Subject: Aquatic Health Management

1. Which virus is responsible for causing Infectious Pancreatic Necrosis (IPN) in fish?
    a) Infectious Salmon Anemia Virus (ISAV)
    b) Infectious Hematopoietic Necrosis Virus (IHNV)
    c) Infectious Bursal Disease Virus (IBDV)
    d) Viral Hemorrhagic Septicemia Virus (VHSV)

2. What is the primary route of transmission for Viral Hemorrhagic Septicemia Virus (VHSV) in fish?
    a) Ingestion of contaminated food
    b) Direct contact with infected fish
    c) Inhalation of aerosolized virus particles
    d) Transmission through mosquito bites

3. Which virus primarily affects the nervous system of fish, leading to symptoms such as erratic swimming behavior and spiral swimming?
    a) Infectious Pancreatic Necrosis Virus (IPNV)
    b) Spring Viremia of Carp Virus (SVCV)
    c) Lympho cystis Disease Virus (LCDV)
    d) Snakehead Rhabdo virus (SHRV)

4. What is the causative agent of Koi Herpes virus Disease (KHVD)?
    a) Cyprinid herpes virus 1 (CyHV-1)
    b) Cyprinid herpes virus 2 (CyHV-2)
    c) Infectious Pancreatic Necrosis Virus (IPNV)
    d) Infectious Hematopoietic Necrosis Virus (IHNV)

5. Which virus causes the disease known as Spring Viremia of Carp (SVC)?
    a) Lympho cystis Disease Virus (LCDV)
    b) Infectious Hematopoietic Necrosis Virus (IHNV)
    c) Spring Viremia of Carp Virus (SVCV)
    d) Infectious Pancreatic Necrosis Virus (IPNV)

6. Which virus is responsible for causing Lympho cystis Disease in fish?
    a) Lympho cystis Disease Virus (LCDV)
    b) Infectious Pancreatic Necrosis Virus (IPNV)
    c) Infectious Salmon Anemia Virus (ISAV)
    d) Viral Hemorrhagic Septicemia Virus (VHSV)

7. What is the primary target organ of Infectious Salmon Anemia Virus (ISAV) in fish?
    a) Liver
    b) Kidney
    c) Spleen

d) Gills

8. Which virus causes the disease commonly known as Red Sea Bream Iridoviral Disease (RSIVD)?
    a) Red Sea Bream Irido virus (RSIV)
    b) Infectious Hematopoietic Necrosis Virus (IHNV)
    c) Koi Herpes virus (KHV)
    d) Snakehead Rhabdo virus (SHRV)

9. What is the primary mode of transmission for Red Sea Bream Irido virus (RSIV)?
    a) Horizontal transmission via water
    b) Vertical transmission from parent to offspring
    c) Transmission through contaminated feed
    d) Vector-borne transmission by mosquitoes

10. Which virus is responsible for causing Viral Nervous Necrosis (VNN) in fish?
    a) Betanoda virus
    b) Betaherpes virus
    c) Betacorona virus
    d) Betaretro virus

11. What is the primary target tissue of Betanoda virus in fish?
    a) Brain and retina
    b) Liver
    c) Spleen
    d) Intestine

12. Which virus causes the disease known as Viral Encephalopathy and Retinopathy (VER)?
    a) Betanoda virus
    b) Cyprinid herpes virus 1 (CyHV-1)
    c) Spring Viremia of Carp Virus (SVCV)
    d) Infectious Hematopoietic Necrosis Virus (IHNV)

13. What is the primary mode of transmission for Betanoda virus?
    a) Direct contact with infected fish
    b) Ingestion of contaminated food
    c) Vertical transmission from parent to offspring
    d) Vector-borne transmission by ticks

14. Which virus causes the disease known as Epizootic Hematopoietic Necrosis (EHN) in fish?
    a) Rana virus
    b) Irido virus

c) Novirhabdo virus
d) Birna virus

15. What is the primary target organ of Epizootic Hematopoietic Necrosis Virus (EHNV) in fish?
    a) Liver
    b) Kidney
    c) Spleen
    d) Muscle tissue

16. Which virus causes the disease known as HIRRV (Hirame Rhabdo virus)?
    a) Hirame Rhabdo virus
    b) Salmonid Alpha virus
    c) Betanoda virus
    d) Tilapia Tilapine virus

17. What is the primary target tissue of Hirame Rhabdo virus in fish?
    a) Brain
    b) Kidney
    c) Liver
    d) Gills

18. Which virus is responsible for causing the disease known as Red-Sore Disease in fish?
    a) Red-Sore Virus (RSV)
    b) Infectious Salmon Anemia Virus (ISAV)
    c) Infectious Hematopoietic Necrosis Virus (IHNV)
    d) Snakehead Rhabdo virus (SHRV)

19. What is the primary mode of transmission for Red-Sore Virus (RSV)?
    a) Horizontal transmission via water
    b) Vertical transmission from parent to offspring
    c) Transmission through contaminated feed
    d) Vector-borne transmission by mosquitoes

20. Which virus is associated with the disease known as Infectious Salmon Anemia (ISA) in fish?
    a) Salmonid Alpha virus
    b) Infectious Pancreatic Necrosis Virus (IPNV)
    c) Infectious Salmon Anemia Virus (ISAV)
    d) Betanoda virus

21. Majority of DNA virus replicates in

a) Cytoplasm
b) Nucleus
c) Nuclear pore
d) Cell membrane

22. RNA virus replicates in
    a) Cytoplasm
    b) Nucleus
    c) Nuclear pore
    d) Cell membrane

23. WSSV shows following type of inclusion body
    a) Bolinger body
    b) Micronucleus
    c) Negri bodies
    d) Cowdry type A

24. Viral disease reported from Indian seabass
    a) Viral nervous necrosis (VNN)
    b) White spot syndrome (WSSV)
    c) Spring viremia of carp
    d) Viral haemorrhagic septicaemia

25. Family of White Spot Syndrome Virus (WSSV) is
    a) Parvo viridae
    b) Nima viridae
    c) Herpes viridae
    d) Irido viridae

26. Infectious peretenotits virus has following type of genome
    a) Double stranded tri segmented RNA
    b) Double stranded bisegmented RNA
    c) Single stranded DNA
    d) Double stranded DNA

27. Following virus has 10 segmented RNA genome
    a) Tilapia parvo virus
    b) Tilapia lake virus
    c) WSSV
    d) SVCV

28. Rolling hairpin replication is observed in
    a) HPV
    b) TSV
    c) YHV
    d) LSNV

29. In which class of viruses (+)ss RNA is transcribed first into ss DNA,
    a) Group III
    b) Group IV
    c) Group V
    d) Group VI
30. Herpes virus contains a layer between external lipid layer and neucleo capsid that layer is termedas
    a) Corona
    b) Tegument
    c) Envelop
    d) Polyprotein

31. _____ are the target cells of irido virus
    a) Endothelial cells
    b) Macrophages
    c) M cells
    d) Muscle cells

32. Following is the gold standard test for virus diagnosis
    a) virus isolation in cell culture
    b) virus isolation in cells followed by serum neutralization
    c) Agar gel immune diffusion test
    d) Real time PCR

33. Following are the cytopathic effect seen in cell culture
    a) Monolayer detachment
    b) Rounding of cells
    c) Elongation of cell
    d) All of the above

34. Retrovirus carries following
    a) DNA polymerase
    b) Reverse transptase
    c) Gyrase
    d) Trypsinase

35. Which of the following parasites commonly infects fish by attaching itself to the skin or gills?
    a) Plasmodium
    b) Ichthyophthirius multifiliis
    c) Toxoplasma gondii
    d) Trypanosoma brucei

36. Which parasite causes the disease commonly known as "fish lice"?
    a) Argulus
    b) Leishmania
    c) Schistosoma
    d) Taenia

37. What is the primary mode of transmission for fish tapeworm infections in humans?
    a) Ingestion of contaminated water
    b) Inhalation of airborne eggs
    c) Direct contact with infected fish
    d) Mosquito bites

38. Which of the following parasites is responsible for the disease commonly known as "fish velvet"?
    a) Gyrodactylus
    b) Dactylogyrus
    c) Cryptobia
    d) Ichthyophonus

39. Which parasite causes the condition known as "white spot disease" in fish?
    a) Cryptosporidium
    b) Ichthyophthirius multifiliis
    c) Giardia lamblia
    d) Plasmodium

40. What is the primary host of the parasitic nematode *Anguillicola crassus*?
    a) Salmon
    b) Eel
    c) Trout
    d) Cod

41. Which of the following is a common symptom of fish infected with the parasite *Ichthyophthirius multifiliis*?
    a) Swollen abdomen
    b) White spots on the skin
    c) Loss of appetite
    d) Excessive mucus production

42. Which parasite is responsible for the disease known as "whirling disease" in fish?
    a) Myxobolus cerebralis

b) *Neobenedenia melleni*
c) Eimeria
d) *Henneguya salminicola*

43. Which of the following parasites is a common cause of "cotton wool disease" in fish?
    a) *Cryptocaryon irritans*
    b) *Piscinoodinium pillulare*
    c) Saprolegnia
    d) Caligus spp.

44. What is the primary mode of transmission for the parasite *Gyrodactylus salaris*?
    a) Ingestion of contaminated food
    b) Skin contact with infected water
    c) Inhalation of airborne spores
    d) Vector-borne transmission by mosquitoes

45. Which parasite is responsible for the condition known as "gill flukes" in fish?
    a) Trichodina
    b) Ichthyobodo
    c) Dactylogyrus
    d) Leishmania

46. What is the primary mode of entry for the parasite *Cryptobia salmositica* into fish?
    a) Ingestion of contaminated prey
    b) Penetration through the skin
    c) Inhalation of infective spores
    d) Transmission via mosquito bites

47. Which parasite is responsible for the disease commonly known as "black spot disease" in fish?
    a) Diplostomum spp.
    b) Ichthyobodo spp.
    c) Cryptosporidium spp.
    d) Saprolegnia spp.

48. What is the primary host of the parasite *Philometroides sanguineus*?
    a) Salmon
    b) Carp
    c) Eel
    d) Catfish

49. Which parasite causes the disease known as "anchorworm" in fish?
    a) Lernaea
    b) Cryptocaryon
    c) Ichthyophthirius
    d) Neobenedenia

50. What is the primary host of the parasite *Ichthyopthiriu smultifiliis*?
    a) Fish
    b) Snails
    c) Mosquitoes
    d) Birds

51. Which parasite is responsible for the disease known as "gill maggot" in fish?
    a) Ergasilus
    b) Diplostomum
    c) Lernaea
    d) Cryptobia

52. What is the primary mode of transmission for the parasite *Myxobolus cerebralis*?
    a) Ingestion of infected prey
    b) Penetration through the skin
    c) Inhalation of infective spores
    d) Transmission via contaminated water

53. Which of the following parasites commonly infects fish and has a life cycle involving snails as intermediate hosts?
    a) Anisakis
    b) Diplostomum
    c) Cryptosporidium
    d) Trichinella

54. Which of the following parasite has direct life cycle?
    a) Nematode
    b) Cestode
    c) Monogenean
    d) Acanthecephalan

55. Bacterial gill Disease is caused by
    a) *Hennaguya ictaluri*
    b) *Myxobolus paloskii*
    c) *Myxobolus cerebralis*
    d) *Flavobacterium branchiophilum*

56. Bacterial Kidney Disease (BKD) is caused by
    a) Aeromonas Salmonicida
    b) Renibacterium salmonarium
    c) Tetracapsulabry salmonae
    d) Pesudomonas fluorescens

57. Cloudiness of sixth abdominal segment is reported in _____ infection in Shrimps?

a) Pseudomonas sp
b) Vibrio sp
c) Aeromonassp
d) All the above

58. Granulomatous lesion is common in which of the following infection
    a) *Photobacterium damsela*
    b) *Mycobacterium marinum*
    c) Nocardiasp
    d) All the above

59. Hitra disease is caused by _____?
    a) *Photobacterium damsela*
    b) *Vibrio salmonicida*
    c) *Yersinia ruckeri*
    d) Flexibacter maritimus

60. Leucothrix sp. is known to cause _____ among the following infection in shrimp?
    a) Luminescent bacterial disease
    b) Filamentous bacterial disease
    c) Shell disease
    d) Black Gill disease

61. Mycobacterium sp. is acid-fast due to the presence of _____?
    a) Lipoteichoic acid
    b) Mycolic acid
    c) Lactic acid
    d) None of the above

62. Proliferative gill disease is caused by _____?
    a) Hennaguya ictaluri
    b) Myxobolu spaloskii
    c) Myxobolus cerebralis
    d) Flavobacterium branchiophilum

63. Texas pond mortality syndrome (TPMS) is caused by _____?
    a) Rickettisia like organism
    b) Pseudomonas sp.
    c) Vibrio sp.
    d) All the above

64. Pseudotuberculosis is caused by _____?
    a) *Photobacterium damsela*
    b) *Vibrio salmonicida*
    c) *Yersinia ruckeri*
    d) *Flexibacter maritimus*

65. Toxin produced by Streptococcus sp. is _____ in nature?
    a) Beta - hemolytic
    b) Alpha - hemolytic
    c) Neurotoxin
    d) Enterotoxin

66. Which of the following bacteria is an obligate fish pathogen?
    a) Vibrio sp
    b) *Aeromonas hydrophila*
    c) *Aeromonas salmonicida*
    d) *Aeromonas caviae*

67. Which of the following types of vaccine contains certain bacterial polysaccharide outer coats that are poorly immunogenic?
    a) Subunit vaccine
    b) Recombinant vaccine
    c) Conjugate vaccine
    d) Peptide vaccine

68. Which among the following reported as is fish borne zoonotic bacterial pathogen?
    a) *Aeromonas Salmonicida*
    b) *Renibacterium salmonarium*
    c) *Mycobacterium marium*
    d) *Pesudomonas fluorescens*

69. Cysteine heart agar is the selective media for _____?
    a) *Aeromonas Salmonicida*
    b) *Renibacterium salmonarium*
    c) *Fransiella sp*
    d) *Pesudomonas fluorescens*

70. Swimming pool granuloma in human is causes due to_____ bacterial pathogen?
    a) *Aeromonas Salmonicida*
    b) *Renibacterium salmonarium*
    c) *Mycobacterium marium*
    d) *Pesudomonas fluorescens*

71. KDM2 is the selective media for _____?
    a) *Aeromonas Salmonicida*
    b) *Renibacterium salmonarium*
    c) *Mycobacterium marium*
    d) *Pesudomonas fluorescens*

72. Bankruptcy disease is caused by _____ bacterial pathogen?
    a) *Aeromonas hydrophila*
    b) *Pseudomonas sp.*
    c) *Clostridium botulinum type E*
    d) *Flavobacterium columnare*

73. Which of the following antibiotic can be used in the selective media for Aeromonas isolation
    a) Trimethoprim
    b) Ampicillin
    c) Chloramphenicol
    d) Tetracycline

74. Enteric Red Mouth Disease is caused by _____?
    a) *Photobacterium damsela*
    b) Aeromonas salmonicida
    c) Yersinia ruckeri
    d) Flexibacter maritimus

75. Which among the following is known as primary non-executive lymphoid organ in fishes?
    a) Thyroid
    b) Anterior kidney
    c) Thymus
    d) Spleen

76. In gills, phagocytosis is carried out by ---------- cells that are lined in the blood vessels of secondary lamellae?

    a) Chloride cells
    b) Pillar cells
    c) Reticulo endothelial cells
    d) Epithelial cells

77. While comparing primary immune response with secondary immune response will be ____?

    a) Longer lag phase and Lower magnitude of reaction

b) Shorter lag phase and Higher magnitude of reaction
c) Longer lag phase and Higher magnitude of reaction
d) Shorter lag phase and Lower magnitude of reaction

78. Immune responses and immune pathways in fishes are highly influenced by _____among the physical factor?
a) Dissolved oxygen
b) Light intensity
c) pH
d) Temperature

79. Bacterin is ---------- antigen
a) T dependent
b) T independent
c) Mitogen
d) Non immunogenic

80. T cell responses are crucially dependent on antigen presentation _____
a) Basophils
b) Eosinophils
c) Macrophages
d) Epithelial cells

81. MHC class I molecules are found on the cell surface of _____ cells
a) Only in thrombocytes
b) All nucleated cells
c) Only in Phagocytes
d) Only in Antigen presentation cells

82. Antibody type commonly found at the mucosal sites of fishes are _____?
a) IgA
b) IgM
c) IgT
d) IgV

83. Cells responsible for epidermal healing in fishes are ----------?
a) Malpighian cells
b) Reticulo endothelial cells
c) Macrophages
d) Monocyte

84. Key molecular genes responsible for T cell receptors rearrangement is called as _____
a) VAG
b) RIG
c) RAG
d) VDJ

85. Which among the following co receptors of T cells binds with MHC II molecule?
    a) TCR delta
    b) TCR Alpha
    c) CD8+
    d) CD4+

86. Which of the following organ in fishes is majorly responsible for antigen trapping ---------?
    a) Pancreas
    b) Hind kidney
    c) Liver
    d) Spleen

87. IgM in fishes is --------- in nature.
    a) Monomer
    b) Tetramer
    c) Pentamer
    d) Trimer

88. Analogues of germinal center in fishes is ----------
    a) Glomerulus
    b) Ellipsoids
    c) Sinusoids
    d) MMC

89. Expansion of GiALT is ---------
    a) Gill associated Lymphoid Tissue
    b) Gonad associated Lymphoid Tissue
    c) Gut associated Lymphoid Tissue
    d) Gastro intestinal associated Lymphoid Tissue

90. Self-reactive lymphocytes are killed within ---------- tissue
    a) Gills
    b) Spleen
    c) Kidney
    d) Thymus

91. Inflammasome is produced during ---------- pathway activation
    a) RLR
    b) TLR
    c) NLR
    d) CLR

92. Which type of TLRs are unique to fishes?
    a) TLR 14, 22
    b) b) TLR 15,21
    c) c) TLR 2, 24

d) d) TLR 18,12

93. Physico chemical properties of -------- chain in the immunoglobulin molecule responsible for classification of Ig molecule
    a) Light
    b) Heavy
    c) J link
    d) All the above

94. Transferrin is under ---------- category of immune defense in fishes
    a) Lectins
    b) Lysins
    c) Enzyme inhibitors
    d) Growth inhibitor

95. Which one is the maximum fraction in the organic contains in the sewage
    a) Carbohydrate
    b) Protein
    c) Fat
    d) Hydrocarbon

96. The use of living microorganism to degrade the environmental pollutant is known as
    a) Microremediation
    b) Nanoremediation
    c) Bioremediation
    d) Macroremediation

97. Toxin responsible for Paralytic shellfish poisoning is
    a) Saxitoxin
    b) Brevetoxin
    c) Okadaic acid
    d) Domoic acid

98. The book '*Silent Spring*', which was written by Rachel Carson, documented
    a) Adverse environmental effects caused by pesticides
    b) Adverse environmental effects caused by ozone depletion
    c) Adverse environmental effects caused by heavy metals
    d) Adverse environmental effects caused by radioactive pollutants

99. Species that serve as early warnings of environmental damage are called
    a) Keystone species
    b) Native species
    c) Specialist species
    d) Indicator species

100. Which of the following is a waterborne disease?
    a) Typhoid
    b) Measles
    c) Sarcoma
    d) Arthritis

101. Which of the following genus of bacteria is not found in freshwater?
a) Pseudomonas
b) Flavobacterium
c) Aeromonas
d) Vibrio

102. All of the following species are considered coliforms, except
a) *Entero bacteraerogenes*
b) *Klebsiella pneumonia*
c) *Salmonella typhi*
d) *Escherichia coli*

103. Which of the following is not a biofertilizer?
a) *Salmonella*
b) *Rhizobium*
c) *Nostoc*
d) *Azolla*

104. Increase in concentration of chemical substance along the trophic level of food chain is called
a) Bioconcentration
b) Bioaccumulation
c) Biomagnification
d) Biotrasformation

105. Neurotoxic shellfish poisoning is caused by
a) Diatom
b) Dinoflagellate
c) Bacteria
d) Brown algae

106. According to the OECD, chemicals with acute toxicity greater than 5 and less than 50 mg/kg body weight will be classified as
a) Harmful
b) Not harmful
c) Toxic
d) Very Toxic

107. Which chemical is not on WHO's list of the ten chemicals of public concern?
a) Arsenic
b) Mercury
c) Lead
d) Chromium

108. Minerals highly responsible for eutrophication of water bodies
a) Phosphorus and iron

b) Phosphorus and calcium
c) Phosphorus and nitrogen
d) Phosphorus and fluoride

109. Most widely accepted water quality criteria for measuring pollution
a) Chemical oxygen demand
b) Biological oxygen demand
c) Chloroform content
d) Ammonia

110. A dangerous pollutant that kills foetus sex organ cell
a) Mercury
b) Lead
c) Cadmium
d) Chromium

111. The maximum standard for discharge of effluent having chemical oxygen demand (mg/L) in inland surface water recommended by CPCB is
a) 200
b) 250
c) 150
d) 100

112. The standard for discharge of effluent having suspended solid (mg/L) in inland surface water by CPCB is
a) 200
b) 150
c) 100
d) 50

113. Which of the following habitat require higher recovery period for oil spill event?
a) Mangroves
b) Sandy shore
c) Rocky shore
d) Salt marshes

114. In the sewage the percent of inorganic contains in one percent of solid is
a) 10%
b) 20%
c) 30%
d) 40%

115. The oxygen require of the organic matter in the sample is termed as
a) BOD
b) COD
c) TOD
d) POD

116. How many percentage of BOD removes in primary treatment?
a) 15%
b) 25%
c) 35%
d) 45%

117. Standard relating to water quality: Enumeration of culturable microorganism using colony count by inoculation in a nutrient agar culture medium
a)ISO 6222:1999
b) ISO 6000:1999
c) ISO 6200:1999
d) ISO 6002:1999

118. An organism used to signal the presence of contaminant and its effects is known as
a) Bioindicator
b) Biomarker
c) Biosensor
d) Bioreactor

119. Fluoride pollution is causing immediate adverse effects on human body parts
a) Brain
b) Heart
c) Teeth
d) Kidney

120. Which one is larval stage of digenian trematode
a) Tomoite
b) Schizont
c) Miracedium
d) Fry

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

35.	**A**
36.	**B**
37.	**C**
38.	**D**
39.	**B**
40.	**B**
41.	**B**
42.	**A**
43.	**C**
44.	**B**
45.	**C**
46.	**C**
47.	**A**
48.	**C**
49.	**A**
50.	**A**
51.	**A**
52.	**B**
53.	**B**
54.	**C**
55.	**D**
56.	**B**
57.	**B**
58.	**D**
59.	**B**
60.	**B**
61.	**B**
62.	**A**
63.	**A**
64.	**A**
65.	**A**
66.	**C**
67.	**C**
68.	**C**

69.	**B**
70.	**C**
71.	**B**
72.	**C**
73.	**B**
74.	**C**
75.	**C**
76.	**C**
77.	**B**
78.	**D**
79.	**B**
80.	**C**
81.	**B**
82.	**C**
83.	**A**
84.	**D**
85.	**D**
86.	**D**
87.	**B**
88.	**D**
89.	**A**
90.	**D**
91.	**C**
92.	**A**
93.	**B**
94.	**D**
95.	**B**
96.	**C**
97.	**A**
98.	**A**
99.	**D**
100.	**A**
101.	**D**
102.	**C**

103.	**A**
104.	**C**
105.	**B**
106.	**C**
107.	**D**
108.	**C**
109.	**B**
110.	**C**
111.	**B**
112.	**C**
113.	**A**
114.	**C**
115.	**B**
116.	**C**
117.	**A**
118.	**A**
119.	**C**
120.	**C**


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