

Optimal – RPL/APL resources for Fish Health

Recognising Prior Learning (RPL)

Guidance: Multiple Choice

This series of **multiple-choice questions** have been designed so as there is only one possible correct and complete response. This allows prior knowledge to be established through pre-testing, using Response Tools.

Recognising Prior Learning (RPL)

This series of **multiple-choice questions** have been designed so as there is only one possible correct and complete response. This allows prior knowledge to be established through pre-testing, using One2Act tools.

Taxonomy: Subject, Bank number, Question title

Subject: FH = Fish Health

Banks: questions of equal weighting asking for the same knowledge/understanding

[Link to Journeyman certificate. Fish Anatomy is found within:](#)

1.5 observe organisms and environments and evaluate changes in relation to [the species' normal appearance and behaviour](#)

3.1 plan, implement, document and evaluate optimal operations [based on the biology of the farmed species](#)

3.7 [recognise normal behaviour](#) and appearance in fish farm organisms and elaborate on common diseases and parasites

- Be able to [recognise normal](#) and abnormal [fish behaviour](#) indicative of disease

3.3 carry out routine measurements of relevant environmental parameters and assess the results [based on the species' environmental requirements and tolerance limits](#)



Funded by the
Erasmus+ Programme
of the European Union

This project has been funded with support from the European Commission. This publication reflects the views only of the authors, and the Commission cannot be held responsible for any use, which may be made of the information contained therein.

Fish Health - Multiple Choice Question Bank

Part A) Types of diseases, fish stress and welfare

Title: FH Bank 1 – External defences

Q1) What are the fish's external defence mechanisms against disease pathogens in the aquatic environment?

Select all correct responses

- a) Mucous layer *
- b) Fins
- c) Skin *
- d) Scales *
- e) Immune system

Title: FH Bank 2 – Transmissible diseases definition

Q2) Which of the following statements most accurately describes transmissible diseases?

- a) Diseases which cannot be transmitted from one fish to another and do not involve a pathogenic organism.
- b) Diseases which can be transmitted from one fish to another and do not involve a pathogenic organism
- c) Diseases which can be transmitted from one fish to another and do involve a pathogenic organism*

Title: FH Bank 3 – Transmissible diseases causes

Q3) Other than the presence of a disease pathogen, which of the following factors could directly increase the risk of a transmissible disease?

Select all correct responses

- a) Overcrowding*
- b) Inbreeding
- c) Poor hygiene/biosecurity*
- d) Poor water quality*
- e) Lack of quarantine*
- f) Poor nutrition
- g) Increased stress*

Title: FH Bank 4 – Non- transmissible diseases definition

Q4) Which of the following statements most accurately describes non-transmissible diseases?

- a) Diseases which cannot be transmitted from one fish to another and do not involve a pathogenic organism*
- b) Diseases which can be transmitted from one fish to another and do not involve a pathogenic organism
- c) Diseases which can be transmitted from one fish to another and do involve a pathogenic organism

Title: FH Bank 5 – Non-transmissible diseases causes

Q5) Which of the following factors could directly increase the risk of a non-transmissible disease?

Select all correct responses

- a) Overcrowding
- b) Inbreeding*
- c) Poor hygiene/biosecurity
- d) Poor water quality*
- e) Lack of quarantine
- f) Poor nutrition*
- g) Increased stress

Title: FH Bank 6 – Non-transmissible environmental diseases

Q6) Which of the following are considered non transmissible environmental diseases?

Select all correct responses:

- a) Gas bubble disease*
- b) Scoliosis
- c) Methaemoglobinaemia*
- d) Snub nose
- e) Siamese twins
- f) Shortened body (stumpy)
- g) Cataracts (Nephrocalcinosis)

Title: FH Bank 7 – Non-transmissible genetic diseases

Q7) Which of the following are considered non transmissible genetic diseases?

Select all correct responses:

- a) Scoliosis*
- b) Gas bubble,
- c) Snub nose*
- d) Methaemoglobinaemia
- e) Siamese twins*
- f) Shortened body (stumpy)*

Title: FH Bank 8 – Signs of stress

Q8) Which of the following physical and behavioural signs may indicate that fish are experiencing stress?

Select all correct responses

- a) Increased respiration rate (rapid gill-movement)*
- b) Hyper-activity*
- c) Increased feed intake
- d) Fish rolling at the surface*
- e) Reduced growth*

Title: FH Bank 9 – Reducing stress in farmed fish

Q 9) What steps could be taken to reduce the impact of stress on farmed fish stocks?

Select all correct responses

- a) Improve welfare standards*
- b) Increase the feeding rate
- c) Improve health management*
- d) Chemical treatment of the water
- e) Improve husbandry and fish handling*

Title: FH Bank 10 – Farmed fish welfare

Q10) Welfare is widely recognised as an important part of farming fish and has been influenced by the '5 freedoms' now adopted by those regulating European livestock farmers.

Which of the following are specified as welfare criteria within the 5 freedoms?

Select all correct responses

- Freedom from hunger*
- Freedom from discomfort*
- Freedom from pain, injury or disease*
- Freedom to express normal behaviour*
- Freedom from fear and distress*

Title: FH Bank 11 – Bacterial disease control

Q11) Which of the following disease pathogen groups can be successfully treated with antibiotics?

- a) Virus
- b) Bacteria*
- c) Parasite
- d) Fungi

Title: FH Bank 12 – Viral disease control

Q12) Which of the following disease pathogen groups cannot be treated and must be controlled by prevention or eradication?

Select all correct responses:

- a) Virus*
- b) Bacteria
- c) External parasites
- d) Internal parasites
- e) Fungi

Title: FH Bank 13 – Ectoparasite definition

Q13) Which of the following best describes an ectoparasite?

- a) A parasite that lives on the skin and external surface of the fish*
- b) A parasite that lives inside the fish and can infest internal organs
- c) A parasite that requires an intermediate host to complete its life cycle
- d) A parasite that will only live on a single host

Title: FH Bank 14 – Endoparasite definition

Q14) Which of the following best describes an endoparasite?

- a) A parasite that lives on the skin and external surface of the fish
- b) A parasite that lives inside the fish and can infest internal organs*
- c) A parasite that requires an intermediate host to complete its life cycle
- d) A parasite that will only live on a single host

Title: FH Bank 15 – Protozoan parasite definition

Q15) Which of the following best describes a protozoan parasite?

- a) single celled organism*
- b) multi celled organism
- c) ectoparasite
- d) endoparasite

Part B) Disease specific questions

Title: FH Bank 16 – Salmon bacterial diseases

Q16) Which of the following are bacterial diseases that can infect farmed Atlantic salmon in the marine environment?

Select all correct responses:

- a) Furunculosis*
- b) Infectious Pancreatic Necrosis (IPN)
- c) Enderic Redmouth Disease (ERM)*
- d) Bacterial Kidney Disease (BKD)*
- e) Infectious haematopoietic necrosis (IHN)
- f) Vibriosis*
- g) Infectious salmon anaemia (ISA)

Title: FH Bank 17 – Tissue sampling

Q17) Which of the following protocols are correct when taking a tissue samples for laboratory analysis by a fish pathologist?

Select all correct responses:

- f) Sample one fish only
- g) Avoid the liver and spleen when sampling internal organs
- h) taken samples from five fish *
- i) Samples should be taken from dead fish
- j) Samples should be taken from fish that are moribund (nearing death)*
- k) Gently crush the tissue before placing them in the sample container

Title: FH Bank 18 – Bacterial Kidney Disease (BKD)

Q18) Which of the following symptoms would indicate a possible outbreak of Bacterial Kidney Disease (BKD) in Atlantic Salmon?

Select all correct responses:

- a) Loss of appetite,
- b) Dark colouration*
- c) Bulging eyes (exophthalmia)*
- d) Haemorrhaging at the vent
- e) Enlargement of the kidney*
- f) Furuncles or boils

Title: FH Bank 19 – Salmon viral diseases

Q19) Which of the following are viral diseases that can infect farmed Atlantic salmon in the marine environment?

Select all correct responses:

- a) Infectious Pancreatic Necrosis (IPN)*
- b) Viral haemorrhagic septicaemia (VHS)*
- c) Enderic Redmouth Disease (ERM)
- d) Infectious haematopoietic necrosis (IHN) *
- e) Infectious salmon anaemia (ISA) *
- f) Bacterial Kidney Disease
- g) Cardiomyopathy Syndrome (CMS) *
- h) Furnculosis

Title: FH Bank 20 – Infectious Pancreatic Necrosis (IPN)

Q20) Which of the following symptoms would indicate a possible outbreak of IPN in Atlantic Salmon?

Select all correct responses:

- a) Lethargic fish showing bouts of frenzied activity*
- b) Pancreatic necrosis (dead cells)*
- c) Darkening of the skin*
- d) Pale and anaemic gills
- e) swollen abdomen*
- f) Darkening of the liver

Title: FH Bank 21 – Salmon external parasitic diseases

Q21) Which of the following are external parasitic diseases that can infect farmed Atlantic salmon in the marine environment?

Select all correct responses:

- a) Amoebic Gill Disease (AGD)*
- b) Ichthyobodo*
- c) Trichodina*
- d) Gyrodactylus salaris
- e) Sea lice*

Title: FH Bank 22 – Sea lice

Q22) Which of the following symptoms could indicate the infestation an Atlantic salmon population with sea lice?

Select all correct responses

- a) Presence of the parasite*
- b) Boils and ulceration
- c) Jumping/flashing/scraping*
- d) Increased mortalities*

- e) Haemorrhaging from the vent
- f) White spots on dorsal fin area and around head and gills*

Title: FH Bank 23 – Salmon internal parasitic diseases

Q23) Which of the following are internal parasitic diseases that can infest farmed Atlantic salmon in the marine environment?

Select all correct responses:

- a) Hexamita*
- b) Eye fluke
- c) PKD*
- d) Cestodes (tapeworm)*
- e) Nematodes (Anisakis cause of Red Vent Syndrome)*

Title: FH Bank 24 – Salmon eggs fungal diseases

Q24) Which of the following are fungal diseases that can infect farmed Atlantic salmon and their eggs?

Select all correct responses:

- a) Saprolegnia (freshwater)*
- b) Exophiala (freshwater and marine)*

Part C) Disease prevention and treatment

Title: FH Bank 25 – Disease treatments – Salmon ectoparasites

Q25) Which recognised methods are needed to be able to treat all the external parasites known to infect farmed Atlantic salmon during the freshwater and marine phases?

Select all correct responses:

- a) Vaccination (Injection or immersion)*
- b) Chemical bath*
- c) Chemical flush*
- d) Oral (medicated feed)*

Title: FH Bank 26 – Bath treatment - Raceway

Q26) How much Chloramine T powder is required to administer a flush treatment to fish displaying symptoms of Bacterial Gill Disease in a raceway which is 6 metres in length, 1.2 metres wide and a water depth of 0.80 metres. The dose rate is 2 ppm

- a) 11.52 grams*
- b) 3.46 grams
- c) 2.88 grams
- d) 2880 grams

Title: FH Bank 27 – Bath treatment – Circular tank

Q27) How much formalin is required to administer a bath treatment to fish showing symptoms of an ectoparasitic protozoan infection in a circular tank with a diameter of 5 metres and a water depth of 1.5 metres. The dose rate is 200 ppm

- a) 147.2 litres
- b) 0.1472 litres
- c) 5.9 litres*
- d) 0.59 litres

Title: FH Bank 28 – Infeed treatment

Q28) Juvenile salmonids in a circular tank are displaying symptoms of the bacterial infection Enteric Redmouth. There are 20 000 fish with an average weight of 60 grams. They will require an antibiotic infeed treatment at a dose rate of 80 mg of antibiotic/kg of fish/day for a total period of 10 days.

What will be the **total quantity** of antibiotic required to treat the stock over the **whole 10 day period**.

- a) 15 grams
- b) 960 grams *
- c) 96000 mg
- d) 150 grams

Title: FH Bank 29 – Salmon notifiable diseases

Q29) Which of the following are notifiable diseases in Atlantic salmon aquaculture in the UK?

Select all of those that are notifiable:

- a) Infectious salmon anaemia (ISA)*
- b) Infectious Pancreatic Necrosis (IPN)
- c) Viral haemorrhagic septicaemia (VHS)*
- d) Furunculosis
- e) Infectious haematopoietic necrosis (IHN)*
- f) Bacterial Kidney Disease (BKD)*
- g) Gyrodactylus salaris*
- h) Enderic Redmouth Disease (ERM)

Q30) Look at the following list of Atlantic salmon viral diseases.

Select all of those that are notifiable:

- a) Infectious Pancreatic Necrosis (IPN)
- b) Infectious haematopoietic necrosis IHN*
- c) Viral haemorrhagic septicaemia (VHS)*
- d) Infectious salmon anaemia (ISA) *

Q31) Look at the following list of Atlantic salmon bacterial diseases.

Select all of those that are notifiable:

- a) Bacterial Kidney Disease (BKD)*
- b) Enderic Redmouth Disease (ERM)
- c) Furunculosis

Q32) Look at the following list of Atlantic salmon parasitic diseases.

Select all of those that are notifiable:

- a) Gyrodactylus salaris*
- b) Sea lice