

ENTRANCE EXAMINATION FOR ADMISSION, MAY 2012.

Ph.D. (ZOOGEOGRAPHY)

COURSE CODE : 133

Register Number :

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*Signature of the Invigilator  
(with date)*

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COURSE CODE : 133

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 of the 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. How many Zoogeographical regions are there in this world?  
 (A) 7 (B) 9 (C) 6 (D) 12
2. Which Zoogeographic region is called as living museum?  
 (A) Palaeartic (B) Ethiopian (C) Oriental (D) Australian
3. Who first divided the Zoogeographic regions?  
 (A) Sclater (B) Wallace (C) Linnaeus (D) Darwin
4. Reproductive isolation in sympatric speciation develops with a  
 (A) Geographic barrier (B) Barrier to gene flow  
 (C) Change in chromosome (D) Barrier to mating
5. Sympatric speciation occurs most commonly in  
 (A) Mammals (B) Plants (C) Birds (D) Fishes
6. Population with overlapping geographic ranges are known as \_\_\_\_\_ populations in the areas of overlap  
 (A) Sympatric (B) Allopatric  
 (C) Parapatric (D) None of the above
7. Hardy-Weinberg law is associated with  
 (A) Plant disease (B) Eugenics  
 (C) Population genetics (D) Embryology
8. The total collection of genes, at any one time, in a unit evolution is called the  
 (A) Genotype (B) Demotype  
 (C) Multiple allelic group (D) Gene pool
9. Ribozyme is  
 (A) RNA with extra phosphate (B) RNA without phosphate  
 (C) RNA without sugar (D) RNA with enzyme activity
10. Enzymes with different molecular configurations, but with same function are called  
 (A) Isoenzymes (B) Apoenzymes  
 (C) Co-enzymes (D) Inducible enzymes
11. Which of the following causes water pollution?  
 (A) 2,4-D and pesticides (B) Smoke  
 (C) Automobile exhaust (D) Aeroplane

12. The biological amplification of pollutant means
- The accumulation of pollutants in top carnivores through food chain
  - The increase in the potentiality of the living organism
  - The increase in the population of top carnivores
  - None of the above
13. DDT causes egg shell thinning in birds because it inhibits:
- Magnesium ATPase
  - Calcium ATPase
  - Carbonic anhydrase
  - Calmodulin
14. Pollution caused by persistent pesticides is relatively more dangerous to which type of organisms?
- Herbivores
  - Producers
  - Top-carnivores
  - First level carnivores
15. Minamata disease is a pollution related disease which results from:
- Oil spill into sea
  - Release of human organic waste into drinking water
  - Accumulation of arsenic into atmosphere
  - Release of industrial waste of mercury into fishing water
16. Release of phosphates and nitrates in water bodies like lakes lead to:
- Increased growth of decomposers
  - Nutrient enrichment
  - Reduced algal growth
  - None of these
17. Eutrophication refers to:
- High production in an aquatic ecosystem
  - Low production in a terrestrial ecosystem
  - Stable production in a terrestrial ecosystem
  - Low production in an aquatic ecosystem
18. Complete eutrophication of a lake renders it:
- Nutrient rich and productive
  - Nutrient poor and unproductive
  - Nutrient rich and unproductive
  - Nutrient poor and productive
19. BOD of a river water is found very high. This means water;
- is clean
  - is highly polluted
  - contain algae
  - contain many dissolved minerals

20. Thermal pollution of water bodies due to:  
 (A) Discharge of waste from mining  
 (B) Discharge of agricultural run-off  
 (C) Discharge of chemicals from industries  
 (D) Discharge of heat (hot water) from power plants
21. Sounds above what level are considered hazardous noise pollution?  
 (A) Above 30 db (B) Above 80 db  
 (C) Above 120 db (D) Above 100 db
22. The most outstanding danger at present for survival of living beings on earth is:  
 (A) Glaciation (B) Deforestation  
 (C) Radiation hazards (D) Desertification
23. The term 'Nuclear winter' is associated with  
 (A) Nuclear war (B) Nuclear disarmament  
 (C) Nuclear weapon testing (D) Aftermath of a nuclear holocaust
24. Which of the following chemicals causes bone cancer and degeneration of tissues?  
 (A) Iodine-131 (B) Calcium-40 (C) Iodine-127 (D) Strontium-90
25. Biological control of agricultural pests, unlike the chemical control is  
 (A) Toxic (B) Very expensive  
 (C) Polluting (D) Self perpetuating
26. Oparin's Theory is based on  
 (A) Artificial synthesis (B) Spontaneous generation  
 (C) God's will (D) All of the above
27. Which one of the following is the outcome of evolutionary process?  
 (A) Over production  
 (B) Struggle for existence  
 (C) Adaptation of an organism to its environment  
 (D) None of the above
28. Which of the following is considered as evolutionary force?  
 (A) Inheritance of acquired characters (B) Speciation  
 (C) Mutation (D) Natural selection
29. Natural selection means  
 (A) Better adaptability (B) Elimination of less adaptation  
 (C) Better survival (D) All of the above

30. The most important requirement of evolution is  
 (A) Adaptation (B) Mutation  
 (C) Sexual reproduction (D) Development abnormality
31. Which of the following was the contribution of Hugo de Vries?  
 (A) Theory of mutation  
 (B) Theory of natural selection  
 (C) Law of dominance  
 (D) Theory of inheritance of acquired characters
32. Which law of evolution states that warm-blooded mammals of hot and humid areas have abundant melanin pigment?  
 (A) Dollo's Law (B) Gloger's Law (C) Cope's Law (D) Gause's Law
33. Phenomenon of 'industrial melanism' demonstrate  
 (A) Natural selection (B) Induced mutation  
 (C) Geographical isolation (D) Reproductive isolation
34. In a pond ecosystem, the shape of pyramid numbers is:  
 (A) Upright (B) Inverted (C) Linear (D) Irregular
35. The pyramid of energy is always:  
 (A) Inverted (B) Upright  
 (C) Both upright and inverted (D) Inverted of forest ecosystem
36. In ecological pyramid of numbers from base to apex, the number of carnivores:  
 (A) increases (B) decreases  
 (C) remains static (D) none of the above
37. The number of individuals of a species in a particular ecosystem at a given time remains constant due to:  
 (A) Available food (B) Predators (C) Parasites (D) Man
38. The rate at which the light energy is converted into chemical energy of organic molecules is the ecosystem's:  
 (A) Net primary productivity (B) Gross primary productivity  
 (C) Net secondary productivity (D) Gross secondary productivity
39. Lotic ecosystem refers to  
 (A) Static water ecosystem (B) Ecosystem of estuaries  
 (C) Deep marine water systems (D) Ecosystem of flowing water

40. Which ecosystem doesn't show variation depending upon geographic location and rainfall?  
 (A) Marine ecosystem (B) Fresh water ecosystem  
 (C) Desert ecosystem (D) Tropical ecosystem
41. The term ecosystem was coined by  
 (A) Odum (B) Reiter (C) Ernst Haeckel (D) Tansley
42. Ecosystem consists of  
 (A) A population  
 (B) A population and its non-living environment  
 (C) A biotic community  
 (D) Temperature
43. Which one is not a factor of the abiotic environment?  
 (A) Sunlight (B) Decomposers (C) Water (D) Temperature
44. Keystone species in an ecosystem are those  
 (A) Present in maximum number  
 (B) Contributing to ecosystem properties  
 (C) That are most frequent  
 (D) Attaining large biomass
45. A functional aspect of an ecosystem is  
 (A) Producers, consumers and abiotic environment  
 (B) Regulation of population  
 (C) Light, temperature, oxygen and carbondi-oxide  
 (D) Both (A) and (C)
46. Biotic components of an ecosystem consists of  
 (A) Producers (B) Consumers  
 (C) Decomposers (D) All of the above
47. Driving force of ecosystem is  
 (A) Solar energy (B) Biomass  
 (C) Producers (D) Carbohydrate in plants
48. The number of primary producers within a specified area would be maximum in  
 (A) Desert (B) Forest ecosystem  
 (C) Grassland ecosystem (D) Pond ecosystem

49. Maximum number in pond ecosystem is of  
(A) Producers (B) Consumers  
(C) Top consumers (D) Decomposers
50. If we completely remove the decomposers from an ecosystem functioning will be adversely affected because  
(A) Energy flow will be blocked  
(B) Rate of decomposition of other components will be very high  
(C) Herbivore will not receive solar energy  
(D) Mineral movement will be blocked
51. Food levels in an ecosystem are called  
(A) Trophic levels (B) Consumer levels  
(C) Producer levels (D) Herbivore levels
52. The ultimate trophic level of any food chain is made of  
(A) Animals (B) Tertiary consumers  
(C) Top carnivore (D) Decomposers
53. In a food chain, animal constitute the  
(A) First trophic level (B) Second trophic level  
(C) Last trophic level (D) None of the above
54. Second order consumers are  
(A) All heterotrophs  
(B) Animals feeding on plants  
(C) Animals preying over herbivorous animals  
(D) Larger animals
55. Interlocking of food chains results in:  
(A) Ecological pyramids (B) Food link  
(C) Food lock (D) Food web
56. If the rate of addition of new species increases with respect to the individual loss of the same population, then the graph obtained has:  
(A) Declined growth (B) Zero population growth  
(C) Exponential growth (D) None of these
57. When population reaches carrying capacity:  
(A) Mortality rate = Birth rate (B) Mortality rate > Birth rate  
(C) Mortality rate < Birth rate (D) None of the above

58. A group of individuals of the same age within a population is called:  
 (A) Clone (B) Cohort (C) Cline (D) Community
59. Population which show gradual trends within zones of ecological variations are called  
 (A) Ecoclines (B) Clines  
 (C) Clones (D) None of the above
60. A population is a group of  
 (A) Species in a community (B) Communities in an ecosystem  
 (C) Individuals in a species (D) Individuals in a family
61. Population density is the  
 (A) Number of species per community  
 (B) Number of individuals per community  
 (C) Number of individuals per species  
 (D) Number of individuals per species per unit area or volume
62. Population dispersion is the  
 (A) Spatial distribution of individuals  
 (B) Movement away from a natal site  
 (C) Movement from one fixed point to another and back again  
 (D) Mixing of two population
63. Exponential growth occur when there is  
 (A) Asexual reproduction only (B) Sexual reproduction only  
 (C) A fixed carrying capacity (D) No inhibition from crowding
64. Logistic growth occurs when there is  
 (A) Asexual reproduction only (B) No inhibition from crowding  
 (C) A fixed carrying capacity (D) None of the above
65. The carrying capacity of a population is determined by its  
 (A) Population growth rate (B) Birth rate  
 (C) Limiting resource (D) Death rate
66. Organisms with very high intrinsic growth rates have  
 (A) Short generation time (B) Long generation time  
 (C) No carrying capacity (D) No courtship behaviours



67. Intraspecific competition is competition among  
 (A) Species  
 (B) Individuals of a population  
 (C) Populations and their regulatory factors  
 (D) Individuals of a community
68. Intraspecific competition is strongest when the  
 (A) Species overlap in their distribution  
 (B) Populations overlap in their ranges  
 (C) Population is at its carrying capacity  
 (D) Reproductive rate is at its maximum
69. In some animal population, crowding cause some individuals to emigrate. Such emigrants usually  
 (A) Establish new population elsewhere (B) Successfully join other populations  
 (C) Return to their place of birth (D) Die
70. The age-structure of a populations is its  
 (A) Relative number of individuals at each age  
 (B) Number of newborns each year  
 (C) Relative number of death at each age  
 (D) Number of young reaching puberty each year
71. Analogy is found between  
 (A) Hands of man and forelimbs of horse  
 (B) Hand of man and flippers of whale  
 (C) Wings of bat and butterfly  
 (D) Wings of bird and bat
72. Which set includes vestigial structures of man?  
 (A) Wisdom tooth, vermiform appendages, coccyx, nail  
 (B) Coccyx, wisdom tooth, vermiform appendix, auricular muscles  
 (C) Vermiform appendix, coccyx, wisdom tooth, pancreas  
 (D) Auricular muscles, nail, wisdom tooth, coccyx
73. Atavism in man means  
 (A) Appearance of ancestral characters  
 (B) Appearance of new characters  
 (C) Loss of some pre-existing characters  
 (D) Evolution of existing characters

74. Which of the following is an example of atavism?  
 (A) Hairs on the head of man (B) Feathers on birds  
 (C) Tail in some babies (D) Scales on fishes
75. The presence of gill slits in the embryos of all vertebrates supports the theory of  
 (A) Metamorphosis (B) Organic evolution  
 (C) Biogenesis (D) Recapitulation
76. Biogenetic law was postulated by  
 (A) T.H. Morgan (B) Darwin (C) Haeckel (D) Wallace
77. Which of the following characters provides a strong evidence in support of organic evolution?  
 (A) Wings in insects, birds and bats  
 (B) Jointed legs in arthropods and in mammals  
 (C) Gill clefts in vertebrate embryo  
 (D) Excretory organs of earthworm and frog
78. Who propounded the theory of aquatic or marine origin of life?  
 (A) Thales (B) Erasmus Darwin  
 (C) Spallanzani (D) Aristotle
79. The presence of vestigial organs in man supports  
 (A) Synthetic theory  
 (B) Natural selection theory  
 (C) Germplasm theory  
 (D) The theory of evolution, but not Lamarck's theory of inheritance of acquired characters
80. The tradition of boring ears and nostrils in Indian women  
 (A) Supports Lamarckism  
 (B) Disproves Lamarckism  
 (C) Neither supports nor disproves Lamarckism  
 (D) None of the above
81. Which one does not favour Lamarckian concept of inheritance of acquired characters?  
 (A) Presence of webbed toes in aquatic birds  
 (B) Absence of limbs in snakes  
 (C) Melanisation of peppered moth industrial areas  
 (D) Lack of pigment in cave dwellers

82. One of the several objections to natural selection theory of Darwin is  
 (A) Struggle for existence  
 (B) Continuity of germplasm  
 (C) Inheritance of acquired characters  
 (D) Many animals possess characteristics without utility and those that are positively harmful
83. Who provided experimental evidences for 'selection' in bacteria using replica plating technique?  
 (A) Zinderberg (B) Louis Pasteur (C) Lister (D) Lederberg
84. Modern synthetic theory of evolution was designated by  
 (A) Haldane (B) Huxley (C) Stebbins (D) Darwin
85. 'Performance theory' of evolution states that  
 (A) All living forms have originated from ocean water  
 (B) All living beings have arisen from a primordial fluid  
 (C) Living things were animated by vital force  
 (D) Ova contains miniatures of the adult in preformed state
86. Organic evolution was defined as  
 (A) Formation of complex animals  
 (B) Evolution of land and its organisms  
 (C) Formation of existing animals and plants from simpler ones by a gradual change over a period of time  
 (D) All of the above
87. The strongest support of organic evolution comes from the study of  
 (A) Fossils (B) Comparative anatomy  
 (C) Embryology (D) Taxonomy
88. The early belief of spontaneous origin of life was disproved by  
 (A) Charles Darwin (B) Louis Pasteur  
 (C) Koch (D) Lederberg
89. The theory of spontaneous generation was given by  
 (A) Redi (B) Pasteur (C) Spallanzani (D) Van Helmont
90. Who was one of the greatest advocates of the theory of special creation?  
 (A) Huxley (B) Charles Darwin  
 (C) Aristotle (D) Father Saurez

91. About how long ago was the earth formed?  
 (A) 20 million years ago (B) 10 million years ago  
 (C) 5 million years ago (D) 3 million years ago
92. "Evolution: A modern synthesis" is the title of a book written by:  
 (A) Thomas Huxley (B) Aldous Huxley  
 (C) J.B.S. Haldane (D) Julian Huxley
93. Lamarck's argument in support of Theory of Evolution was centred around:  
 (A) Use and disuse of organs (B) Survival of the fittest  
 (C) Continuous variations (D) All of the above
94. Charles Darwin knew of mutations. He called them  
 (A) Continuous variations (B) Discontinuous variation  
 (C) Sports (D) None of the above
95. The author of the classical work "The origin of life on earth" is  
 (A) Darwin (B) Fox (C) Oparin (D) Urey
96. According to Lamarck the presence of vestigial organs in animals was due to  
 (A) Change of habitat (B) Environmental reaction  
 (C) Continuous disuse (D) Inheritance of acquired character
97. The law which states that "Ontogeny repeats phylogeny" is known as  
 (A) Law of heredity (B) Biogenetic law  
 (C) Theory of natural selection (D) Mutation theory
98. Formation of large molecules from small nucleoproteins is termed as  
 (A) Coacervation (B) Polymerization  
 (C) Aggregation (D) All of these
99. Darwin's theory is also known as  
 (A) Germinal - selection theory (B) Pangenesis theory  
 (C) Special creation theory (D) Spontaneous generation theory
100. The first geological time scale was developed by  
 (A) Aristotle (B) Charles Lapworth  
 (C) Adam Sedgwick (D) Giovanni Avduina