

ENTRANCE EXAMINATION FOR ADMISSION, MAY 2013.

Ph.D. (MARINE BIOLOGY)

COURSE CODE :119

Register Number :

*Signature of the Invigilator
(with date)*

COURSE CODE : 119

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. The largest marine mammal is
 (A) Gray whale (B) Sperm whale (C) Beluga whale (D) Blue whale

2. Both Balanus and Chthalamus are seen
 (A) Deep sea (B) Sandy shore (C) Rocky shore (D) Muddy shore

3. Bleaching is associated with
 (A) Corals (B) Reproduction (C) Trophic level (D) Seaweeds

4. Physalia is commonly called as
 (A) Jack -by the wind (B) Will o the wisp
 (C) Portuguese man of war (D) Blue Indian

5. Elvers migrate from
 (A) Indian ocean to Atlantic Ocean (B) Arabian sea to Bay of Bengal
 (C) Sea water to marine (D) All the above

6. India has conducted _____ Antarctic expedition
 (A) 19 (B) 22 (C) 23 (D) 25

7. An oxygen minimum layer develops
 (A) In a fjord at low tide
 (B) At a depth in the water column in the open ocean
 (C) Within the sediment, just above a burrowed zone
 (D) All of the above

8. Poikilotherms
 (A) Are conformers with regard to body temperature
 (B) Are regulators with regard to body temperature
 (C) Always lose heat to the surrounding sea water
 (D) None of the above

9. Most bioluminescent organisms use
 (A) Luciferin (B) Hemerythrin (C) Magnesium (D) Sodium ion

10. Baleen whales
- (A) Attack large prey such as seals
 - (B) Generally feed and breed in the same small areas
 - (C) May migrate thousands of kilometers between feeding and breeding areas
 - (D) Never feed on fish
11. *Penaeus merguensis* called as
- (A) Yellow prawn
 - (B) Tiger prawn
 - (C) Banana prawn
 - (D) Indian prawn
12. *Balanus* sp., is considered in the aquaculture
- (A) Pest
 - (B) Feed
 - (C) Fertilizer
 - (D) Toxicants
13. Megalopa is a term used in the aquaculture activities of
- (A) Seaweed
 - (B) *Metapenaeus dobsoni*
 - (C) Crab
 - (D) *Lates calcarifer*
14. *Artemia salina* is called as
- (A) Brine shrimp
 - (B) Clam
 - (C) Fin fish
 - (D) Sea weed
15. Implantation of nucleus in pearl oyster near to
- (A) Heart
 - (B) Kidney
 - (C) Intestinal loop
 - (D) Brain
16. Law of the sea enforced in the year
- (A) 1994
 - (B) 1973
 - (C) 1960
 - (D) 1958
17. Antarctic water exhibit huge quantity of
- (A) Penguin
 - (B) Blue Whale
 - (C) Dolphin
 - (D) Krill
18. In a biosphere, the area not subjected to human activity is
- (A) Transition Zone
 - (B) Intermediate Zone
 - (C) Buffer Zone
 - (D) Core Area
19. Antarctic Treaty signed in the year
- (A) 1961
 - (B) 1959
 - (C) 1982
 - (D) 1994

20. Integrate coastal and marine area management is a programme of
 (A) National Institute of Oceanography
 (B) National Institute of Ocean Technology
 (C) Central Marine Fishery Research Institute
 (D) Department of Ocean Development
21. Imposex is caused by
 (A) Genetic disorders (B) Pollution by TBT
 (C) Oil pollution (D) All the above
22. In a sucker fish the sucker is a modification of
 (A) Dorsal fin (B) Gill slit (C) Mouth (D) Ventral fin
23. Shucking in aquaculture means
 (A) Feeding the organisms (B) Cutting the organisms
 (C) Removal of meat (D) All the above
24. Pneumatophores are present in
 (A) Hydrophytes (B) Epiphytes (C) Xerophytes (D) Mangroves
25. Which one of the following species listed as endanger one
 (A) *Tursiops truncatus*
 (B) *Dunong dugon*
 (C) *Hippoglossus hippoglossus*
 (D) *Gauds morhua*
26. Otoliths study is used to estimate
 (A) Feeding rate (B) Fecundity rate (C) Spawning rate (D) Growth rate
27. Sequence of nucleotides on tRNA is called as
 (A) Codon (B) Genetic Code
 (C) Anticodon (D) Overlapping Code
28. Which one is the fixed net?
 (A) Chinese dip nets (B) Bag net (C) Shore seines (D) Cast nets
29. Smooth undulations of the ocean surface is called
 (A) Wave trains (B) Dispersion (C) Sea Cap (D) Swell

30. The rate at which calcareous sediment are supplied to the sea bed equals the rate at which those sediments dissolve
 (A) AAD (B) CCD (C) DDD (D) BBD
31. Longest Mid Ocean Ridge in
 (A) Atlantic ocean (B) Pacific Ocean
 (C) Indian Ocean (D) Antarctic Ocean
32. The breakdown of limestone in the coral reef by marine organism is called as
 (A) Sea Erosion (B) Bio accumulation
 (C) Bio degradation (D) Bio erosion
33. The reefs form as a border along shore are called as
 (A) Barrier reef (B) Atolls (C) Fringing reef (D) Keys
34. 0.2 to 2 micrometer planktons are called as
 (A) Phytoplankton (B) Picoplankton
 (C) Zooplankton (D) Nanaoplankton
35. Long wavelength, shallow water progressive waves caused by the rapid displacement of ocean water are called
 (A) Tsunami (B) Storm surges
 (C) Seiches (D) Internal Wave
36. An animal that feeds by consuming food particles on or in the sediments
 (A) Deposit feeders (B) Suspension feeders
 (C) Scavengers (D) Croopers
37. International Whaling Commission established in
 (A) 1876 (B) 1946 (C) 1956 (D) 1986
38. In between sand grains comprise a group of organism are called as
 (A) Rocky fauna (B) Sandy fauna
 (C) Interstitial fauna (D) Coastal fauna
39. The bacteria whose cells occur within filamentous structure are called as
 (A) Gliding bacteria (B) Phototropic bacteria
 (C) Green bacteria (D) Sheathed bacteria

40. Plasmalogens belonging to
 (A) Lipid (B) Proteins
 (C) Aminoacid (D) Carbohydrates
41. One of the following is from the Lipid group
 (A) Proline (B) Steroids (C) Haemoglobin (D) Malate
42. In a nucleotides a heterocyclic ring is a derivative of
 (A) Cysteine (B) Leucine (C) Pyrimidine (D) Proline
43. Charfaff's rule consists of the following rule(s)
 (A) $A = T$ (B) $G = C$ (C) $A + G = T + C$ (D) All the above
44. The Watson - Crick Model represents the most stable form of DNA is
 (A) A-DNA (B) B-DNA (C) C-DNA (D) Z-DNA
45. The genetic code of start codon in prokaryotic cell is
 (A) AUG, GUG (B) AAA, AAG
 (C) AAU, AAC (D) AUU, AUC, AUA
46. The Michaelis constant represent
 (A) T_m (B) P_m (C) K_m (D) M_m
47. Source material for biosynthesis of Acetyl-CoA through carbohydrate is
 (A) Succinate (B) Pyruvate (C) Malate (D) Citrate
48. Generation of glucose from other than carbohydrate source is called
 (A) Glycogenesis (B) Glycogenolysis (C) Gluconeogenesis (D) Glycolysis
49. Malate-asparate shuttle system used for
 (A) Formation of Glucose (B) Formation of Lipid
 (C) Formation of Proteins (D) Formation of Amino acid
50. Microorganisms, although unable to grow, have low death rates in the presence of oxygen is called as
 (A) Oxylabile anaerobes (B) Oxydurin anaerobes
 (C) Anaerobes (D) Aerobic

51. Removing water from preserving microbial cultures by freeze drying is known as
(A) Paterurisation (B) Canning
(C) Lyophilization (D) Dry heat sterilization
52. The common cationic detergent used as a bactericidal is
(A) Ethylene oxide (B) Aldehydes (C) Phenols (D) Quats
53. The bacteria to achieve a doubling of the population by certain amount of time is called as
(A) Generation Time (B) Incubation Time
(C) Budding Time (D) Growing Time
54. Science dealing in the study of Fishes is
(A) Saurology (B) Arthology
(C) Ichthyology (D) Marine biology
55. Which of the following group of molluscs are exclusive marine?
(A) Gastropods (B) Pelecypoda (C) Schaplopoda (D) Cephalopoda
56. Which of the following is the oldest living fossil?
(A) Architeuthis (B) Nautilus (C) Limulus (D) Neopilina
57. F1 particles are also known as
(A) Ribosomes (B) Oxysomes (C) Centrosome (D) Lysosome
58. The first compound of TCA cycle is
(A) Citric acid (B) Oxalosuccinic acid
(C) Cis-Asconitic acid (D) Oxaloacetic acid
59. DSL refers to
(A) Deep Sea Level (B) Deep Sound layer
(C) Deep Scattering layer (D) All the above
60. TMAO is an indicator of
(A) The freshness of fish (B) Chemical synthesis
(C) Enzyme activity (D) None of the above

61. Alternate genes at a locus that have different phenotypic effects are known as
(A) Dominants (B) Phenotypes
(C) Alleles (D) Chromosomes
62. In a food web, plants are also known as
(A) Saprophytes (B) Tertiary producers
(C) Primary producers (D) Ecosystems
63. When sea water freezes
(A) Some fish may produce glycoprotein's to lower the freezing point of sea water
(B) The unfrozen water will have a higher salt content
(C) Enzymes may not function
(D) All of the above
64. A planktotrophic larva
(A) Usually develops from rather large eggs
(B) Is always capable of dispersal across oceans
(C) Is not capable of settlement throughout all of its planktonic life
(D) Settles only on hard substrata
65. Gas exchange into the fish swim bladder is regulated by
(A) The gill (B) The retina
(C) The hemoglobin in the blood (D) The rete mirabile
66. Which of the following is not an example of symbiosis?
(A) lichens (B) mycorrhizae
(C) tapeworms and humans (D) clownfish and sea anemones
67. Trace elements in seawater include
(A) Chlorine and potassium (B) Sodium and aluminum
(C) Iron and strontium (D) Sodium and chlorine
68. The Coriolis Effect causes a deflection to the right in
(A) The Southern Hemisphere (B) The Equator
(C) The Northern Hemisphere (D) The Pole

69. Pycnoclines are
 (A) Vertical gradients in temperature only
 (B) Vertical gradients in sea water density
 (C) Vertical gradients in oxygen concentration
 (D) Small scale changes in current structure
70. The flow of solvent through a semi-permeable membrane towards the solution side is the phenomenon of
 (A) absorption (B) diffusion
 (C) osmosis (D) transfusion
71. Ethers are isomeric with
 (A) carboxylic acids (B) aldehydes (C) alcohols (D) ketones
72. Nucleon is a common name for
 (A) Proton and electron (B) Electron and neutron
 (C) Neutron only (D) Neutron and proton
73. Fishes are characterized by
 (A) two chamber heart (B) venous heart
 (C) branchial heart (D) all the above
74. The velocity of light in vacuum can be changed by changing
 (A) frequency (B) amplitude (C) wavelength (D) none of these
75. True or False: During the process of breaking down glucose and other carbohydrates to release energy, animals make water as a waste product.
 (A) True (B) False
76. The apparent daily path of the Sun changes with the seasons because
 (A) Earth's axis is tilted
 (B) Earth's distance from the Sun changes
 (C) The Sun revolves
 (D) The Sun rotates
77. Which of the following is a lyophobic colloid?
 (A) Gelatin (B) Sulphur (C) Starch (D) Gum Arabic

78. The helical structure of protein is stabilized by
(A) peptide bonds (B) dipeptide bonds
(C) hydrogen bonds (D) van der Waals forces
79. Euplankton
(A) short lived planktonic life (B) only planktonic life
(C) both (D) none of the above
80. Salinity can be determined by measuring:
(A) Specific gravity (B) pH (C) turbidity (D) Eh
81. The light reactions of photosynthesis supply the Calvin cycle with.
(A) light energy. (B) CO₂ and ATP.
(C) H₂O AND NADPH. (D) ATP and NADPH.
82. The chloroplast functions in
(A) lipid storage (B) protein synthesis
(C) photosynthesis (D) DNA replication
83. Which of the following best describes the very early atmosphere of the Earth, before the first cells appeared and while there were still reducing conditions?
(A) High amounts of hydrogen and methane gases.
(B) High amounts of oxygen gas.
(C) High amounts of carbon dioxide gas.
(D) High amounts of oxygen and low amounts of carbon dioxide gasses.
84. Marsh
(A) area of soft, flat wet land periodically flooded by salt water
(B) area of soft, flat wet land not flooded by water
(C) area adjacent to a large water body
(D) all the above
85. Standard visibility measurements of the sea water by the marine scientists made with the
(A) secchi disc (B) fathometer
(C) lux meter (D) none of the above.

86. Energy is transferred from the Sun to Earth mainly by.
(A) molecular collisions (B) density currents
(C) electromagnetic waves (D) red shifts
87. Which of these materials is not a major component of the plasma membrane?
(A) phospholipids (B) glycoproteins (C) proteins (D) DNA
88. First phase of embryonic development is
(A) cleavage (B) gastrulation
(C) fertilization (D) gametogenesis
89. Taking samples of ocean water can be accomplished by all of the following except
(A) Van Dorn Bottle (B) Nansen Bottle
(C) Ekman Grab (D) Surface Sample Bottle
90. Locomotion in starfish occurs by
(A) tentacles (B) flagella (C) tube feet (D) pseudopodia
91. Which is most accurate concerning plankton?
(A) A community of autotrophic microorganisms that live in the ocean.
(B) These are the stacks of disks inside chloroplasts.
(C) Found the plants in the sea.
(D) A community of autotrophic microorganisms that live in the ocean.
92. Which is most accurate concerning fermentation?
(A) Produces lactic acid in our muscles.
(B) Produces ethanol in our muscles.
(C) Part of the synthesis of carbohydrates by photosynthesis.
(D) Part of the breakdown process of cellulose in the human intestine.
93. Where would you find the "Calvin cycle"?
(A) The Calvin cycle is the cycle of nitrogen fixation and is found in the soil and roots of plants.
(B) The Calvin cycle only occurs in mitochondria.
(C) The Calvin cycle only occurs in autotrophs.
(D) None.

94. Which of the following is most accurate concerning "exons"?
- (A) Regions of tRNA which contain information used to make proteins.
 - (B) Regions of DNA which are NOT used to make protein.
 - (C) Exons are regions found on the post transcriptional mRNA that codes for polypeptides.
 - (D) None.
95. A difference between chemiosmosis in photosynthesis and respiration is that in photophosphorylation.
- (A) NADPH rather than NADH passes electrons to the electron transport chain.
 - (B) ATP synthase releases ATP into the stroma rather than into the cytosol.
 - (C) light provides the energy to push electrons to the top of the electron chain, rather than energy from the oxidation of foods.
 - (D) both 1 and three are correct.
96. Which of the following compound is most soluble in water
- (A) $MgSO_4$
 - (B) $CaSO_4$
 - (C) $Sr SO_4$
 - (D) $BaSO_4$
97. What is the most common kind of crustacean zooplankton in the oceans?
- (A) Decapod
 - (B) Cyprid
 - (C) Copepods
 - (D) Zoea
98. Which part of the atom is radioactivity associated?
- (A) Protons only
 - (B) Neutrons only
 - (C) Nucleus
 - (D) Extra nuclear part
99. Formaldehyde and KOH are heated, then we get
- (A) *acetylene*
 - (B) *methane*
 - (C) *methyl alcohol*
 - (D) *ethyl formate*
100. Sonar in the ocean water is used to
- (A) depth of water
 - (B) measure the movement of sound in water
 - (C) to determine the position and distance of objects in the water
 - (D) all of these