

**ENTRANCE EXAMINATION FOR ADMISSION, MAY 2013.**

**M.Sc. (ECOLOGY AND ENVIRONMENTAL SCIENCES)**

**COURSE CODE : 371**

Register Number :

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*Signature of the Invigilator  
(with date)*

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**COURSE CODE : 371**

**Time : 2 Hours**

**Max : 400 Marks**

***Instructions to Candidates :***

1. Write your Register Number within the box provided on the top of this page and fill in the page 1 of the answer sheet using pen.
2. Do not write your name anywhere in this booklet or answer sheet. Violation of this entails disqualification.
3. Read each question carefully and shade the relevant answer (A) or (B) or (C) or (D) in the relevant box of the ANSWER SHEET using HB pencil.
4. Avoid blind guessing. A wrong answer will fetch you -1 mark and the correct answer will fetch 4 marks.
5. Do not write anything in the question paper. Use the white sheets attached at the end for rough works.
6. Do not open the question paper until the start signal is given.
7. Do not attempt to answer after stop signal is given. Any such attempt will disqualify your candidature.
8. On stop signal, keep the question paper and the answer sheet on your table and wait for the invigilator to collect them.
9. Use of Calculators, Tables, etc. are prohibited.

1. Which country has no native terrestrial mammals?  
(A) Greenland (B) New Zealand  
(C) Mongolia (D) China
2. Phenotypical ratio of F<sub>2</sub> hybrid plants in dihybrid cross of Mendel  
(A) 9:3:3:1 (B) 9:3:1:3  
(C) 3:3:3:1 (D) 3:1
3. Deforestation reduces \_\_\_\_\_ and increases \_\_\_\_\_.  
(A) CO<sub>2</sub> uptake in photosynthesis, and global warming  
(B) O<sub>2</sub> uptake in respiration and guttation  
(C) N uptake and photosynthesis  
(D) P uptake and transpiration
4. Hydrochory refers to  
(A) pollination by water (B) seed dispersal by water  
(C) absorption of water (D) elimination of water
5. Theory of inheritance of acquired characters was put forward by  
(A) Lamarck (B) Darwin  
(C) Mendel (D) Bateson
6. Plant growth substances include  
(A) Adenine, Guanine, Cytosine (B) Sporopollenin, Chlorophyll  
(C) Auxin, Gibberellin, Cytokinin (D) Nitrogen, Phosphorus, Potassium
7. Causes of coastal pollution include  
(A) oil-spills, effluents, solid dumps, etc.  
(B) oil-extraction, aquaculture, agriculture, etc.  
(C) over- exploitation of fishery resources  
(D) under-utility of fishery resources
8. What are the respiratory organs in insects  
(A) gills (B) trachea  
(C) lungs (D) skin

9. The standard deviation is:
- (A) A parameter of distribution (B) A measure of dispersion  
(C) A measure of central tendency (D) Skewness
10. Anemophily and Chiropterophily respectively refer to
- (A) pollination by animals and water  
(B) seed dispersal by bats and baboons  
(C) pollination by winds and bats  
(D) seed dispersal by wind and insects
11. Organisms reproducing once in life time are respectively referred in plants and animals as
- (A) monocarpic and semelparous (B) polycarpic and iteroparous  
(C) monophyletic and polyphyletic (D) viviparous and semelparous
12. Excess of water escaping from the plants in a liquid form is called
- (A) transpiration (B) osmosis  
(C) guttation (D) respiration
13. Final product of anaerobic respiration is
- (A) methanol (B) pyruvate  
(C) ethanol (D) starch
14. According to the laws of thermodynamics which of the following can be recycled
- (A) Both matter and energy (B) Matter, but not energy  
(C) Neither matter nor energy. (D) Energy, but not matter
15. Tick the set of invasive weeds
- (A) Pine, fir, linden (B) Teak, sal, red sanders  
(C) Lantana, Eichhornia, Chromolaena (D) Gnetum, Connarus, Derris
16. What is meant by demography?
- (A) The age distribution of populations  
(B) Growth curves of populations  
(C) Factors that affect birth and death of populations  
(D) The distribution and abundance of animals

17. Tick the order indicating increasing rainfall
- (A) cold deserts, hot deserts, grasslands
  - (B) rainforests, savannas and deciduous forests
  - (C) grasslands, rainforests and deserts
  - (D) deserts, savannas, deciduous and evergreen forests
18. Physical and chemical defense against herbivory are
- (A) Thorns and Total phenols
  - (B) Epidermis and Lipids
  - (C) Vasculature and Glycerol
  - (D) Nectaries and Proteins
19. Representatives of four major Arthropod classes include
- (A) canids, felids and bovids
  - (B) annelids, centipedes and polychaetes
  - (C) millepedes, crabs, lepidopterans and arachnids
  - (D) nematodes, earthworms and corals
20. Which one of the following is produced from mineral oil?
- (A) Castor oil
  - (B) Kerosine
  - (C) Jetropa oil
  - (D) Ranseed oil
21. Kyoto Convention is concerned with
- (A) oil pollution
  - (B) deforestation
  - (C) terrorism
  - (D) climate change
22. Sustainable use of resources would refer to
- (A) optimal resource harvest within regenerative potential of species
  - (B) maximal resource harvest in all seasons
  - (C) resource harvest at long time intervals o resource harvest at all
  - (D) no resource harvest at all
23. Important shelter belt species for coastal protection include
- (A) Spinifex, Casuarina
  - (B) Teak, Ixora
  - (C) Cinnomon, Verbena
  - (D) Salix, Fagus
24. Endemics are
- (A) species with wide distribution
  - (B) species with restricted distribution
  - (C) biomes of wide range
  - (D) biomes of narrow range

25. As a result of rising global temperatures following two major impacts are expected
- (A) relatively long summers and drier winters.
  - (B) rise in the sea level and regional climatic changes.
  - (C) increased water levels in water bodies like lakes and streams but more consistent flooding patterns.
  - (D) increased water levels in lakes and streams and comparatively larger floodplains.
26. Methods of fossilization include
- (A) Sublimation, impression, predation and dispersion
  - (B) Sedimentation, impression, compression and petrification
  - (C) Nitrification, cryopreservation, compression and pollination
  - (D) Denitrification, crystallization, fossilization and preservation
27. Leather industries utilize
- (A) seed lectins and potassium permanganate
  - (B) bark and fruit tannins or chromium sulphate
  - (C) stem latex and sodium citrate
  - (D) root oils and lead nitrate
28. The function of water in photosynthesis is
- (A) combine with CO<sub>2</sub>
  - (B) absorb light energy
  - (C) supply of electrons in the light-dependent reactions
  - (D) transport H<sup>+</sup> ions in the light-independent (dark) reactions
29. When body temperature of organisms corresponds to environment, they are called
- (A) Poikilothermic
  - (B) Endothermic
  - (C) Homeothermic
  - (D) endoexothermic
30. The type I error is to:
- (A) Reject the test when it is wrong
  - (B) When  $H_0 > H$
  - (C) Accept  $H_0$  when it is wrong
  - (D) Reject  $H_0$  when it is true
31. Which of the following is not a component of all the ecosystems
- (A) producers
  - (B) decomposers
  - (C) herbivores
  - (D) tertiary consumers

32. Echinoderms include  
 (A) finfish, bivalves and gastropods  
 (B) shelfish, gastropods and oysters  
 (C) star fish, sea urchins and sea cucumbers  
 (D) clams, prawns and shrimps
33. Plant and fungal cell wall are respectively made of  
 (A) chitin and creatinin (B) maltose and lactose  
 (C) cellulose and chitin (D) glucose and galactose
34. Tick the related mammal group  
 (A) manatees , elks and cheetah (B) musk deer, otters and lion  
 (C) capibara, elands and bats (D) mammoths, elephants and tapirs
35. Growing two or more crops simultaneously with no distinct row arrangement is known as  
 (A) mixed cropping (B) mixed intercropping  
 (C) relay cropping (D) alley cropping
36. Succession initiating from aquatic environment is  
 (A) hydrosere (B) xerosere  
 (C) mesosere (D) none of the above
37. The deepest zone of the ocean is called  
 (A) epipelagic (B) mesopelagic  
 (C) benthopelagic (D) bathypelagic
38. Which of the following terms is not related to thermal stratification  
 (A) thermocline  
 (B) epilimnion  
 (C) hypolimnion  
 (D) eutrophication
39. Individuals of the same species in a particular locality constitute  
 (A) population (B) community  
 (C) flora (D) fauna
40. Smog pollution does not contain  
 (A) Ozone (B) PAN (C) CO (D) NO<sub>2</sub>

41. Dengue is transmitted by  
(A) aedes (B) anopheles  
(C) culex (D) none of above
42. Which one of the following is a major constituent of Biogas?  
(A) Methane (B) Carbohydrates  
(C) Hydrogen (D) Nitrogen dioxide
43. The use of living organisms to degrade the environmental pollutants or to prevent pollution through waste water treatment is known as  
(A) phytoremediation (B) remediation  
(C) bioremediation (D) none of the above
44. Example of poikilotherms is  
(A) bird (B) snake  
(C) cow (D) man
45. A sudden uncontrolled descend of a mass of earth under the force of gravity is called  
(A) soil erosion (B) mining  
(C) landslide (D) earth quake
46. India has second largest reserve of \_\_\_\_\_ after Brazil  
(A) iron ore (B) bauxite  
(C) coal (D) copper
47. The dissipation of energy during its transmission from one trophic level to another is in agreement with  
(A) first law of thermodynamics  
(B) second law of thermodynamics  
(C) third law of thermodynamics  
(D) none of the above
48. The graphical representation of the interrelation of producer and consumer in an ecosystem is termed as  
(A) ecological niche (B) ecological pyramid  
(C) trophic levels (D) food web
49. Species with restricted geographical distribution over relatively small range is called  
(A) endangered species (B) extinct species  
(C) endemic species (D) threatened species

50. \_\_\_\_\_ give an empirical value to water quality and is a parameter for the organic matter present in water  
 (A) BOD                      (B) COD                      (C) DO                      (D) All the above
51. The process of conversion of electricity (energy) from waste is called  
 (A) pyrolysis                      (B) vermicomposting  
 (C) sanitary landfill                      (D) plastic recycling
52. Endangering plant species can be multiplied through  
 (A) transgenesis                      (B) rDNA technology  
 (C) cloning                      (D) tissue culture
53. The progressive series of changes that eventually produce a climax community on what was once a bare rocky island is an example of  
 (A) primary succession                      (B) speciation  
 (C) secondary succession                      (D) evolution
54. In a terrestrial ecosystem, the trophic level that would contain the largest biomass would be the  
 (A) producers                      (B) primary consumers  
 (C) secondary consumers                      (D) highest order consumers
55. The most serious environmental effect posed by hazardous wastes is  
 (A) air pollution                      (B) contamination of groundwater  
 (C) increased use of land for landfills                      (D) destruction of habitat
56. Extinct bird of Mauritius island  
 (A) sunbird                      (B) humming bird                      (C) dodder                      (D) dodo
57. Marine mammals include  
 (A) sea cucumber, corals and polychetes  
 (B) mammoths, mouse, deer and marsh crocodile  
 (C) manatees, dugongs and whales  
 (D) caulapa, halimeda and codium



58. Hermaphrodite refers to
- (A) male and female parts in the different flowers of same plant
  - (B) male and female parts in the same flower
  - (C) male and female flowers in separate plants
  - (D) plants with some female and some bisexual flowers
59. Population regulation mechanisms help in
- (A) density reduction and diversity maintenance
  - (B) density increase and diversity reduction
  - (C) diversity and density increase equally
  - (D) diversity and density decrease equally
60. Groundwater mining in coastal areas can result in
- (A) decrease in the toxicity of groundwater.
  - (B) decrease in the salinity of groundwater.
  - (C) increase in the water table.
  - (D) increase in the salinity of groundwater.
61. In which of the following ecosystem an ecological pyramid of energy flow is often an inverted one
- (A) ocean
  - (B) tundra
  - (C) rainforest
  - (D) desert
62. One of the best solutions to get rid of non-biodegradable wastes is \_\_\_\_\_
- (A) burning
  - (B) dumping
  - (C) burying
  - (D) recycling
63. Evolutionary changes in floral morphology influence evolutionary changes in pollinator morphology and vice versa. This type of evolution is known as
- (A) Evolutionary ecology
  - (B) Ecological evolution
  - (C) Co-evolution
  - (D) Macroevolution
64. In a lake polluted with pesticides, which one of the following will contain the maximum amount of pesticides?
- (A) Small fish
  - (B) Microscopic animals
  - (C) Phytoplankton
  - (D) Water birds

65. The fact that viruses are obligate intracellular parasites means that they require a \_\_\_\_\_ for reproduction.
- (A) culture dish (B) host cell  
(C) phenol red broth (D) secondary virus
66. The terms grana and ETP are related to
- (A) nucleus and microtubules respectively  
(B) chloroplast and mitochondria respectively  
(C) golgibodies and lysosome respectively  
(D) ribosomes and vacuoles respectively
67. The largest mangrove area in India is
- (A) Gulf of Mannar (B) Gulf of Combay (C) Sundarbans (D) Palk Strait
68. Anemophily and entomophily respectively refer to
- (A) pollination by animals and water  
(B) seed dispersal by bats and baboons  
(C) pollination by wind and insects  
(D) seed dispersal by wind and insects
69. Macrofungal fruit bodies are produced in
- (A) Phycomycetes and Deuteromycetes (B) Ascomycetes and Basidiomycetes  
(C) Zygomycetes and Trichomycetes (D) Deuteromycetes and Oomycetes
70. Weed control is achieved by
- (A) cytological, physiological and embryological means  
(B) mechanical, chemical and biological means  
(C) pathological, karyological and cytological means  
(D) chronological, cytological and astrological means
71. Endozoochory involves fruit processing by
- (A) ingestion, digestion and egestion  
(B) injestion, extraction and sedimentation  
(C) impression, compression and petrification  
(D) expression, suppression and consumption
72. Root nodules with N<sub>2</sub> fixers occur in
- (A) cereals and cinnamons (B) casuarinas and legumes  
(C) cassytha and mints (D) cassava and sedges

73. In post-fertilization stage ovary, ovule & zygote respectively develop into
- (A) seed, embryo and fruit
  - (B) seed, endosperm and perisperm
  - (C) fruit, seed and embryo
  - (D) embryo, endosperm and fruit
74. Floating and rooted macrophytes of pond ecosystems
- (A) Utricularia - Oenothera; Wolfia -Eichhornia
  - (B) Enhalus -Blyxa and Lemna - Hydrocharis
  - (C) Halophila - Halodule and Eichhornia- Pistia
  - (D) Lemna - Wolfia and Elodia - Vallisneria
75. Two hottest hot spots of Biodiversity in Indian subcontinent include
- (A) Western Ghats-Sri Lanka - Indo Burma
  - (B) Eastern Ghats - Aravallis
  - (C) Coromandel coast - Gangetic plains
  - (D) Sundarbans and Point Calimere
76. Orderly arrangement of 4 major algal group representatives include
- (A) Chara, Cyclotella, Codium, Ulva
  - (B) Anabaena, Cycas, Pinus, Gnetum
  - (C) Nostoc, Ulva, Padina, Polysiphonia
  - (D) Mangifera, Moringa, Ficus and Fucus
77. Monoculture means
- (A) plantation of single species
  - (B) mixed crop plantation
  - (C) plantation of Eucalyptus and Acacias
  - (D) bacterial culture
78. Gulf of Mannar Biosphere Reserve is known for
- (A) fresh water resources
  - (B) giant squirrels and Slender loris
  - (C) seagrasses, algae and marine fauna
  - (D) crab-eating macaques

79. One of the following plant groups is known for fibre source
- (A) sal, tendu, bamboo (B) jute, Hemp, Agave  
(C) oak, fir, balsam (D) avacado, mint, pine
80. Tree trunks of humid tropical forests are clothed with
- (A) Saprophytes (B) Parasites (C) Epiphytes (D) Hydrophytes
81. Largest leaf and flower respectively are known in
- (A) Vanda teesselata and Russelia  
(B) Vaccinium neigherrense and Rhamnus  
(C) Victoria amazonica and Rafflesia  
(D) Viscum orientale and Ruscus
82. Transgenics are known to be
- (A) disease-prone (B) disease-resistant  
(C) disease-inducive (D) disease-promotive
83. Exotic plants exhibit
- (A) slow growth and low-nutrient efficiency  
(B) fast growth and high-nutrient efficiency  
(C) slow elongation and growth  
(D) none of the above
84. Transitional zone between two adjacent habitats is referred as
- (A) ecotone (B) ecological niche (C) ecesis (D) euphotic zone
85. IUCN's collection of available data of threatened species is named
- (A) IUCN Bulletin (B) Red data book  
(C) IUCN Manual (D) Monograph

86. Water-borne diseases due to contaminated water include
- (A) Cholera, Typhoid , Diarrhea, Hepatitis
  - (B) Swine flu, Viral fever
  - (C) Blood cancer, Brain tumour
  - (D) Epilepsy, Arthritis
87. Summer leaflessness of trees is common in
- (A) coniferous forests
  - (B) tropical deciduous forests
  - (C) temperate deciduous forests
  - (D) tundras
88. An example of co-evolution of plants and animals is
- (A) figs and their pollinator wasps
  - (B) ixora and bats species
  - (C) conifers and Macaques
  - (D) teak and moths
89. Producers in pond ecosystem include
- (A) Halophytes and Oaks
  - (B) Mesophytes and macro fungi
  - (C) Pines and zooplanktons
  - (D) Rooted and floating hydrophytes and phytoplankton's
90. Treeless vegetation characteristic of
- (A) Savannas
  - (B) Taigas
  - (C) Tundras
  - (D) Mangroves
91. Riparian ecosystems refers to
- (A) hill top forests
  - (B) cloud forests
  - (C) reed forests
  - (D) forests fringing river systems
92. Cell immobilization technique is facilitated using
- (A) Potassium permanganate
  - (B) Sodium alginate
  - (C) Sodium chloride
  - (D) Calcium carbide

93. Genetic diversity can be detected by  
(A) iso-enzyme analysis (B) co-enzyme analysis  
(C) protein synthesis (D) photosynthetic ability
94. Sources of precipitation include  
(A) ponds and lakes (B) lakes and reservoirs  
(C) throughfall and stem flow (D) rainfall, dew, snow, fog
95. Tree rings are distinct in  
(A) tropical species due to indistinct seasonality  
(B) temperate species due to distinct seasonality  
(C) subtropics due to moisture  
(D) subtropics due to high illumination
96. Palms characteristically possess  
(A) thick fibrous roots, caudex and spadix,  
(B) thin tap roots, caudicle and spikes  
(C) drupes, firs and cymes  
(D) berries, spruce and thyrses
97. Tick the odd item  
(A) Photosynthesis (B) CO<sub>2</sub> in take (C) Chlorophyll (D) Respiration
98. Desertification refers to  
(A) forest degrading to dense taiga  
(B) forest improving to tundras  
(C) forest improving to deserts  
(D) forest degrading to sparse vegetation
99. Seed dormancy is common in  
(A) water-stressed ecosystems (B) nutrient-stressed ecosystems  
(C) mangrove ecosystem (D) all ecosystems
100. What does the parameter 'r' stand for in a logistic equation?  
(A) Reproductive output (B) Rate of increase  
(C) Ratio (D) Relative frequency
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