitness' the 'benefit' of performing an altruistic act to a relative is 500 units and the 'cost' involved is 150 units. Following the Hamilton's rule, the act should be performed if the relative is a

- ☐ Only brother
- ☐ only step-sister
- ☐ brother or step-sister
- ☐ nephew or niece

Question No.2

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- ☐ Exon shuffling and gene duplication.
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Blue baby syndrome is caused due to

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_____ improves the efficiency of solid waste management

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Disposal

- ☐
- ☐ Compositing
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In ants, which employ a haplodiploid mating system, fathers are related to sons by $r =$

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- ☐
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Question No.18

☐

_____ is the most soluble gas in seawater

- ☐ CO₂
- ☐ N₂
- ☐ O₂
- ☐ CO

Question No.19

☐

Which of the following greenhouse gasses has got highest atmospheric life time

- ☐ CH₄
- ☐ N₂O
- ☐ CO₂
- ☐ CFCs

Question No.20

☐

Which of the following coal type has more carbon?

- ☐ Bituminous
- ☐ Wood coal
- ☐ Anthracite
- ☐ Lignite

Question No.21

☐

The process of mating of individuals, which are more closely related than the average of the population to which they belong, is called _____

- ☐ Inbreeding
- ☐ Hybrid vigor
- ☐ Hybridization
- ☐ Heterosis

Question No.22

☐

Which gas does not contribute to global warming through its greenhouse effects?

- ☐ Carbon dioxide

- ☐ Methane
- ☐ Nitrous oxide
- ☐ Nitric oxide

Question No.23

☐

The synthesis of Darwin's theory of natural selection with the Mendelian theory of heredity is known as _____

- ☐ Neo-Darwinism
- ☐ The synthetic theory of evolution
- ☐ The modern synthesis
- ☐ All of these

Question No.24

☐

Identify the correctly matched pair

- ☐ Montreal Protocol - Global warming
- ☐ Stockholm Convention – Ground water protection
- ☐ Kyoto protocol – Climatic change
- ☐ Basal Convention – Biodiversity Conservation

Question No.25

☐

An intermediate developmental stages in the ecological succession is called

- ☐ Climax
- ☐ Sere
- ☐ Nudation
- ☐ Ecesis

Question No.26

☐

One Dobson Unit (DU) refers to a layer of ozone that would be _____ millimeter thickness at standard temperature and pressure

- ☐ 0.0001
- ☐ 0.1
- ☐ 0.001
- ☐ 0.01

Question No.27

☐

Automobile catalytic converter helps to control emissions of

- ☐ Carbon dioxide and hydrogen

- ☐ Carbon monoxide and hydrogen
- ☐ Carbon monoxide and nitrogen dioxide
- ☐ Carbon monoxide and carbon dioxide

Question No.28



A change in one or more characteristics of a population that is heritable and occurs from one generation to the next is called

- ☐ Evolution.
- ☐ Sexual selection.
- ☐ Natural selection.
- ☐ Inheritance of acquired characteristics

Question No.29



Secondary sewage treatment involves

- ☐ physical removal of solids from polluted water by filtration and sedimentation
- ☐ removal of microbial pathogens by chlorination or ozonation
- ☐ removal of chemical remains by precipitation
- ☐ removal of dissolved organic compounds by activated sludge or trickling filter

Question No.30



The idea that an altruistic gene will be favoured if $r > C/B$, where r is the coefficient of relatedness, B is the benefit to the recipient of altruism and C is the cost introduced to the donor, is known as

- ☐ Red queen hypothesis
- ☐ competitive exclusion principle
- ☐ Hamilton's rule
- ☐ handicap principle

Question No.31



An ecosystem gradually merges with an adjoining one through a transitional zone is called

- ☐ Shore effect
- ☐ Ecological footprint
- ☐ Ecotone
- ☐ Ecological niche

Question No.32

☐ Which of the following National Parks has the highest density of tigers among protected areas in the world?

- ☐ Manas
- ☐ Jim Corbett
- ☐ Kaziranga
- ☐ Keoladeo Ghana

Question No.33

☐ In some species of new world monkeys, only female reproduce in a group. one or more younger female have supresses reproduction and assist reproductive female. This is an example of

- ☐ Sexual selection
- ☐ Reciprocal altruism
- ☐ Kin Selection
- ☐ Group Selection

Question No.34

☐ Compared to K-selection, r-selection favours

- ☐ rapid development, smaller body size and early, semelparous reproduction
- ☐ slow development, smaller body size and late, iteroparous reproduction
- ☐ slow development, larger body size and late, iteroparous reproduction
- ☐ rapid development, smaller body size and early, iteroparous reproduction

Question No.35

☐ Boron is needed in plants for

- ☐ Protein synthesis
- ☐ Water uptake and transport
- ☐ Structural integrity to the cell wall
- ☐ Chlorophyll synthesis

Question No.36

☐ The wildlife of Andaman is similar with the wildlife of _____ whereas the Nicobar fauna are similar to _____

- ☐ Sumatra, Malaysia
- ☐ Burma, Sumatra
- ☐ Malaysia, Burma

- ☐ Burma, Malaysia

Question No.37

☐

The middle value of an ordered array of numbers is the

- ☐ Mid Point
- ☐ Median
- ☐ Mean
- ☐ Mode

Question No.38

☐

Biological species concept was introduced by_____

- ☐ Ernst Mayr
- ☐ Charles Darwin
- ☐ Charles Lyell
- ☐ Edward O. Wilson

Question No.39

☐

Which of the following is not an in-situ conservation method?

- ☐ Biosphere reserves
- ☐ Wild life sanctuaries
- ☐ National Parks
- ☐ Zoo

Question No.40

☐

Which of the following is not a sustainable development goal?

- ☐ Ensure healthy lives and promote wellbeing for all at all ages
- ☐ End poverty in all its forms everywhere
- ☐ Eliminate racism in all its forms
- ☐ Take urgent action to combat climate change and its impacts

Question No.41

☐

Which are the main gases present in Sun?

- ☐ Argon and Helium
- ☐ Hydrogen and Carbon Dioxide
- ☐ Hydrogen and Helium
- ☐ Hydrogen and Argon

Question No.42

☐

According to 2014 IUCN Red List, which of the following vertebrate classes has the largest percentage of threatened species?

- ☐ Mammals
- ☐ Amphibians
- ☐ Birds
- ☐ Reptiles

Question No.43

☐

The change of the lighter-coloured variety of peppered moth (*Biston betularia*) to its darker variety (*Biston carbonaria*) is due to _____

- ☐ Genetic isolation
- ☐ Mutation
- ☐ Spatial and temporal Isolation
- ☐ Temporal isolation

Question No.44

☐

Arrange in sequence the function associated with EIA

- i) Prediction
- ii) defining the scope
- iii) Identification
- iv) impact evolution and analysis

- ☐ ii and iv
- ☐ iii and iv
- ☐ ii, iii, i and iv
- ☐ ii and iii

Question No.45

☐

A general increase in the average body mass of animal population within a species with the latitude is known as

- ☐ Alle effect
- ☐ Allen's rule
- ☐ Bergmann's rule
- ☐ Hamilton's rule

Question No.46

☐

Young lakes are often clear and with little plant life. Such lakes are called

- ☐ Lotic

- ☐ Oligotrophic
- ☐ lentic
- ☐ Eutrophic

Question No.47

☐

Which of the following statements is INCORRECT about a keystone species?

- ☐ Removing a keystone species can effect successive trophic levels causing a trophic cascade
- ☐ Removing a keystone species can reduce species richness of a community
- ☐ Species other than consumers can be a keystone species
- ☐ Keystone species has influence on a community proportionate to its abundance

Question No.48

☐

Nitrogen cycle in soil follows the pattern of

- ☐ Dead organisms → ammonia → nitrite → nitrate → nitrogen
- ☐ Dead organisms → nitrate → ammonia → nitrogen
- ☐ Nitrate → Nitrite → plants → animals
- ☐ Nitrite → nitrate → ammonia → plants

Question No.49

☐

The tiny, passively drifting planktons are called as

- ☐ Diatoms
- ☐ Spores
- ☐ Fingerlings
- ☐ Nekton

Question No.50

☐

The *Philosophie Zoologique* (1809) is the contribution of _____

- ☐ Jean-Baptiste Lamarck
- ☐ Maupertuis
- ☐ Charles Darwin
- ☐ Erasmus Darwin

Question No.51

☐

Theory of inheritance of acquired characters was given by _____
Oparin

- ☐
- ☐ Lamarck
- ☐ De Vries
- ☐ Darwin

Question No.52

☐

The modification of behavior based on prior experience is called

- ☐ A fixed action pattern
- ☐ Learning.
- ☐ Adjustment behaviour
- ☐ Navigation.

Question No.53

☐

Geographic hotspots are those areas rich in

- ☐ endemic species.
- ☐ habitats.
- ☐ species
- ☐ rare species.

Question No.54

☐

Macroevolution refers to the evolutionary changes that

- ☐ Create new species and groups of species
- ☐ Occur over long periods of time.
- ☐ Cause changes in allele frequencies.
- ☐ Occur in multicellular organisms.

Question No.55

☐

Hybrid breakdown occurs when species hybrids

- ☐ do not develop past the early embryonic stages.
- ☐ produce offspring that express the traits of only one of the original species.
- ☐ are infertile
- ☐ are fertile but produce offspring with reduced viability and fertility.

Question No.56

☐

When temperature of ocean rises

- ☐ It absorbs less N₂

- ☐ It absorbs more CO₂
- ☐ It absorbs more N₂
- ☐ It absorbs less CO₂

Question No.57

☐

Which of the following statements best describes an endangered species?

- ☐ a species that has disappeared in a particular community but is present in other natural environments
- ☐ a species that is in danger of becoming extinct throughout all or a significant portion of its range
- ☐ a species that is extinct
- ☐ a species that is likely to become extinct in a portion of its range

Question No.58

☐

Cryptosporidiosis is a _____disease

- ☐ Air borne
- ☐ Respiratory
- ☐ Vector borne
- ☐ Water borne

Question No.59

☐

Buffon's Law applied to plants as well as to animals, and also applied to any region of the world that was separated from others by _____

- ☐ Altitudes
- ☐ Latitudes
- ☐ Barriers of geography or climate
- ☐ Longitudes

Question No.60

☐

Multidimensional niche concept was introduced by _____

- ☐ Charles Darwin
- ☐ Edward O. Wilson
- ☐ G. E. Hutchinson
- ☐ Robert H. MacArthur

Question No.61

☐

_____play a major role in global climate regulation

- ☐ Molluscs
- ☐ Planktons
- ☐ Bacteria
- ☐ Fishes

Question No.62

☐

Which method of solid waste disposal is known as hygienic method?

- ☐ Landfilling
- ☐ Composting
- ☐ Pulverization
- ☐ Incineration

Question No.63

☐

Which state of Cr (Chromium) is most toxic?

- ☐ Cr³⁺
- ☐ Cr⁶⁺
- ☐ Cr⁵⁺
- ☐ Cr⁴⁺

Question No.64

☐

Name of the common Indian bird that is generally seen in groups (aggregation)

- ☐ Bulbul
- ☐ Warbler
- ☐ Babbler
- ☐ Sun bird

Question No.65

☐

The phenomenon of increased effect of chemicals on predators in a food chain is known as

- ☐ Biomagnification
- ☐ Bio-toxicity
- ☐ Biodegradation
- ☐ Bioaccumulation

Question No.66

☐

The evolution of one species into two or more species is
Microevolution.

- ☐
- ☐ Punctuated equilibrium
- ☐ Gradualism.
- ☐ Cladogenesis.

Question No.67

☐

Identify the correct sequence of atmospheric layers from the ground level

- ☐ Thermosphere → mesosphere → stratosphere → troposphere
- ☐ Mesosphere → stratosphere → Troposphere → thermosphere
- ☐ Troposphere → stratosphere → mesosphere → thermosphere
- ☐ Stroposphere → Troposphere → mesosphere → thermosphere

Question No.68

☐

Which of the species characteristic that not make them more prone to extinction are listed below,

- ☐ High trophic status
- ☐ High sexual dimorphism
- ☐ High degree of specialization
- ☐ Short life span

Question No.69

☐

N₂ fixation takes place in specialized cells called

- ☐ Heterocyst
- ☐ Microcyst
- ☐ Homocyst
- ☐ Mesocyst

Question No.70

☐

Exxon Valdez ship disaster led large scale oil spill in

- ☐ 1898
- ☐ 1989
- ☐ 2000
- ☐ 1889

Question No.71

☐

Eutrophication of water bodies caused by
Nutrient Enrichment

- ☐
- ☐ Toxic Chemical Accumulation
- ☐ Heavy Metal Accumulation
- ☐ Nutrient Depletion

Question No.72

☐

Which of the following belongs to second generation photovoltaic cell

- ☐ Quantum dots
- ☐ Amorphous silicon
- ☐ Porous silicon
- ☐ Crystalline silicon

Question No.73

☐

Itai-itai disease is caused by

- ☐ Arsenic
- ☐ Mercury
- ☐ Cadmium
- ☐ Lead

Question No.74

☐

Which of the following groups have only two wings?

- ☐ Butterfly, housefly, fruitfly
- ☐ Housefly, fruitfly, mosquito
- ☐ Dragonfly, butterfly, fruit fly
- ☐ Honey bee, beetle, ant

Question No.75

☐

Barnacles on a whale is an example of

- ☐ Symbiosis
- ☐ Commensalism
- ☐ Mutualism
- ☐ Amensalism

Question No.76

☐

The colorimetric methods are usually based on the following

- ☐ Hydration-reduction process

- ☐ Molecular density effect
- ☐ Charge separation
- ☐ Complex-formation reaction

Question No.77

☐

Lichen comes under

- ☐ Amensalism
- ☐ Commensalism
- ☐ Mutualism
- ☐ Parasitoids

Question No.78

☐

Contribution of various greenhouse gases to the global warming in decreasing order

- ☐ Methane, Carbon dioxide, CFCs
- ☐ Carbon dioxide, Methane, CFCs
- ☐ Methane, CFCs, Carbon dioxide
- ☐ Carbon dioxide, CFCs, Methane

Question No.79

☐

An episodic (every 3-5 years) warm current usually appears off the coasts of Ecuador and Peru is

- ☐ El Nino
- ☐ Eolian
- ☐ La Nino
- ☐ Rip currents

Question No.80

☐

The "Red Queen Hypothesis" is related to _____

- ☐ The evolutionary arms race between the host and the parasite.
- ☐ Mate selection process by a female in a lek.
- ☐ The elimination by deleterious mutations by sexual reproduction.
- ☐ The mating order in the harem of a polygamous male.

Question No.81

☐

Animals found in every part of the world are said to be _____, while those which restricted are called as _____

- ☐ Cosmopolitan, Stenotopic
- ☐ Discontinuous, Ubiquitous
- ☐ Stenotopic, Cosmopolitan
- ☐ Cosmopolitan, Endemic

Question No.82



The instrument that measures temperature, pressure, and humidity at various altitudes in the atmosphere is

- ☐ Barograph
- ☐ Altimeter
- ☐ Aneroid barometer
- ☐ Radiosonde

Question No.83



A species whose life history strategies allow for high intrinsic rates of increase (r-strategist) will also exhibit the following EXCEPT :

- ☐ Short period of exponential population growth (r).
- ☐ Reproductive strategy that involves random mating, semelparity and little or no parental investment.
- ☐ Survivorship that show density-dependent mortality, typically exhibiting Type 1 or 2 survivorship curves.
- ☐ High tolerance for both environmental instability and low quality resources.

Question No.84



Which of the following order is correct?

- ☐ Snail-Seagull-Whelk-Seaweed
- ☐ Seagull-Whelk-Snail-Seaweed
- ☐ Seaweed-Snail-Whelk-Seagull
- ☐ Seaweed-Whelk-Snail-Seagull

Question No.85



Which one of the following conditions is NOT likely to favour male monogamy?

- ☐ When the female guards her mate against seeking other females to mate.
- ☐ When the male wants to spend more time for foraging.
- ☐ When the male has to assist the mate in brood and nestling care.
- ☐ When the male has to guard his mate against mating by another male.

Question No.86☐

Which is the simple food chain

- ☐ Lichen-toad-slug-snake-eagle
- ☐ Lichen-Slug-toad-snake-eagle
- ☐ Slug-lichen-toad-snake-eagle
- ☐ Algae-snake-fox-tiger-eagle

Question No.87☐

Systematics and the Origin of Species was published in 1942 by _____

- ☐ Sewall Wright
- ☐ J.B.S.Haldane
- ☐ Ernst Mayr
- ☐ Richard Goldschmidt

Question No.88☐

Which country is the pioneer in use of Geothermal energy for space heating

- ☐ Germany
- ☐ Iceland
- ☐ Japan
- ☐ Australia

Question No.89☐

Theory of evolution by natural selection was proposed by _____

- ☐ Charles Darwin
- ☐ Jean-Baptiste Lamarck
- ☐ Weismann
- ☐ Dobzhansky

Question No.90☐

Ecology is the study of relationships between living and nonliving parts of the world said by

- ☐ Lamark
- ☐ David Cooper
- ☐ Charles Darwin
- ☐ Ernst Haeckel

Question No.91

Forest Conservation Act passed in India in ____

- ☐ 1980
- ☐ 1978
- ☐ 1981
- ☐ 1979

☐

Question No.92

The process of burning of solid waste at high temperature is called

- ☐ Heating
- ☐ Boiling
- ☐ Incineration
- ☐ Autoclaving

☐

Question No.93

Blue green algae is also called as

- ☐ Haptophytes
- ☐ Dinophysis
- ☐ Coccoliths
- ☐ Cyanophyceae

☐

Question No.94

'Nature would never limit growth', said by

- ☐ Wordsworth
- ☐ Malthus
- ☐ Barnett and Morse
- ☐ Roosevelt

☐

Question No.95

Respiratory roots are known as

- ☐ Hydathodes
- ☐ Pneumatophores
- ☐ Prop roots
- ☐ Tap roots

☐

Question No.96

☐

According to the competitive exclusion hypothesis,

- ☐ one species that competes with several different species for resources will be excluded from the community.
- ☐ two species that use the exact same resource show very little competition.
- ☐ two species with the same niche cannot coexist.
- ☐ all competition between species results in the extinction of at least one of the species.

Question No.97

☐

In Lack's study of British passerine birds, different species seem to segregate based on resource factors, such as location of prey items. This differentiation among the niches of these passerine birds is known as

- ☐ resource partitioning
- ☐ competitive exclusion.
- ☐ character displacement
- ☐ intraspecific competition

Question No.98

☐

Cobalt

- ☐ gives plants mechanical strength and may help minimize water loss and increase disease resistance
- ☐ reduces fruit bud formation
- ☐ is essential for the symbiotic relationship between legumes and their associated Rhizobia bacteria
- ☐ decreases in stem length and a resetting of terminal leaves

Question No.99

☐

A community with many individuals but few different species would exhibit

- ☐ high species diversity.
- ☐ high stability.
- ☐ low abundance and high species complexity
- ☐ low species richness and high abundance

Question No.100

☐

Nitrogen fixation is the process

- ☐ by which bacteria convert nitrate to gaseous nitrogen.
- ☐ by which plants and animals take up nitrates
- ☐ by which atmospheric nitrogen is converted to ammonia or ammonium ions

☐ that converts organic nitrogen to ammonia