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ENTRANCE EXAMINATION FOR ADMISSION, MAY 2010.
M.Sc. (ECOLOGY AND ENVIRONMENTAL ENGINEERING)

COURSE CODE : 371

Register Number :



Signature of the Invigilator
(with date)

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. Conservation areas are prioritised based on
 - (A) High species diversity, endemism & geographic uniqueness
 - (B) Low diversity, wide distribution & geological substrate
 - (C) Climate, soil & cultigens
 - (D) Human population, climate & soil
2. Mercury pollution causes the disease called minamata, which affects

(A) Lymphatic	(B) Nervous system
(C) Respiratory system	(D) Ophthalmic complex
3. Wild relatives of species are useful in increasing
 - (A) Disease treatment of domesticated biota
 - (B) Disease resistance in domesticated biota
 - (C) Disease induction in domesticated biota
 - (D) Disease testing in domesticated biota
4. Physical & chemical defense against herbivory are

(A) Thorns & Total phenols	(B) Epidermis & Lipids
(C) Vasculature & Glycerol	(D) Nectaries & Proteins
5. Representatives of four major Arthropod classes include
 - (A) Canids, Felids & bovids
 - (B) Annelids, centipedes & polychaetes
 - (C) Millepedes, crabs, lepidopterans & arachnids
 - (D) Nematodes, earthworms & corals
6. Study of chromosomes is

(A) Dendrology	(B) Cytology
(C) Karyology	(D) Chronology
7. Biodiversity is dealt at three levels
 - (A) Ecosystem, climate and soils
 - (B) Ecosystem species and tissue systems
 - (C) Genes, species and ecosystem
 - (D) Genes, cells and tissue systems
8. CAM plants open stomata in

(A) Day time to transpire	(B) Night time to economise water
(C) Summer to respire	(D) Winter to avoid evaporation

9. Water and food conducting tissues include
 - (A) Parenchyma and Aerenchyma
 - (B) Chlorenchyma and Collenchyma
 - (C) Xylem and Phloem
 - (D) Cambium and stomium
10. Attractive macrofungal fruit bodies are basically made of
 - (A) Mycelium
 - (B) Cambium
 - (C) Cellulose
 - (D) Lignin
11. One of the following plant groups is known for spice source
 - (A) Ericaceae, Cactaceae, Linaceae
 - (B) Euohorbiaceae, Moraceae, Asteraceae
 - (C) Annonaceae, Leeaceae, Malvaceae
 - (D) Lauraceae, Myrtaceae, Zingiberaceae
12. Population around cement industry are largely affected by
 - (A) Cordiac diseases
 - (B) Pulmonary diseases
 - (C) Eye diseases
 - (D) Urinary diseases
13. Transgenics are known to be
 - (A) Disease-prone
 - (B) Disease-resistant
 - (C) Disease-inducive
 - (D) Disease-promotive
14. Wingless insect is
 - (A) Moths
 - (B) Beetles
 - (C) Silverfish
 - (D) Dipterans
15. Commercially cultivated Medicinal resources include
 - (A) Aloe, Gloriosa, Vinca
 - (B) Apium, Toona, Musa
 - (C) Alnus, Pandanus, Rhamnus
 - (D) Buxus, Taxus, Hoya
16. Weed control is achieved by
 - (A) Cytological, physiological & embryological means
 - (B) Mechanical, chemical & biological means
 - (C) Pathological, karyologocal & cytological means
 - (D) Chronological, cytological & astrological means
17. Pathogenic protozoans include
 - (A) Nostoc, Anabaena etc.
 - (B) Noctileuca, Paramecium etc.
 - (C) Entamoeba, Plasmodium etc.
 - (D) Chlorella, Chlamydomonas etc.

18. In post-fertilization stage ovary, ovule & zygote respectively develop into
 - (A) Seed, embryo & fruit
 - (B) Seed, endosperm & perisperm
 - (C) Fruit, seed & embryo
 - (D) Embryo, endosperm and fruit
19. The study of Ecology of a single species is known as
 - (A) Synecology
 - (B) Animal ecology
 - (C) Autoecology
 - (D) Plant ecology
20. Humus of the soil consists of:
 - (A) Rock or unmodified material
 - (B) Only clay particles
 - (C) Sand and soil particles
 - (D) Decomposed organic matter
21. The part of the atmosphere, which is in contact with the earth's surface is called:
 - (A) Lithosphere
 - (B) Mesosphere
 - (C) Troposphere
 - (D) Thermosphere
22. The term ecosystem was first proposed by
 - (A) AG Tansley
 - (B) Charles Elton
 - (C) R. Lindman
 - (D) GF Gause
23. If succession starts on a bare rock, it will be first invaded by
 - (A) Mosses
 - (B) Ferns
 - (C) Lichens
 - (D) Herbs
24. The 'climax pattern' hypothesis, in succession, was proposed by
 - (A) FE Clements
 - (B) RF Daubenmire
 - (C) RH Whittaker
 - (D) SW Watson
25. Which of the following is not a typical lotic habitat
 - (A) River
 - (B) Stream
 - (C) Spring
 - (D) Swamp
26. The persistent pollutants in the food-chain are increased through
 - (A) Bioaccumulation
 - (B) Bioconcentration
 - (C) Bioexcretion
 - (D) Biomagnification
27. Any organism that lives inside another plant is known as
 - (A) Endophyte
 - (B) Epiphyte
 - (C) Ectophyte
 - (D) Epiparasite
28. "World Environment Day" is
 - (A) 28th February
 - (B) 4th March
 - (C) 5th June
 - (D) 16th December

29. Which of the following methods of timber extraction cause minimum environmental damage?
- (A) Clear felling (B) Hand logging
(C) Selective logging (D) Reduced-impact logging
30. Perpetual source of energy is
- (A) Nuclear reactors (B) Hydropower
(C) Solar energy (D) None of the above
31. The single largest river development scheme in India is
- (A) The Narmada Valley Development Project
(B) The Damodar Valley Development Project
(C) The Ganga Valley Development Project
(D) The Tapti Valley Development Project
32. In case of a parasitic food chain, the shape of the pyramid of number is always
- (A) Upright (B) Linear (C) Inverted (D) Not certain
33. Biodiversity hotspots harbour
- (A) Evergreen forest of tropic region
(B) High diversity of biota and endemics
(C) Desert areas
(D) All the above
34. Tick the cause of itai-itai disease of Japan
- (A) Arsenic pollution (B) Cyanidine pollution
(C) Cadmium pollution (D) Lead pollution
35. The only two mycorrhizal mushrooms which are commercially cultivated are
- (A) Morels and truffles (B) Oyster and morels
(C) Shitake and oyster (D) Truffles and shitake
36. Characteristics of individuals of a "K-selected" species include
- (A) Short-lived, only breed once before they die
(B) Long-lived, produce relatively few young
(C) Short-lived, produce many young
(D) Ephemerals living for few weeks
37. Which hypothesis states that biodiversity and ecosystem function are not linked?
- (A) Diversity-stability hypothesis
(B) Redundancy hypothesis
(C) Idiosyncratic hypothesis
(D) Janzen-Connell hypothesis

38. Where two species interact and the effect on species 1 is positive and that of species 2 is neutral, the interaction is
 (A) Commensalism (B) Mutualism
 (C) Competition (D) Allelopathy
39. Which of the following plants have ant association
 (A) Oak trees (B) Acacia trees
 (C) Deadly nightshade (D) Fir trees
40. Photosynthesis is the transformation of _____ energy into _____ energy.
 (A) Unavailable, available (B) Light, chemical
 (C) Unusable, usable (D) Mechanical, chemical
41. 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
42. Which one of the following is an odd item?
 (A) Autotrophs (B) Chemotrophs
 (C) Heterotrophs (D) Chromatograph
43. Tick the odd item :
 (A) Producer (B) Consumer (C) Decomposer (D) Homogenizer
44. Phytosociology is a branch of biology that deals with
 (A) Social relations between plants and animals
 (B) Social relations between plants and micro-organisms
 (C) Social relations between plants species
 (D) Social relations between plants and soils
45. The first law of thermodynamics deals with
 (A) Non-generation and non-destruction of energy
 (B) Non-generation and destruction of energy
 (C) Generation and non-destruction of energy
 (D) Generation and destruction of energy
46. Tropical rain forests occur in
 (A) Polar region, Russia
 (B) Central Africa, Central & South America, South & South East Asia
 (C) North America, Russia
 (D) Deccan Plateau, North America

47. Monoculture means
 (A) Plantation of Eucalyptus & Acacias
 (B) Bacterial culture
 (C) Plantation of single species
 (D) Mixed crop plantation
48. Quinine is obtained from
 (A) Cinnamon (B) Coffea (C) Thea (D) Cinchona
49. C_3 and C_4 pathways are related to
 (A) Nutrient cycles (B) Transpiration
 (C) Photosynthesis (D) Respiration
50. 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
51. The largest mangrove area in India is
 (A) Gulf of Mannar (B) Gulf of Combay
 (C) Sundarbans (D) Palk Strait
52. Nitrogen fixers include
 (A) Blue green algae (B) Green algae
 (C) Brown algae (D) Red algae
53. Tree trunks of humid forests are clothed with
 (A) Saprophytes (B) Parasites (C) Epiphytes (D) Hydrophytes
54. Phototropism refers to
 (A) Animal movement towards s case (B) Animal movement towards light
 (C) Plant movement towards light (D) Plant movement towards shade
55. Semi arid crops include
 (A) Rice, Sugarcane, Banana (B) Mangoes, Apple, Oranges
 (C) Pines, Oaks, Firs (D) Millets, Peanut, Cotton
56. Hydroponics refer to
 (A) Growing plants in nutrient water (B) Growing plants in soil pots
 (C) Growing bacteria in agar medium (D) Growing fungi in Petri plates

57. Ornithophily & entomophily respectively refer to
 (A) Pollination by animals & water (B) Seed dispersal by bats & baboons
 (C) Pollination by birds & insects (D) Seed dispersal by wind & insects
58. Green seaweeds include
 (A) Nostoc, Anabaena, Oscillatoria & Lyngbya
 (B) Caulerpa, Ulva, Enteromorpha & Chaetomorpha
 (C) Padina, Dictyota, Ectocarpus & Fucus
 (D) Ceramium, Gigartina, Gracillaria & Polysiphonia
59. Macrofungal fruit bodies are produced in
 (A) Zygomycetes & Trichomycetes (B) Deuteromycetes & Oomycetes
 (C) Phycomycetes & Deuteromycetes (D) Ascomycetes & Basidiomycetes
60. Fossil plants include
 (A) *Lepidodendron*, *Williamsonia*, *Mesembryoxylon*
 (B) *Lepidagathis*, *Woodfordia*, *Memecylon*
 (C) *Lagerstroemia*, *Viscum*, *Myristica*
 (D) *Lentibularia*, *Vaccinium*, *Myrica*
61. Mangroves are known for
 (A) *Avicennia*, *Rhizophora*, crabs & prawns
 (B) Fresh water fishes & prawns, *Myristica* & Eucalypts
 (C) Hornbills, toucans & musk deer
 (D) Hartebeest, Wallabies & mouse deer
62. Tropical rainforests are characterized by
 (A) Short forests with single stratum & low diversity
 (B) Tall forests with multi- strata & high diversity
 (C) Beach forests with succulents & conifers
 (D) Woodlands with sparse trees & grasses
63. Chromosome numbers are halved in
 (A) Chlorosis (B) Necrosis (C) Mitosis (D) Meiosis
64. Largest leaf & flower respectively are known in
 (A) *Vanda teesselata* & *Russelia*
 (B) *Vaccinium neigherrense* & *Rhamnus*
 (C) *Victoria amazonica* & *Rafflesia*
 (D) *Viscum orientale* & *Ruscus*

65. Tree-less vegetation occurs in
 (A) Taigas (B) Tundras
 (C) Temperate deciduous forests (D) Temperate rainforests
66. Major resources for savanna herbivores include
 (A) Short sedges & shrubs
 (B) Savanna flowers & termites
 (C) Tall grasses & tree browse
 (D) Savanna parasites & saprophytes
67. Roughage in tropical grasses is due to
 (A) Cell wall materials & silica (B) Cell organelles & calcium
 (C) Cell cytoplasm & phosphorus (D) Cell protein & sulphur
68. Conifers include
 (A) Pines, firs, spruce & yews (B) Alders, beeches, ashes & poplars
 (C) Eucalyptus, myricas & myristicas (D) Teak sal, & terminalias
69. Tick the unrelated animal group
 (A) Hornbills & toucans
 (B) Sun birds & humming birds
 (C) Kangaroos & wallabies
 (D) Canids & proboscids
70. The grass family Poaceae offers
 (A) Grains, straw, culms, sugar, etc. (B) Pulses, mints, fungi, sago, etc.
 (C) Rosmarin, lavender, mints, etc. (D) Timbers, spices, fruits, etc.
71. Diuretic medicinal sources
 (A) Decrease urination (B) Increase urination
 (C) Decrease blood urea (D) Increase blood urea
72. Natural barriers in coastal regions include
 (A) Mangroves and sand dunes (B) Foxgloves & sandpiper
 (C) Sandbar & inundation (D) Sand crabs & dykes
73. Root nodules with N₂ fixers occur in
 (A) Cereals and cinnamons (B) Casuarinas & legumes
 (C) Cassytha & mints (D) Cassava & sedges
74. Kelp forests are composed of
 (A) Gigantic sea grasses in tropical coasts
 (B) Gigantic brown sea weeds in temperate West coast
 (C) Kapok forests in South Asia
 (D) *Kleinhofia* forests in North America

75. Leaf fossils are better preserved as
 (A) Compression (B) Sedimentation (C) Petrification (D) Impression
76. Some illegally removed forest resources include
 (A) Citrus, cardamom, beads, etc. (B) Sandal, horns, antlers, ivory etc.
 (C) Saffron, salts, ceramics, tobacco etc. (D) Neem, cumins, tobacco etc.
77. Leather industries utilize
 (A) Seed lectins & potassium permanganate
 (B) Stem latex and sodium citrate
 (C) Root oils and lead nitrate
 (D) Bark & fruit tannins or chromium sulphate
78. Squirrels are largely
 (A) Seed dispersal (B) Seed predators
 (C) Seed carnivores (D) Seed insectivores
79. Estuarine & coastal shelf areas are
 (A) Exposed feeding ground for freshwater fauna
 (B) Exposed feeding group for lepidopterans
 (C) Protected spawning ground for felids
 (D) Protected spawning ground for coastal fauna
80. 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
81. Reptiles are exemplified by
 (A) Canids, felids & bovids (B) Scuriids, proboscids & viverids
 (C) Snakes, lizards, crocodiles & turtles (D) Otters, voles & shrews
82. Organisms reproducing once in life time are respectively referred in plants and animals as
 (A) Monocarpic & semelparous (B) Polycarpic & iteroparous
 (C) Monophyletic & polyphyletic (D) Viviparous & semelparous
83. The Tsunami episode of December 2004 had its Epicenter in
 (A) Sri Lanka and affected America
 (B) India and affected Arctic region
 (C) Somalia and affected Australia
 (D) Sumatra and affected south, southeast Asian and Somalia coasts

84. Major determinants of global distribution of biomes include
 (A) Altitude, latitude, and longitude (B) Temperature and rainfall
 (C) Soil and rainfall (D) Temperature and altitude
85. Desert plant adaptations include
 (A) Thin cuticle, hypodermis, top stomata
 (B) No chlorenchyma, hypodermis or succulence
 (C) Thick cuticle, hypodermis, sunken stomata and succulence
 (D) Lacking hypodermis and stomata
86. Coastal zone regulation does not permit construction within
 (A) 1000m sea shore (B) 100m from sea shore
 (C) 500m from sea shore (D) 5 km from sea shore
87. Tick the set of invasive weeds
 (A) Pine, fir, linden (B) Teak, sal, red sanders
 (C) Lantana, Eichhornia, Chromolaena (D) Gnetum, Connarus, Derris
88. 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 or resource harvest at all
 (D) No resource harvest at all
89. Methods of fossilization include
 (A) Sublimation, impression, predation & dispersion
 (B) Sedimentation, impression, compression & petrification
 (C) Nitrification, cryopreservation, compression & pollination
 (D) Denitrification, crystallization, fossilization & preservation
90. Echinoderms include
 (A) Finfish, bivalves & gastropods
 (B) Shelfish, gastropods & oysters
 (C) Star fish, sea urchins & sea cucumbers
 (D) Clams, prawns & shrimps
91. Plant & fungal cell wall are respectively made of
 (A) Chitin & creatinin (B) Maltose & lactose
 (C) Cellulose & chitin (D) Glucose & galactose
92. Succession initiating from aquatic environment is
 (A) Hydrosere (B) Xerosere
 (C) Mesosere (D) None of the above

93. Extinct bird of Mauritius island
(A) Sunbird (B) Humming bird (C) Dodder (D) Dodo
94. Marine mammals include
(A) Seacucumber, corals & polychetes
(B) Mammoths, mouse, deer & marsh crocodile
(C) Manatees, dugongs & whales
(D) Caulerpa, Halimeda & Codium
95. 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
96. Population regulation mechanisms help in
(A) Density reduction & diversity maintenance
(B) Density increase & diversity reduction
(C) Diversity and density increase equally
(D) Diversity and density decrease equally
97. 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
98. Major wetlands include
(A) Bogs, marshes, mangroves & swamps
(B) Oceans, continental shelf, rivers & streams
(C) Lakes, ponds & puddles
(D) Rivers, streams & ponds
99. Tick the related mammal group
(A) Manatees, elks & cheetah (B) Musk deer, otters & lion
(C) Capibara, elands & bats (D) Mammoths, elephants & tapirs
100. 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