

Subject: Aquaculture

1. "The Chinese Fish Culture Classic" was originally written by
 - a. G Hudinaga
 - b. Fan Lee
 - c. Francis Day
 - d. S Y Lin

2. Which of the following statements are correct
 1. Microencapsulation is the best technique to prepare the larval feed
 2. Fish meal is a good source of amino acids
 3. For the preparation of flake diets ingredients are grounded to 0.05 to 0.1 mm
 4. BHT is a feed attractantOptions are
 - a. 1, 2, 3 are correct
 - b. 2, 3, 4 are correct
 - c. 1, 3, 4 are correct
 - d. 1, 2, 4 are correct

3. Which of the following statements are correct
 1. Generally carnivorous fish have true stomachs with peptic digestion
 2. For efficient use of feed, feeding is reduced in summer
 3. All fat digesting enzymes act in alkaline medium
 4. A feed made out of refined ingredients with specified analysis is called as practical dietOptions are
 - a. 1, 2, are correct
 - b. 2, 4 are correct
 - c. 1, 3 are correct
 - d. 2, 3 are correct

4. The cheapest nutrient energy source is
 - a. Lipid
 - b. Protein
 - c. Minerals
 - d. Carbohydrates

5. Catabolism of protein leads to the release of
 - a. Nitrite
 - b. Methane
 - c. Nitrate
 - d. Ammonia

6. Match the correct pair
- | | |
|------------------------|-------------------------|
| a. Probiotic | 1. Sodium alginate |
| b. BHA | 2. Spirulina |
| c. Polymer binder | 3. <i>Lactobacillus</i> |
| d. Single cell protein | 4. Preservative |
- Options are
- a-4, b-3, c-1, d-2
 - a-3, b-4, c-2, d-1
 - a-3, b-4, c-1, d-2
 - a-4, b-3, c-2, d-1
7. Match the correct pair
- | | |
|----------------------|---------------------------|
| a. Purified diet | 1. Ad libitum feeding |
| b. Check tray | 2. Restricted feeding |
| c. Demand feeder | 3. Feed intake monitoring |
| d. Non demand feeder | 4. Experimental feeding |
- Options are
- a-4, b-3, c-1, d-2
 - a-3, b-4, c-2, d-1
 - a-3, b-4, c-1, d-2
 - a-4, b-3, c-2, d-1
8. Match the correct pair
- | | |
|--------------------------------|-----------------|
| a. Calcium sulphate | 1. Disinfectant |
| b. Calcium Magnesium Carbonate | 2. Gypsum |
| c. Calcium oxide | 3. Dolomite |
| d. Chlorine | 4. Quick lime |
- Options are
- a-3, b-2, c-4, d-1
 - a-2, b-3, c-4, d-1
 - a-3, b-4, c-1, d-2
 - a-2, b-1, c-4, d-3
9. Chelating agent used in shrimp hatchery is.....
- Sodium thiosulphate
 - EDTA
 - Oxytetracycline
 - Zeolite
10. Simazine is used for controlling
- Blue green algae
 - Fish lice
 - White spot disease
 - Low oxygen

11. The controlling factor of productivity is
a. Colloidal content of the soil
b. Acidic bottom of the pond
c. Calcium content of the bottom of the pond
d. Cellulose mud of the pond
12. Chicken manure is high in
a. Sodium content
b. Nitrogen content
c. Trace elements
d. Zinc content
13. Nutrient cycle is a part of
a. Biogeochemical cycle
b. Nitrogen cycle
c. Phosphorus cycle
d. Sulphur cycle
14. The standard combination of N:P:K is
a. 10:8:4
b. 18:8:4
c. 10:8:2
d. 18:8:2
15. Which chemical is used to control obnoxious gas
a. Zeolite
b. CaOCl_2
c. Alum
d. CaCO_3
16. Probiotics mainly contain the following organism
a. *Aspergillus*
b. *Lactobacillus*
c. *Saccharomyces*
d. *Nitrobacter*
17. Typha is a
a. Rooted higher plant
b. Floating plant
c. Seaweed
d. Emergent plant
18. Application of Gypsum in a pond corrects the..... of pond water
a. Acidity
b. Alkalinity
c. Salinity
d. Hardness

19. If the diameter of soil particles is less than 0.002mm, the soil will be.....
- Clayey
 - Loamy
 - Sandy
 - Clayey loam
20. Which of the following statements are correct
- An optimum ration is the one which gives the best growth and FCR
 - SGR and FCR depend on the feeding rate of the fish
 - Obtaining maximum growth may result in over spending on feeding
 - Gonadal growth affects non basal metabolic rate in fish
- Options are
- 1, 2, 3 are true
 - 1, 3, 4 are true
 - 2, 3, 4 are true
 - 1, 2, 4, are true
21. Which of the following statements are correct
- Extrusion process of feed making involves higher temperature and pressure
 - Energy rich feed ingredients are those groups which contain less than 20% protein and less than 18% crude fibre
 - CMC is a natural binder
 - The fatty acid composition of fish can vary considerably and strongly depends on that of the ingested food
- Options are
- 1, 2, 3 are correct
 - 2, 3, 4 are correct
 - 1, 2, 4 are correct
 - 1, 3, 4 are correct
22. The gut pH in fishes during digestion is reduced by the secretion of
- Acetic acid
 - Hydrochloric acid
 - Formic acid
 - Sulphuric acid
23. The mathematical technique available to nutritionists for selecting best combination of feed ingredients to formulate diets is
- Quadratic programming
 - Linear programming
 - Best buy technique
 - Pearson square method
24. The water stability of shrimp feed should be minimum of
- 30 min
 - 1 hr
 - 2 hr
 - 3 hr

25. Which is the odd one in this group?
a. Propionic acid
b. Sodium sorbate
c. Ascorbic acid
d. Potassium Citrate
26. Which is the odd one in this group?
a. Betaine
b. Taurine
c. Proline
d. Santoquin
27. Which is the odd one in this group?
a. BHA
b. BHT
c. Vitamin E
d. Glycine
28. An ideal fish feed should have water stability of at least.....
a. 1 hour
b. 2 hours
c. 3 hours
d. 4 hours
29. Major problem in using organic manure is
a. Non availability
b. Variability of composition
c. Cost factor
d. Handling problem
30. Which of the following is suitable for collecting sample from the bottom
a. Nansen bottle
b. Ekman grab
c. Van dorn sampler
d. Reversing Bottle
31. Dose of bleaching powder to kill all the predatory and weed fishes in pond is
a. 5-10 ppm
b. 25-30ppm
c. 50-100ppm
d. 100-200ppm
32. If the pond water pH is 6.5 – 7.5 then in which proportion the lime will be used
a. 500 kg/ha
b. 400kg/ha
c. 200kg/ha
d. 700 kg/ha

33. The water requirement has been estimated to bem³ /kg of IMC production for semi-intensive culture
- 10.3
 - 15.4
 - 5.7
 - 2.5
34. Soil group most suitable for fish culture is
- Sandy soil
 - Clayey soil
 - Loamy soil
 - Silty clay soil
35. Total world aquaculture production in 2020 wasmillion tonnes
- 99.5
 - 87.5
 - 79.5
 - 66.5
36. Stocking density of *M. rosenbergii* in grow out pond
- 40000-50000 PL/ha
 - 30000-40000 PL/ha
 - 25000-30000 PL/ha
 - 50000-60000 PL/ha
37. The GIFT Tilapia is exclusively being bred in India by
- CIFA
 - CIBA
 - CIFRI
 - RGCA
38. For multi-stocking multi-harvesting of ponds, thegear is effective and suitable
- Seine net
 - Cast net
 - Drag net
 - Gill net
39. Leading state in inland saline water shrimp culture in India
- Rajasthan
 - Punjab
 - UP
 - Haryana

40. The state ofis the highest fish seed producer after West Bengal
a. Andhra Pradesh
b. MP
c. Assam
d. Jharkhand
41. Wastewater aquaculture is practiced in
a. West Bengal
b. Andhra Pradesh
c. Bihar
d. Assam
42. The concept of composite fish culture was developed by ICAR-
.....
a. CIFA
b. CIFRI
c. CIBA
d. CIFE
43. Monosex population of tilapia (all male) could be produced with 17 alpha methyl-testosterone treated feed for weeks
a. 1 week
b. 2 weeks
c. 3 weeks
d. 4 weeks
44. *P. hypophthalmus* was first introduced into India from
a. Taiwan
b. Thailand
c. Bangladesh
d. Vietnam
45. Murrels are easily susceptible todisease
a. Whirling disease
b. Snakehead rhabdovirus (SHRV)
c. Dropsy
d. Epizootic Ulcerative Syndrome
46. Freshwater eel (spp),is cultured in Bangladesh and parts of eastern India
a. *Anguilabengalensis*
b. *Monopterus albus*
c. *Monopterus cutchia*
d. *Aguilaanguila*

47. *Oreochromismossambicus* introduced in India in the year
a. 1952
b. 1960
c. 1935
d. 1972
48. One of the following is also called as 'aquatic chicken'
a. *Channa* sp.
b. Rohu
c. Tilapia
d. Common carp
49. Number of larval stages in *M. rosenbergii* is
a. 10
b. 12
c. 13
d. 11
50. Induced breeding and seed production technology for grouper *Epinephelus* was developed by
a. CIBA
b. CIFA
c. CMFRI
d. CIFE
51. The number of Zoea stages observed in crabs is
a. Four
b. Two
c. Six
d. Five
52. *Mugil cephalus* is considered as
a. Euryhaline
b. Stenohaline
c. Thermohaline
d. Hyperhaline
53. Fish that easily breed in pond is
a. Grass carp
b. Catla
c. Common carp
d. Magur
54. Paddle wheel aerators are type of aerators
a. Gravity
b. Surface
c. Turbine
d. Submersible

55. Specific Surface Area of a biofilter is expressed as
a. m^2/m^3
b. m/m^3
c. m^3/m^2
d. m^2/m
56. The best pH range for operation of biofilters is between.....
a. 6 to 9
b. 5 to 8
c. 6 to 11
d. 8 to 9
57. Drum filter is a.....
a. Mechanical filter
b. Biofilter
c. Chemical filter
d. Sediment filter
58. Light-weight biofilter media is normally used in.....
a. Submerged biofilter
b. Trickling biofilter
c. Rotating biological contactor
d. Sand filter
59. The most widely used cryoprotectant in fish gamete preservation is.....
a. Methanol
b. DMSO
c. Glycerol
d. Propylene glycol
60. Hypophysation technique was first used in
a. China
b. Thailand
c. India
d. Brazil
61. The Coastal Aquaculture authority (CAA) was established under the Coastal Aquaculture Authority Act,
a. 2003
b. 2005
c. 2007
d. 2009
62. The Coastal Aquaculture Authority (CAA) is located in.....
a. Kochi
b. Hyderabad
c. Mumbai
d. Chennai

63. Which statements are correct for CAA
1. The Authority is empowered to register coastal aquaculture farms
 2. Make regulations for the construction and operation of aquaculture farms in coastal areas
 3. Monitor such farms to determine their adherence to environmental impact guidelines
 4. Take action for discontinuation of coastal aquaculture farms that are not in accordance with guidelines
- Options
- a. 1,2,3,4
 - b. 1,3,4
 - c. 2,3,4
 - d. 1,2,4
64. As per CAA guidelines, stocking densities should not exceed no./ square metre for *P. vannamei* culture
- a. 30
 - b. 60
 - c. 80
 - d. 50
65. Environment Monitoring and Management Plan (EMMP) is essential for all shrimp farms with ha or more water area
- a. 10
 - b. 20
 - c. 30
 - d. 40
66. Which one is green seaweed
- a. *Ulva*
 - b. *Sargassum*
 - c. *Laminaria*
 - d. *Undaria*
67. Fingerling stocking density in composite fish culture
- a. 5000-10000
 - b. 10000-150000
 - c. 2000-5000
 - d. 15000-20000
68. 'Freeboard' is the term used with reference to the construction of
- a. Dike
 - b. Spillway
 - c. Screen
 - d. Sluice

69. Clear water culture system was developed by
- AQUACOP
 - WORLFISH
 - SEAFDEC
 - NACA
70. *Kappaphycusalvarezii* production is dominated by.....
- Japan
 - Indonesia
 - Taiwan
 - Malaysia
71. Match the pair
- | | |
|---------------------|-----------------------------|
| a. Altricial larvae | 1. Culture of chlorophyceae |
| b. Precocial Larvae | 2. Cell integrity |
| c. DMSO | 3. Mini adult |
| d. Chu-10 | 4. Live food |
- Options are
- a-4, b-3, c-2, d-1
 - a-3, b-4, c-2, d-1
 - a-3, b-4, c-1, d-2
 - a-4, b-3, c-1, d-2
72. Match the pair
- | | |
|---------------------|-----------------|
| a. Aquaponics | 1. Bio-filter |
| b. RAS | 2. Media bed |
| c. Nitrite oxidizer | 3. Nitrospira |
| d. Ammonia Oxidizer | 4. Nitrosospira |
- Options are
- a-2, b-1, c-3, d-4
 - a-1, b-2, c-4, d-3
 - a-1, b-2, c-3, d-4
 - a-2, b-1, c-4, d-3
73. Which of the following statements are correct
- Batch culture method is most commonly practiced in algal culture
 - Chlorella* is good source of carotenoid
 - Forage fish are used to feed the cultured main fish species
 - Guillard medium is used for culturing rotifers
- Options are
- 1, 3, 4 are correct
 - 2, 3, 4 are correct
 - 1, 2, 3 are correct
 - 1, 3, 4 are correct

74. Which of the following statements are correct
1. *Fabreasalina* is stenohalinespp
 2. Freshly hatched *artemia* tend to avoid light
 3. Ozone may be used to treat water for algal culture
 4. Tilapia can be used as forage fish
- Options are
- a. 1, 2, 3 are correct
 - b. 2, 3, 4 are correct
 - c. 1 and 3 are correct
 - d. 3 and 4 are correct
75. Decapsulation of hydrated cysts of *Artemia* can be done in
- a. Sodium chloride
 - b. Sodium hypochlorite
 - c. Sodium thiosulphate
 - d. Sodium hydroxide
76. Detrital system of Cladoceran culture use
- a. Soil
 - b. Inorganic fertilizer
 - c. Yeast
 - d. Lime
77. More carbohydrate is found in algae during
- a. Induction phase
 - b. Exponential phase
 - c. Stationary phase
 - d. Lag phase
78. Which of the following statements are correct
1. Trochophor larvae is used as live food for marine fishes
 2. Photometer can be used to quantify algal density in water
 3. *Artemia* cysts can be hatched in 25 ppt salt water
 4. *Dunaliella* is a diatom
- Options are:
- a. 1, 2, 3, are correct
 - b. 1, 3, 4 are correct
 - c. 2, 3, 4 are correct
 - d. 1, 2, 4 are correct
79. In shrimp Y organ produce
- a. Moulting inducing hormone
 - b. Moulting inhibiting hormone
 - c. Growth hormone
 - d. None

80. The south American country of is one of largest salmon producer in the world
- Chile
 - Brazil
 - Ecuador
 - Argentina
81. The principal component of Biofloc is..... bacteria
- Aerobic bacteria
 - Anaerobic bacteria
 - Heterotrophic bacteria
 - Psychrophilic bacteria
82. The certification of ASC stands
- Aquaculture Stewardship Council
 - Aquatic Sustainable Council
 - Aquaculture Sustainable Committee
 - Aquatic Stewardship Committee
83. Which statements are correct
- Share of non-fed aquaculture reduced to 30.5% while fed aquaculture increased to 69.5% of the total aquaculture production in 2018.
 - Greenhouse gas emissions from aquaculture estimated to be as low as 5% of those coming from agriculture
 - More than 622 spp items are farmed around the world
 - BMPs do not cover community engagement and social responsibility
- Options are
- 1, 3, 4 are correct
 - 2, 3, 4 are correct
 - 1, 2, 3 are correct
 - 1, 2, 4 are correct
84. As per CRZ Notification of the Ministry of Environment, Forest and Climate Change, Govt. of India no coastal aquaculture shall be carried on within..... from High Tide Lines
- 100 metres
 - 300 metres
 - 200 metres
 - 400 metres
85. Highly sought after and widely used for broodstock feed of *L.vannamei* is
- Polychaetes
 - Tubifex
 - Earthworms
 - Chicken liver

86.is crucial in ensuring the safety and quality of aquatic organisms in the aquaculture supply chain
- Certification
 - Block Chain
 - Processing
 - Traceability
87. Shape and size of pond mainly depends upon the
- Species to be cultured
 - Rainfall
 - Water quality
 - Location of the pond
88. The first zooplankton group to emerge after pond fertilization is
- Protozoans
 - Rotifers
 - Copepods
 - Cladocerans
89. Jayanti Rohu is
- Selective bred
 - Transgenic
 - Hybridised
 - Induced bred
90. The main purpose of construction of berm
- Keep fish trays
 - Use as footpath
 - Beautify the dike
 - Avoid soil erosion
91. Which pump is having a impeller
- Reciprocating pump
 - Centrifugal pump
 - Submersible pump
 - Centripetal pump
92. Scientific name of Banana prawn is
- Penaeus indicus*
 - Penaeus merguensis*
 - Penaeus japonicus*
 - Penaeus stylirostris*

- 93 Earthen ponds are suitable for
a. Extensive system
b. Intensive system
c. Hatchery
d. Super intensive system
- 94 The following may be used to prevent seepage in ponds
a. Gypsum
b. Bentonite
c. Lime
d. Sand
- 95 Tide fed aquafarms are suited for
a. Extensive culture
b. Intensive culture
c. Super intensive culture
d. Semi intensive culture
- 96 Dumpy level is commonly used levelling instrument to locate the points in same plane.
a. Horizontal
b. Verticle
c. Parallel
d. Rectangular
- 97 Most ideal shape of a pond is
a. Square
b. Rectangular
c. Hexagonal
d. Pentagonal
- 98 In raceways, the ideal slope for construction of ponds is
a. 0.5-1%
b. 1-2%
c. 2-3%
d. 3-4%
- 99 The name PIT in Tags stands for
a. Passive-Integrated-Transponder
b. Passive-Integrated-Thermal
c. Potential-Integrated-Transponder
d. Potential-Internal-Thermal
- 100 Amur is an improved strain of
a. Common carp
b. Grass carp
c. Gold fish
d. Koi carp

- 101 MS-222 is a/an
a. Anaesthetic
b. Preservative
c. Coloring agent
d. Antioxidant
- 102species used in freshwater cage culture to control the biofoulers.
a. *Catla catla*
b. *Cyprinus carpio*
c. *Labeokontius*
d. *Ompokpabda*
- 103 The per capita fish consumption in the world (2020)?
a. 20.2kg
b. 15.5 kg
c. 9.2 kg
d. 25.8 kg
- 104 Which statements are true?
1. Cages should be installed at a place where there is water velocity less than 40 cm/sec.
2. Pangasius is most commonly cultivated species in cages in India.
3. Pen culture is generally done in reservoirs
4. Omnivorous/carnivorous are commonly cultivated fishes in the cage culture.
Options are
a. 1, 2, 3 are true
b. 2, 3, 4 are true
c. 1, 3, 4 are true
d. 1, 2, 4 are true
- 105 The characteristic larvae of sea cucumber is called
a. Trocophore
b. Velliger
c. Spat
d. Auricularia
- 106 Induce spawning of pearl oyster is done through manipulation of
a. Salinity
b. Light
c. Temperature
d. pH
- 107 Crop duration of *P vannamei* is.... days
a. 60
b. 80
c. 120
d. 150

- 108 The secchi-disk transparency maintained in round ponds of intensive shrimp culture is around
- 10 cm
 - 20 cm
 - 30 cm
 - 50 cm
- 109 The International Fishery Exhibition of 1883 which inspired many to start fish culture facilities around the world was held in
- Washington
 - Tokyo
 - Paris
 - London
- 110 IMTA is the farming of aquaculture species of different in the proximity with complementary ecosystem functions
- Layers
 - Feeding habits
 - Trophic levels
 - Niches
- 111 Dr. Francis Day made the first attempt to introduce trout to India in
- 1863
 - 1903
 - 1823
 - 1923
- 112 Discovery of *Artemianauplii* as live food may be attributed to
- P. Sorgeloos
 - Gunnar Rollefson
 - Schlösser
 - Dhert
- 113 Kakabans are fibre mats used for common carp egg collection in
- Sri Lanka
 - Indonesia
 - Thailand
 - Bangladesh
- 114 is the leading seaweed cultivating state in India
- Karnataka
 - Odisha
 - Tamil Nadu
 - Kerala

- 115 Scientific name of Y loach is
- Botiadarío*
 - Botialohachata*
 - Lepidocephalichthysguntea*
 - Schisturadenisoni*
- 116 Fish species which show parental care
- Danio rerio*
 - Betta splendens*
 - Carassiusauratus*
 - Botiadarío*
- 117 Bouchot culture is the main cultural practice for
- Mussels
 - Oysters
 - Seaweed
 - Snail
- 118 Which statements are true
- The farming of the seaweed *Kappaphycusalvarezii* can be a high cost venture
 - Eyes of fish larvae usually only contain cones in the retina resulting in poor visibility
 - Larviculture requires specific husbandry techniques, feeding strategies and microbial control
 - Stickiness of common carp egg can be removed by Salt-carbamide solution and Milk powder solution
- Options are
- 1, 2, 3 are true
 - 1, 3, 4 are true
 - 2, 3, 4 are true
 - 1, 2, 4 are true
- 119 There areSustainable Development Goals (SDGs) related to aquaculture in the 2030 Agenda for Sustainable Development
- 13
 - 17
 - 19
 - 15

120

Match the pair

- a. *Aeromonassalmonicida*
- b. *L. vannamei*
- c. Gill rot
- d. BG11

- 1. *Chlorella*
- 2. Furunculosis
- 3. SPF
- 4. *Branchiomyces*

Options are

- a. a-2, b-3, c-4, d-1
- b. a-3, b-1, c-2, d-4
- c. a-4, b-3, c-2, d-1
- d. a-2, b-1, c-4, d-3



1.	B
2.	A
3.	C
4.	D
5.	D
6.	C
7.	A
8.	B
9.	B
10.	A
11.	A
12.	B
13.	A
14.	B
15.	A
16.	B
17.	A
18.	D
19.	A
20.	A
21.	C
22.	B
23.	B
24.	C
25.	D
26.	D
27.	D
28.	A
29.	B
30.	B

31.	B
32.	C
33.	A
34.	B
35.	B
36.	B
37.	D
38.	D
39.	D
40.	D
41.	A
42.	B
43.	D
44.	C
45.	D
46.	C
47.	A
48.	C
49.	D
50.	C
51.	D
52.	A
53.	B
54.	B
55.	C
56.	A
57.	A
58.	A
59.	B
60.	D

61.	B
62.	D
63.	A
64.	B
65.	D
66.	A
67.	A
68.	A
69.	A
70.	B
71.	A
72.	A
73.	C
74.	D
75.	B
76.	A
77.	C
78.	A
79.	A
80.	A
81.	C
82.	A
83.	C
84.	C
85.	A
86.	D
87.	A
88.	A
89.	A
90.	D

91.	B
92.	B
93.	A
94.	B
95.	A
96.	A
97.	B
98.	B
99.	A
100.	A
101.	A
102.	B
103.	A
104.	D
105.	D
106.	C
107.	C
108.	C
109.	D
110.	C
111.	A
112.	B
113.	B
114.	C
115.	B
116.	B
117.	A
118.	C
119.	B
120.	A