

54 Aquatic Animal Health Management ICAR SEPT 2022

Topic:- GEN KNOW COMMON PHD

1) Colour of the tag used on certified seed bags is[Question ID = 16958][Question Description = 101_221_GKD_SEP22_Q01]

1. Blue [Option ID = 37829]
2. Purple [Option ID = 37830]
3. White [Option ID = 37831]
4. Golden Yellow [Option ID = 37832]

2) Following are the statements regarding the Usar soil -

- A. It is reclaimed by adding lime.
- B. This soil has pH more than seven.
- C. Paddy crop can be grown in this soil.

Choose the *correct* answer from the options given below:

[Question ID = 16959][Question Description = 102_221_GKD_SEP22_Q02]

1. A and B only [Option ID = 37833]
2. B and C only [Option ID = 37834]
3. C only [Option ID = 37835]
4. A only [Option ID = 37836]

3) When total utility of a commodity increases, marginal utility will be

[Question ID = 16960][Question Description = 103_221_GKD_SEP22_Q03]

1. Negative but increasing
[Option ID = 37837]
2. Positive but decreasing
[Option ID = 37838]
3. Constant
[Option ID = 37839]
4. Either positive or negative
[Option ID = 37840]

4) Where is the headquarter of International Fund for Agriculture Development located?

[Question ID = 16961][Question Description = 104_221_GKD_SEP22_Q04]

1. Vienna, Austria
[Option ID = 37841]
2. Rome, Italy
[Option ID = 37842]
3. New York, USA
[Option ID = 37843]
4. Berlin, Germany
[Option ID = 37844]

5) Mid-Oceanic Ridges are one of the important divisions of the ocean floor. In this respect, point out the incorrect statement regarding the 'Mid-Oceanic Ridges'. [Question ID = 16962][Question Description = 105_221_GKD_SEP22_Q05]

1. It is the largest mountain chain on the surface of the earth [Option ID = 37845]
2. It is a series of interconnected chain within the ocean. [Option ID = 37846]
3. It is characterised by a central rift system [Option ID = 37847]
4. The rift system at the crest is the zone of very low volcanic activity. [Option ID = 37848]

6) Consider the following facts about the union territory of India and point out the one which is incorrect in relation to union territory. [Question ID = 16963][Question Description = 106_221_GKD_SEP22_Q06]

1. These are the areas under the direct control of central government. [Option ID = 37849]
2. Also known as the 'centrally administered territories. [Option ID = 37850]

3. These territories constitute a conspicuous departure from the unitary feature of India. [Option ID = 37851]
4. There is no uniformity in their administrative systems. [Option ID = 37852]

7) Variety of flora and fauna are found in the different types of forest in India. In this regard, species of trees like teak, *sal shisham*, *sandalwood*, etc. are found in which of the following type of forests in India?[Question ID = 16964][Question Description = 107_221_GKD_SEP22_Q07]

1. Tropical evergreen forests [Option ID = 37853]
2. Tropical thorn forests [Option ID = 37854]
3. Tropical deciduous forests [Option ID = 37855]
4. Montane forests [Option ID = 37856]

8) The Marginal Preference Theory of consumption behaviour was proposed by

[Question ID = 16965][Question Description = 108_221_GKD_SEP22_Q08]

1. Armstrong
[Option ID = 37857]
2. J.K.Hicks
[Option ID = 37858]
3. Neumann
[Option ID = 37859]
4. Edmund Cannon
[Option ID = 37860]

9) Point out the incorrect statements regarding the service sector in India.[Question ID = 16966][Question Description = 109_221_GKD_SEP22_Q09]

1. It is the highest contributor to GDP [Option ID = 37861]
2. It requires skilled labour [Option ID = 37862]
3. It is the fastest growing sector [Option ID = 37863]
4. It is restricted to very few sectors. [Option ID = 37864]

10) Consider the statements regarding the agriculture sector in India and point out the incorrect statement.[Question ID = 16967][Question Description = 110_221_GKD_SEP22_Q10]

1. Agriculture sector is the largest employer of workforce [Option ID = 37865]
2. It has contributed to the Gross Value Added (GVA) [Option ID = 37866]
3. Growth in allied sectors is the major drivers of overall growth in the sector. [Option ID = 37867]
4. Minimum Support Price (MSP) policy is used as to promote crop uniformity. [Option ID = 37868]

11) In case of related goods, the cross elasticity of demand is[Question ID = 16968][Question Description = 111_221_GKD_SEP22_Q11]

1. Low [Option ID = 37869]
2. High [Option ID = 37870]
3. Zero [Option ID = 37871]
4. Unity [Option ID = 37872]

12) With reference to organic farming in India, consider the following statements :

- A. The National Programme for Organic Production' (NPOP) is operated under the guidelines and directions of the Union Ministry of Rural Development.
- B. The Agricultural and Processed Food Products Export Development Authority' (APEDA) functions as the Secretariat for the implementation of NPOP.
- C. Sikkim has become India's first fully organic state.

Choose the *correct* answer from the options given below:

[Question ID = 16969][Question Description = 112_221_GKD_SEP22_Q12]

1. A and B only
[Option ID = 37873]
2. B and C only
[Option ID = 37874]
3. C only
[Option ID = 37875]
4. A, B and C

[Option ID = 37876]

13) With reference to the circumstances in Indian agriculture, the concept of "Conservation Agriculture" assumes significance. Which of the following falls under the Conservation Agriculture ?

- A. Avoiding the monoculture practices.
- B. Adopting minimum tillage.
- C. Avoiding the cultivation of plantation crops.
- D. Using crop residues to cover soil surface.
- E. Adopting spatial and temporal crop sequencing/ crop rotations.

Choose the *correct* answer from the options given below:

[Question ID = 16970][Question Description = 113_221_GKD_SEP22_Q13]

- 1. A, C and D only [Option ID = 37877]
- 2. B, C, D and E only [Option ID = 37878]
- 3. B, D and E only [Option ID = 37879]
- 4. A, B, C and E only [Option ID = 37880]

14) Consumers are likely to get a variety of goods in which kind of market competition[Question ID = 16971][Question Description = 114_221_GKD_SEP22_Q14]

- 1. Monopoly [Option ID = 37881]
- 2. Duopoly [Option ID = 37882]
- 3. Oligopoly [Option ID = 37883]
- 4. Monopolistic [Option ID = 37884]

15) What is the correct chronological order of the following laws enacted for the conservation and protection of environment ?

- A. Environment (Protection) Act.
- B. Water (Prevention & Control of Pollution) Act.
- C. Air (Prevention & Control of pollution) Act.
- D. National Green Tribunal Act.

Choose the *correct* answer from the options given below:

[Question ID = 16972][Question Description = 115_221_GKD_SEP22_Q15]

- 1. B, C, A, D [Option ID = 37885]
- 2. A, B, C, D [Option ID = 37886]
- 3. C, B, A, D [Option ID = 37887]
- 4. D, C, B, A [Option ID = 37888]

16) The scientific study of soil is[Question ID = 16973][Question Description = 116_221_GKD_SEP22_Q16]

- 1. Earth Study [Option ID = 37889]
- 2. Soil Science [Option ID = 37890]
- 3. Pedology [Option ID = 37891]
- 4. Soil Chemistry [Option ID = 37892]

17) *Triticum aestivum*, the common bread wheat is -

[Question ID = 16974][Question Description = 117_221_GKD_SEP22_Q17]

- 1. Tetraploid

[Option ID = 37893]

- 2. Hexaploid

[Option ID = 37894]

- 3. Haploid

[Option ID = 37895]

- 4. Diploid

[Option ID = 37896]

18) Sectoral inflation refers to[Question ID = 16975][Question Description = 118_221_GKD_SEP22_Q18]

- 1. Running inflation [Option ID = 37897]

2. Comprehensive inflation [Option ID = 37898]
3. Sporadic inflation [Option ID = 37899]
4. Creeping inflation [Option ID = 37900]

19) Keynes Liquidity trap refers to[Question ID = 16976][Question Description = 119_221_GKD_SEP22_Q19]

1. Speculative demand for money [Option ID = 37901]
2. Transactions motive of money is inelastic [Option ID = 37902]
3. Precautionary motive of money is inelastic [Option ID = 37903]
4. Transactions motive of money is constant [Option ID = 37904]

20) A business is solvent if[Question ID = 16977][Question Description = 120_221_GKD_SEP22_Q20]

1. Total receipts exceed total expenditures [Option ID = 37905]
2. Total debt exceeds total equity [Option ID = 37906]
3. Total sales exceed total cash expense [Option ID = 37907]
4. Total assets exceed total liabilities [Option ID = 37908]

Topic:- Fishery Science 2_PHD

1) At a pH of about 4, most inorganic carbon in water is in the form of[Question ID = 5601][Question Description = 101_131_BFS_SEP22_Q01]

1. HCO_3^- [Option ID = 22401]
2. CO_3^{2-} [Option ID = 22402]
3. CO_2 [Option ID = 22403]
4. HCO_3^- and CO_3^{2-} [Option ID = 22404]

2) Given below are two statements, one is labelled as Assertion A and the other is labelled as Reason R

Assertion A: Fishes are considered one of the healthy food for human.

Reason R: Fishes are rich in highly unsaturated fatty acids.

In light of the above statements, choose the *most appropriate* answer from the options given below

[Question ID = 5602][Question Description = 102_131_BFS_SEP22_Q02]

1. Both A and R are correct and R is the correct explanation of A [Option ID = 22405]
2. Both A and R are correct but R is NOT the correct explanation of A [Option ID = 22406]
3. A is correct but R is not correct [Option ID = 22407]
4. A is not correct but R is correct [Option ID = 22408]

3) Vitellogenin is synthesized in[Question ID = 5603][Question Description = 103_131_BFS_SEP22_Q03]

1. Kidney [Option ID = 22409]
2. Spleen [Option ID = 22410]
3. Liver [Option ID = 22411]
4. Gonads [Option ID = 22412]

4) Which of the following substances decreases the activity of dopamine?

[Question ID = 5604][Question Description = 104_131_BFS_SEP22_Q04]

1. GnRH
[Option ID = 22413]
2. MIS
[Option ID = 22414]
3. MPF
[Option ID = 22415]
4. Pimozide
[Option ID = 22416]

5) Egg incubation time for Indian major carps is[Question ID = 5605][Question Description = 105_131_BFS_SEP22_Q05]

1. 6-8 h [Option ID = 22417]
2. 12-15 h [Option ID = 22418]
3. 18-24 h [Option ID = 22419]
4. 26-30 h [Option ID = 22420]

6) Murrel eggs are[Question ID = 5606][Question Description = 106_131_BFS_SEP22_Q06]

1. Pelagic [Option ID = 22421]
2. Demersal [Option ID = 22422]

3. Semi-buoyant [Option ID = 22423]
4. Sticky [Option ID = 22424]

7) How many hours after hormone injection, magur females are stripped?[Question ID = 5607][Question Description = 107_131_BFS_SEP22_Q07]

1. 5-7 h [Option ID = 22425]
2. 8-10 h [Option ID = 22426]
3. 16-17 h [Option ID = 22427]
4. 20-24 h [Option ID = 22428]

8) Kuruma shrimp is[Question ID = 5608][Question Description = 108_131_BFS_SEP22_Q08]

1. *Paeneus monodon* [Option ID = 22429]
2. *P. semisulcatus* [Option ID = 22430]
3. *P. merguensis* [Option ID = 22431]
4. *P. japonicas* [Option ID = 22432]

9) The state fish of Bihar is?[Question ID = 5609][Question Description = 109_131_BFS_SEP22_Q09]

1. Murrel [Option ID = 22433]
2. Magur [Option ID = 22434]
3. Singi [Option ID = 22435]
4. Catla [Option ID = 22436]

10) Given below are two statements, one is labelled as Assertion A and the other is labelled as Reason R

Assertion A: Potassium permanganate reduces the biological oxygen demand of pond water when applied.

Reason R: Potassium permanganate is an oxidizing agent.

In light of the above statements, choose the *most appropriate* answer from the options given below

[Question ID = 5610][Question Description = 110_131_BFS_SEP22_Q10]

1. Both A and R are correct and R is the correct explanation of A [Option ID = 22437]
2. Both A and R are correct but R is NOT the correct explanation of A [Option ID = 22438]
3. A is correct but R is not correct [Option ID = 22439]
4. A is not correct but R is correct [Option ID = 22440]

11) Select a herbivore fish from the following.

[Question ID = 5611][Question Description = 111_131_BFS_SEP22_Q11]

1. Sea bream [Option ID = 22441]
2. Milk fish [Option ID = 22442]
3. Murrel [Option ID = 22443]
4. Grouper [Option ID = 22444]

12) The ova diameter of a fully mature female of milkfish is

[Question ID = 5612][Question Description = 112_131_BFS_SEP22_Q12]

1. 250-500 μm [Option ID = 22445]
2. 650-850 μm [Option ID = 22446]
3. 1150-1350 μm [Option ID = 22447]
4. 1400-1700 μm [Option ID = 22448]

13) Molecular mass of water is[Question ID = 5613][Question Description = 113_131_BFS_SEP22_Q13]

1. 16 g/mol [Option ID = 22449]
2. 18 g/mol [Option ID = 22450]
3. 20 g/mol [Option ID = 22451]
4. 40 g/mol [Option ID = 22452]

14) Golden Mahseer males and females mature at[Question ID = 5614][Question Description = 114_131_BFS_SEP22_Q14]

1. 1⁺ year and 2⁺ years, respectively [Option ID = 22453]
2. 2⁺ year and 4⁺ years, respectively [Option ID = 22454]
3. 3⁺ year and 5⁺ years, respectively [Option ID = 22455]
4. 5⁺ year and 7⁺ years, respectively [Option ID = 22456]

15) Match List I with List II

List I	List II
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A. <i>Ranatra</i>	I. Water scorpion
B. <i>Gerris</i>	II. Water boatman
C. <i>Nepa</i>	III. Water cricket
D. <i>Velia</i>	IV. Pond skater
	V. Water stick insects

Choose the correct answer from the options given below:

[Question ID = 5615][Question Description = 115_131_BFS_SEP22_Q15]

1. A -I, B -II, C -III, D - V [Option ID = 22457]
2. A -V, B -IV, C -I, D -III [Option ID = 22458]
3. A -V, B -II, C -I, D - III [Option ID = 22459]
4. A -V, B -IV, C -I, D - II [Option ID = 22460]

16) Given below are two statements, one is labelled as Assertion A and the other is labelled as Reason R

Assertion A: *Pangasius pangasius* is the only species of the genus *Pangasius* found in India.

Reason R: *Pangasius pangasius* displays smigration from estuarine to upper stretch of river.

In light of the above statements, choose the *most appropriate* answer from the options given below

[Question ID = 5616][Question Description = 116_131_BFS_SEP22_Q16]

1. Both A and R are correct and R is the correct explanation of A
[Option ID = 22461]
2. Both A and R are correct but R is NOT the correct explanation of A
[Option ID = 22462]
3. A is correct but R is not correct
[Option ID = 22463]
4. A is not correct but R is correct
[Option ID = 22464]

17) *Horabagrus brachisoma* is commonly called as [Question ID = 5617][Question Description = 117_131_BFS_SEP22_Q17]

1. Yellow catfish [Option ID = 22465]
2. Butter catfish [Option ID = 22466]
3. Stinging catfish [Option ID = 22467]
4. Walking catfish [Option ID = 22468]

18) Dissolved oxygen concentration in pond water is generally not affected by [Question ID = 5618][Question Description = 118_131_BFS_SEP22_Q18]

1. Light [Option ID = 22469]
2. Fish biomass [Option ID = 22470]
3. Zooplankton biomass [Option ID = 22471]
4. Feeding frequency [Option ID = 22472]

19) Given below are two statements, one is labelled as Assertion A and the other is labelled as Reason R

Assertion A: Liming increases the pH of pond water.

Reason R: The H₂S toxicity increase with the increase in water pH.

In light of the above statements, choose the *most appropriate* answer from the options given below

[Question ID = 5619][Question Description = 119_131_BFS_SEP22_Q19]

1. Both A and R are correct and R is the correct explanation of A [Option ID = 22473]
2. Both A and R are correct but R is NOT the correct explanation of A [Option ID = 22474]
3. A is correct but R is not correct [Option ID = 22475]
4. A is not correct but R is correct [Option ID = 22476]

20) Which of the following fishes excrete urea as the primary nitrogenous end product? [Question ID = 5620][Question Description = 120_131_BFS_SEP22_Q20]

1. Trouts [Option ID = 22477]
2. Salmon [Option ID = 22478]
3. Murrels [Option ID = 22479]
4. Sharks [Option ID = 22480]

21) Which is the first permanent cell line developed from fish?

[Question ID = 5621][Question Description = 121_131_BFS_SEP22_Q21]

1. FHM [Option ID = 22481]
2. GF1 [Option ID = 22482]
3. RTG2 [Option ID = 22483]
4. CHSE-214 [Option ID = 22484]

22) Which of the following is not differentiated from T-Cell?

[Question ID = 5622][Question Description = 122_131_BFS_SEP22_Q22]

1. T helper cell [Option ID = 22485]
2. T cytotoxic cell [Option ID = 22486]
3. T suppressor cell [Option ID = 22487]
4. T chemokine cell [Option ID = 22488]

23) The most commonly used anticoagulant for hematology is?

[Question ID = 5623][Question Description = 123_131_BFS_SEP22_Q23]

1. Potassium citrate
[Option ID = 22489]
2. Calcium citrate
[Option ID = 22490]
3. Ethylenediaminetetraacetic acid
[Option ID = 22491]
4. Tetrasodium salt
[Option ID = 22492]

24) Which of the following is a disease causing Gram-positive bacteria[Question ID = 5624][Question Description = 124_131_BFS_SEP22_Q24]

1. *Edwardsiella tarda* [Option ID = 22493]
2. *Renibacterium salmoninarum* [Option ID = 22494]
3. *Yersinia ruckeri* [Option ID = 22495]
4. *Flavobacterium columnare* [Option ID = 22496]

25) The headquarter of OIE is located in

[Question ID = 5625][Question Description = 125_131_BFS_SEP22_Q25]

1. Bangkok
[Option ID = 22497]
2. Geneva
[Option ID = 22498]
3. Paris
[Option ID = 22499]
4. New York
[Option ID = 22500]

26) Monogenean fish parasite, Dactylogyrus mainly affect[Question ID = 5626][Question Description = 126_131_BFS_SEP22_Q26]

1. Gills [Option ID = 22501]
2. Skin [Option ID = 22502]
3. Fins [Option ID = 22503]
4. Eyes [Option ID = 22504]

27) Which institute developed and commercialized ARGURE to control Argulosis?

[Question ID = 5627][Question Description = 127_131_BFS_SEP22_Q27]

1. ICAR-CIBA [Option ID = 22505]
2. ICAR-CIFE [Option ID = 22506]
3. ICAR-CIFA [Option ID = 22507]
4. ICAR-CIFRI [Option ID = 22508]

28) NSPAAD stands for[Question ID = 5628][Question Description = 128_131_BFS_SEP22_Q28]

1. National Sustainable Programme for Aquatic Animal Diseases [Option ID = 22509]
2. National Surveillance Programme for Aquatic Animal Diseases [Option ID = 22510]
3. National Surveillance Plan for Aquatic Animal Diseases [Option ID = 22511]

4. National Sustainable Plan for Aquatic Animal Diseases [Option ID = 22512]

29) Technique of DNA fingerprinting involves[Question ID = 5629][Question Description = 129_131_BFS_SEP22_Q29]

1. ELISA [Option ID = 22513]
2. Northern blotting [Option ID = 22514]
3. Southern blotting [Option ID = 22515]
4. SDS-PAGE [Option ID = 22516]

30) Specific humoral defense in fish is mediated by[Question ID = 5630][Question Description = 130_131_BFS_SEP22_Q30]

1. Macrophages [Option ID = 22517]
2. Antibody [Option ID = 22518]
3. T cells [Option ID = 22519]
4. Interferon [Option ID = 22520]

31) Which of the following is an eye parasite of fish?

[Question ID = 5631][Question Description = 131_131_BFS_SEP22_Q31]

1. *Diplostomum* sp. [Option ID = 22521]
2. *Trichodina* sp. [Option ID = 22522]
3. *Ergasilus* sp. [Option ID = 22523]
4. *Tetrahymena* sp. [Option ID = 22524]

32) An adaptive increase in the number of cells that can cause enlargement of tissues or organs is known as[Question ID = 5632][Question Description = 132_131_BFS_SEP22_Q32]

1. Hyperplasia [Option ID = 22525]
2. Hypertrophy [Option ID = 22526]
3. Atrophy [Option ID = 22527]
4. Autolysis [Option ID = 22528]

33) Name the country which introduces fish quarantine system for the first time in Asia-Pacific region?[Question ID = 5633]

[Question Description = 133_131_BFS_SEP22_Q33]

1. China [Option ID = 22529]
2. Thailand [Option ID = 22530]
3. Indonesia [Option ID = 22531]
4. Vietnam [Option ID = 22532]

34) Brown Blood Disease occurs in fish when water contains

[Question ID = 5634][Question Description = 134_131_BFS_SEP22_Q34]

1. High pH concentrations
[Option ID = 22533]
2. High nitrite concentrations
[Option ID = 22534]
3. High O₂ concentrations
[Option ID = 22535]
4. Heavy metal toxicity
[Option ID = 22536]

35) White tail disease is a disease of[Question ID = 5635][Question Description = 135_131_BFS_SEP22_Q35]

1. *Penaeus indicus* [Option ID = 22537]
2. *Litopenaeus vannamei* [Option ID = 22538]
3. *Penaeus monodon* [Option ID = 22539]
4. *Macrobrachium rosenbergii* [Option ID = 22540]

36) Haemoglutinins come under which group of anti-nutrients?

[Question ID = 5636][Question Description = 136_131_BFS_SEP22_Q36]

1. Glycosides
[Option ID = 22541]
2. Phenols
[Option ID = 22542]
3. Proteins
[Option ID = 22543]
4. Miscellaneous

[Option ID = 22544]

**37) The ideal temperature (degree centigrade) adopted for manufacture of extruded feeds is[Question ID = 5637]
[Question Description = 137_131_BFS_SEP22_Q37]**

1. 100- 125 [Option ID = 22545]
2. 125 - 150 [Option ID = 22546]
3. 85 - 100 [Option ID = 22547]
4. 150 - 175 [Option ID = 22548]

38)

List I	List II
A. Prebiotic	I. BHT
B. Binder	II. Oxytetracycline
C. Antioxidant	III. Starch
D. Antibiotic	IV. Nucleotide

[Question ID = 5638][Question Description = 138_131_BFS_SEP22_Q38]

1. A - II , B - III , C - IV, D - I [Option ID = 22549]
2. A - I, B - III, C - II, D - IV [Option ID = 22550]
3. A - III, B - IV, C - I, D - II [Option ID = 22551]
4. A - IV , B - III, C - I, D - II [Option ID = 22552]

39) Carotenoids are considered as what type of additives ?[Question ID = 5639][Question Description = 139_131_BFS_SEP22_Q39]

1. Nutritive [Option ID = 22553]
2. Adjuvant [Option ID = 22554]
3. Non-nutritive [Option ID = 22555]
4. Surfactants [Option ID = 22556]

40) The HUFAs, which are vital as cell membrane constituents are susceptible to which of the following ?[Question ID = 5640][Question Description = 140_131_BFS_SEP22_Q40]

1. Both oxygen and organic radical [Option ID = 22557]
2. Oxygen only [Option ID = 22558]
3. Organic radicals only [Option ID = 22559]
4. Alpha rays [Option ID = 22560]

41) Which one of the following is the best initial live diet for carp spawn after hatching[Question ID = 5641][Question Description = 141_131_BFS_SEP22_Q41]

1. Copepods [Option ID = 22561]
2. Rotifers [Option ID = 22562]
3. Cladocerans [Option ID = 22563]
4. Ostracods [Option ID = 22564]

42) The factors that are known to stimulate olfactory senses in fishes ?[Question ID = 5642][Question Description = 142_131_BFS_SEP22_Q42]

1. Prostaglandins only [Option ID = 22565]
2. Sterols only [Option ID = 22566]
3. Insulin only [Option ID = 22567]
4. Both Prostaglandins and Steroids [Option ID = 22568]

43) Secretion of enzymes from Acinar cells are found in which organ of fishes ?

[Question ID = 5643][Question Description = 143_131_BFS_SEP22_Q43]

1. Pancreas
[Option ID = 22569]
2. Spleen
[Option ID = 22570]
3. Liver
[Option ID = 22571]
4. Gizzard
[Option ID = 22572]

44) Calcium requirement in fishes is primarily correlated with intake of which of the following ?[Question ID = 5644]

[Question Description = 144_131_BFS_SEP22_Q44]

1. Nickel [Option ID = 22573]
2. Copper [Option ID = 22574]
3. Phosphorous [Option ID = 22575]
4. Iron [Option ID = 22576]

45) Haemorrhagic kidney is symptom of the deficiency of which of the following ?[Question ID = 5645][Question Description = 145_131_BFS_SEP22_Q45]

1. Calcium [Option ID = 22577]
2. Iron [Option ID = 22578]
3. Ascorbic acid [Option ID = 22579]
4. Choline [Option ID = 22580]

46) In the HUFA enrichment of live feeds, which statements are correct?

- A. Cladocerans can be efficiently enriched
- B. Ostracods can be effectively enriched
- C. Artemia is a good candidate species for enrichment
- D. Rotifers can be enriched

Choose the *correct* answer from the options given below

[Question ID = 5646][Question Description = 146_131_BFS_SEP22_Q46]

1. A, B, C and D [Option ID = 22581]
2. B, C and D only [Option ID = 22582]
3. C and D only [Option ID = 22583]
4. A, C and D only [Option ID = 22584]

47) Which one of the following forms a important food of whales ?[Question ID = 5647][Question Description = 147_131_BFS_SEP22_Q47]

1. Squillas [Option ID = 22585]
2. Antarctic krills [Option ID = 22586]
3. Pelagic fishes [Option ID = 22587]
4. Demersal fishes [Option ID = 22588]

48) Which of the following are correct?

- A. Fish meal is not an essential ingredient for preparation of feed of carps
- B. Cholesterol is added to shrimp diets
- C. Cholesterol is added to diets of murrels
- D. Carotenoid is added as an antibiotic in fish feeds

Choose the *correct* answer from the options given below:

[Question ID = 5648][Question Description = 148_131_BFS_SEP22_Q48]

1. A and B only [Option ID = 22589]
2. B and C only [Option ID = 22590]
3. A and D only [Option ID = 22591]
4. C and D only [Option ID = 22592]

49) Which of the following seaweed is a good source of Vitamin B₁ ?

[Question ID = 5649][Question Description = 149_131_BFS_SEP22_Q49]

1. *Sargassum* [Option ID = 22593]
2. *Laminaria* [Option ID = 22594]
3. *Ulva* [Option ID = 22595]
4. *Prophyra* [Option ID = 22596]

50) The approach in which gene expression (mRNA) is analyzed in a biological sample at a given time under specific conditions is,[Question ID = 5650][Question Description = 150_131_BFS_SEP22_Q50]

1. Nutrigenetics [Option ID = 22597]
2. Lipogenetics [Option ID = 22598]
3. Transcriptomics [Option ID = 22599]
4. Metabolomics [Option ID = 22600]

1) The predominant roles of IgT/Z antibodies have been elucidated in[Question ID = 5701][Question Description = 101_132_FHM_SEP22_Q01]

1. MALT [Option ID = 22801]
2. Thymus [Option ID = 22802]
3. Anterior Kidney [Option ID = 22803]
4. Spleen [Option ID = 22804]

2) Pattern recognition receptors bind to[Question ID = 5702][Question Description = 102_132_FHM_SEP22_Q02]

1. MHC I molecules [Option ID = 22805]
2. B and T lymphocytes [Option ID = 22806]
3. Pathogen-associated molecular patterns [Option ID = 22807]
4. Host cell-associated molecules [Option ID = 22808]

3) In the following, which is NOT a crustacean blood cell?

[Question ID = 5703][Question Description = 103_132_FHM_SEP22_Q03]

1. Hyaline cells [Option ID = 22809]
2. Granular cells [Option ID = 22810]
3. Semigranular cells [Option ID = 22811]
4. Chloride cells [Option ID = 22812]

4) Which is the most accurate description for genetic material of WSSV?[Question ID = 5704][Question Description = 104_132_FHM_SEP22_Q04]

1. Enveloped, linear ssDNA viruses [Option ID = 22813]
2. Non-enveloped, linear dsDNA virus [Option ID = 22814]
3. Enveloped, rod-shaped circular dsDNA virus [Option ID = 22815]
4. Non-enveloped, icosahedral ssDNA virus [Option ID = 22816]

5) Which stem cell represents a major target for gene therapy?

[Question ID = 5705][Question Description = 105_132_FHM_SEP22_Q05]

1. Hematopoietic [Option ID = 22817]
2. Hepatocyte [Option ID = 22818]
3. Neural Cell [Option ID = 22819]
4. Germinal Cell [Option ID = 22820]

6) Svedberg (S values) are units of molecular size used to describe cellular components and is usually determined by[Question ID = 5706][Question Description = 106_132_FHM_SEP22_Q06]

1. PAGE [Option ID = 22821]
2. Ultracentrifugation [Option ID = 22822]
3. Spectrophotometry [Option ID = 22823]
4. Western blot [Option ID = 22824]

7) Fumagilin is used to treat[Question ID = 5707][Question Description = 107_132_FHM_SEP22_Q07]

1. Ichthyophthirius [Option ID = 22825]
2. Microsporidian [Option ID = 22826]
3. Amyloodinium [Option ID = 22827]
4. Trichodina [Option ID = 22828]

8) Flame cells are the specialized excretory structures of[Question ID = 5708][Question Description = 108_132_FHM_SEP22_Q08]

1. *Diphyllbothrium latum* [Option ID = 22829]
2. *Ichthyophthirius multifiliis* [Option ID = 22830]
3. *Gyrodactylus sp.* [Option ID = 22831]
4. *Lernaea cyprinacea* [Option ID = 22832]

9) In which stage of GAS, an increase in plasma glucose is found in response to catecholamine stimulation due to hepatic gluconeolysis?

[Question ID = 5709][Question Description = 109_132_FHM_SEP22_Q09]

1. Primary [Option ID = 22833]
2. Secondary [Option ID = 22834]
3. Tertiary [Option ID = 22835]

4. Quaternary [Option ID = 22836]

10) The nucleotide sequence recognized for cleavage by a restriction enzyme are[Question ID = 5710][Question Description = 110_132_FHM_SEP22_Q10]

1. Palindromic sequence [Option ID = 22837]
2. Tandem repeats [Option ID = 22838]
3. CG rich regions [Option ID = 22839]
4. TATA boxes [Option ID = 22840]

11) In crustacean non-specific defence mechanism, what is the end product of prophenoloxidase cascade?

[Question ID = 5711][Question Description = 111_132_FHM_SEP22_Q11]

1. Phenols
[Option ID = 22841]
2. Hydrogen superoxide
[Option ID = 22842]
3. Melanin
[Option ID = 22843]
4. Quinone
[Option ID = 22844]

12) Which is the correct order of lymphoid organ ontogeny display in marine fish?

[Question ID = 5712][Question Description = 112_132_FHM_SEP22_Q12]

1. Thymus → Spleen → Anterior Kidney [Option ID = 22845]
2. Spleen → Anterior Kidney → Thymus [Option ID = 22846]
3. Thymus → Anterior Kidney → Spleen [Option ID = 22847]
4. Anterior Kidney → Spleen → Thymus [Option ID = 22848]

13) Which epitope has been utilized for developing vaccine against IPNV?

[Question ID = 5713][Question Description = 113_132_FHM_SEP22_Q13]

1. VP1 [Option ID = 22849]
2. VP2 [Option ID = 22850]
3. G Glycoprotein [Option ID = 22851]
4. NS [Option ID = 22852]

14) Cell death caused by autolysis is produced by?

[Question ID = 5714][Question Description = 114_132_FHM_SEP22_Q14]

1. Bacterial enzymes
[Option ID = 22853]
2. Phagocytic leukocytes
[Option ID = 22854]
3. Endogenous enzymes
[Option ID = 22855]
4. Antibodies
[Option ID = 22856]

15) Which of the following stains helps in demonstrating collagenous tissue?

[Question ID = 5715][Question Description = 115_132_FHM_SEP22_Q15]

1. Acid-fast stain [Option ID = 22857]
2. Van Gieson [Option ID = 22858]
3. India ink [Option ID = 22859]
4. Sudan black [Option ID = 22860]

16) Most prevalent species of *Argulus* found in India[Question ID = 5716][Question Description = 116_132_FHM_SEP22_Q16]

1. *Argulus indicus* [Option ID = 22861]
2. *Argulus coregoni* [Option ID = 22862]
3. *Argulus siamensis* [Option ID = 22863]
4. *Argulus bicolor* [Option ID = 22864]

17) As per SOP specified by Coastal Aquaculture Authority, which of the following institution has an aquatic quarantine facility for imported SPF broodstock of *Litopenaeus vannamei*?

[Question ID = 5717][Question Description = 117_132_FHM_SEP22_Q17]

1. MPEDA-RGCA [Option ID = 22865]
2. ICAR-CIBA [Option ID = 22866]
3. CAA [Option ID = 22867]
4. NFDB [Option ID = 22868]

18) Atypical strain of *Aeromonas salmonicida* on TSA is identifiable as

[Question ID = 5718][Question Description = 118_132_FHM_SEP22_Q18]

1. Motile, oxidase negative and fermentative [Option ID = 22869]
2. Motile, oxidase positive and non-fermentative [Option ID = 22870]
3. Non-motile, oxidase negative and non-fermentative [Option ID = 22871]
4. Non-motile, oxidase positive and fermentative [Option ID = 22872]

19) Which Ultraviolet (UV) light is widely used to decontaminate environmental surfaces?

[Question ID = 5719][Question Description = 119_132_FHM_SEP22_Q19]

1. UV-C [Option ID = 22873]
2. UV-B [Option ID = 22874]
3. UV-A [Option ID = 22875]
4. UV-V [Option ID = 22876]

20) Best possible measures to control WSSV is[Question ID = 5720][Question Description = 120_132_FHM_SEP22_Q20]

1. Vaccine [Option ID = 22877]
2. Povidine iodine [Option ID = 22878]
3. BMP [Option ID = 22879]
4. Lime [Option ID = 22880]

21) Given below are two statements

Statement I: Monoclonal antibodies are homogenous antibodies produced from single clone of plasma cell.

Statement II: Aminopterin in HAT medium effectively blocks the de novo pathway, forcing all the cells to use the salvage pathway.

In light of the above statements, choose the *most appropriate* answer from the options given below

[Question ID = 5721][Question Description = 121_132_FHM_SEP22_Q21]

1. Both Statement I and Statement II are correct [Option ID = 22881]
2. Both Statement I and Statement II are incorrect [Option ID = 22882]
3. Statement I is correct but Statement II is incorrect [Option ID = 22883]
4. Statement I is incorrect but Statement II is correct [Option ID = 22884]

22) Which TLR binds to the bacterial flagellin[Question ID = 5722][Question Description = 122_132_FHM_SEP22_Q22]

1. TLR1 [Option ID = 22885]
2. TLR3 [Option ID = 22886]
3. TLR5 [Option ID = 22887]
4. TLR11 [Option ID = 22888]

23) Zankers necrosis affects[Question ID = 5723][Question Description = 123_132_FHM_SEP22_Q23]

1. Straited muscle [Option ID = 22889]
2. Smooth muscle [Option ID = 22890]
3. Skeletal muscle [Option ID = 22891]
4. Glands [Option ID = 22892]

24) Parasite, *Epistylis* commonly found in?

[Question ID = 5724][Question Description = 124_132_FHM_SEP22_Q24]

1. Freshwater

[Option ID = 22893]

2. Brackish Water

[Option ID = 22894]

3. Sea Water

[Option ID = 22895]

4. Both in Freshwater and Sea Water

[Option ID = 22896]

25) Which of the following is a most common clearing agent used in histology?[Question ID = 5725][Question Description = 125_132_FHM_SEP22_Q25]

1. Acetone [Option ID = 22897]
2. Methanol [Option ID = 22898]
3. Mercaptoethanol [Option ID = 22899]
4. Xylene [Option ID = 22900]

26) Which disease produces sandpaper-like effect in infected fish?

[Question ID = 5726][Question Description = 126_132_FHM_SEP22_Q26]

1. Saprolegniasis [Option ID = 22901]
2. Ichthyophthiriasis [Option ID = 22902]
3. Ichthyophthiriosis [Option ID = 22903]
4. Costiosis [Option ID = 22904]

27) "Sekiten-bio" or Red spot disease is caused by[Question ID = 5727][Question Description = 127_132_FHM_SEP22_Q27]

1. *Pseudomonas anguilliseptica* [Option ID = 22905]
2. *Aeromonas salmonicida* [Option ID = 22906]
3. *Vibrio anguillarum* [Option ID = 22907]
4. *Flexibacterium putida* [Option ID = 22908]

28) Given below are two statements

Statement I: An ideal primers should have size in between 16 to 22 bp

Statement II: Repeated sequence of same nucleotide should be preferable

In light of the above statements, choose the *most appropriate* answer from the options given below

[Question ID = 5728][Question Description = 128_132_FHM_SEP22_Q28]

1. Both Statement I and Statement II are correct [Option ID = 22909]
2. Both Statement I and Statement II are incorrect [Option ID = 22910]
3. Statement I is correct but Statement II is incorrect [Option ID = 22911]
4. Statement I is incorrect but Statement II is correct [Option ID = 22912]

29) EPC (Epithelioma papulosum cyprinid) cell line is derived from[Question ID = 5729][Question Description = 129_132_FHM_SEP22_Q29]

1. Grass carp [Option ID = 22913]
2. Common carp [Option ID = 22914]
3. Silver carp [Option ID = 22915]
4. Big head carp [Option ID = 22916]

30) Of the following, which is NOT a T-Cell marker?

[Question ID = 5730][Question Description = 130_132_FHM_SEP22_Q30]

1. CD 4 [Option ID = 22917]
2. CD 28 [Option ID = 22918]
3. CD 40 [Option ID = 22919]
4. CD 45 [Option ID = 22920]

31) Which of these crustacean viral diseases is NOT listed by the OIE

[Question ID = 5731][Question Description = 131_132_FHM_SEP22_Q31]

1. *Macrobrachium rosenbergii* nodavirus [Option ID = 22921]
2. White spot syndrome virus [Option ID = 22922]
3. Gill-associated virus [Option ID = 22923]
4. Infectious myonecrosis virus [Option ID = 22924]

32) The main organs where pathology due to TiLV is observed are[Question ID = 5732][Question Description = 132_132_FHM_SEP22_Q32]

1. Eyes, brain and liver [Option ID = 22925]
2. Gill and skin [Option ID = 22926]
3. Spleen and kidney [Option ID = 22927]
4. Swim bladder [Option ID = 22928]

33) Free-swimming larva of digeneans are known as[Question ID = 5733][Question Description =

133_132_FHM_SEP22_Q33]

1. Cercaria [Option ID = 22929]
2. Miracidium [Option ID = 22930]
3. Oncomiracidia [Option ID = 22931]
4. Plerocercoid [Option ID = 22932]

34) Immunisation before one week of lymphoid maturity leads to[Question ID = 5734][Question Description = 134_132_FHM_SEP22_Q34]

1. Poor immunity [Option ID = 22933]
2. Hyperimmunity [Option ID = 22934]
3. Immunosuppression [Option ID = 22935]
4. Immune tolerance [Option ID = 22936]

35) Which of the following is an obligate host of Taura Syndrome Virus?

[Question ID = 5735][Question Description = 135_132_FHM_SEP22_Q35]

1. *Scylla serrata* [Option ID = 22937]
2. *Macrobrachium rosenbergii* [Option ID = 22938]
3. *Palaemon styliiferus* [Option ID = 22939]
4. *Litopenaeus vannamei* [Option ID = 22940]

36) Koi herpesvirus (KHV) responsible for disease outbreaks in common carp belongs to[Question ID = 5736][Question Description = 136_132_FHM_SEP22_Q36]

1. Paramyxoviridae [Option ID = 22941]
2. Orthomyxoviridae [Option ID = 22942]
3. Alloherpesviridae [Option ID = 22943]
4. Retroviridae [Option ID = 22944]

37) Which of the following is a natural antioxidant?

[Question ID = 5737][Question Description = 137_132_FHM_SEP22_Q37]

1. Retinol [Option ID = 22945]
2. Pantothenic acid [Option ID = 22946]
3. Ergocalciferol [Option ID = 22947]
4. Tocopherol [Option ID = 22948]

38) Which is the intermediate host of nematodes?

[Question ID = 5738][Question Description = 138_132_FHM_SEP22_Q38]

1. Molluscs [Option ID = 22949]
2. Bivalve [Option ID = 22950]
3. Arthropods [Option ID = 22951]
4. Birds [Option ID = 22952]

39) Severe bland degenerative myopathy is associated with deficiency of[Question ID = 5739][Question Description = 139_132_FHM_SEP22_Q39]

1. Ascorbic acid [Option ID = 22953]
2. Tocopherol [Option ID = 22954]
3. Zinc [Option ID = 22955]
4. Calcium [Option ID = 22956]

40) The most common anaesthesia used in aquaculture[Question ID = 5740][Question Description = 140_132_FHM_SEP22_Q40]

1. MS-222 [Option ID = 22957]
2. Quinaldine [Option ID = 22958]
3. Clove oil [Option ID = 22959]
4. Benzocain [Option ID = 22960]

41) Dacie's fluid is commonly used for diluting[Question ID = 5741][Question Description = 141_132_FHM_SEP22_Q41]

1. Serum [Option ID = 22961]
2. RBC [Option ID = 22962]
3. WBC [Option ID = 22963]
4. Haemoglobin [Option ID = 22964]

42) Glisson's capsule is found in which of the following organ[Question ID = 5742][Question Description = 142_132_FHM_SEP22_Q42]

1. Liver [Option ID = 22965]
2. Spleen [Option ID = 22966]
3. Kidney [Option ID = 22967]
4. Thymus [Option ID = 22968]

43) The activation of which TLR is through MyD88-independent pathway[Question ID = 5743][Question Description = 143_132_FHM_SEP22_Q43]

1. TLR3 [Option ID = 22969]
2. TLR11 [Option ID = 22970]
3. TLR22 [Option ID = 22971]
4. TLR6 [Option ID = 22972]

44) Choose correct order of toxicity of metals in fish[Question ID = 5744][Question Description = 144_132_FHM_SEP22_Q44]

1. Cr>Cd>Pb>Ni>Hg [Option ID = 22973]
2. Hg>Cd>Pb>Ni>Cr [Option ID = 22974]
3. Hg>Pb>Cd>Ni>Cr [Option ID = 22975]
4. Cr>Pb>Cd>Ni>Hg [Option ID = 22976]

45) Which of the following broad-spectrum antibiotic is FDA- approved for use in fish under the trade name Aquaflo? [Question ID = 5745][Question Description = 145_132_FHM_SEP22_Q45]

1. Florfenicol [Option ID = 22977]
2. Oxytetracycline [Option ID = 22978]
3. Sulfadimethoxine/ormetoprim [Option ID = 22979]
4. Sulfamerazine [Option ID = 22980]

46) Bouins fluid contains[Question ID = 5746][Question Description = 146_132_FHM_SEP22_Q46]

1. Formaldehyde and calcium chloride [Option ID = 22981]
2. Mercuric chloride, potassium dichromate and acetic acid [Option ID = 22982]
3. Picric acid, formaldehyde and acetic acid [Option ID = 22983]
4. Ethanol and acetic acid [Option ID = 22984]

47) Cytokines secreted by T-helper cells which can mediate CMI are?

[Question ID = 5747][Question Description = 147_132_FHM_SEP22_Q47]

1. IL4 and IL5
[Option ID = 22985]
2. IL2 and IFN γ
[Option ID = 22986]
3. IL6 and IFN γ
[Option ID = 22987]
4. IL4 and IL6
[Option ID = 22988]

48) Match List I with List II

List I	List II
(Metals)	(Target organ)
A. Cadmium	I. Liver
B. Copper	II. Brain
C. Arsenic	III. Kidney
D. Lead	IV. Muscle

Choose the correct answer from the options given below:

[Question ID = 5748][Question Description = 148_132_FHM_SEP22_Q48]

1. A - II, B - I, C - IV, D - III [Option ID = 22989]
2. A - III, B - IV, C - I, D - II [Option ID = 22990]
3. A - III, B - I, C - IV, D - II [Option ID = 22991]
4. A - II, B - IV, C - I, D - III [Option ID = 22992]

49) Match List I with List II

List I	List II
(Different PCR Techniques)	(Characteristics)
A. Nested PCR	I. Detects different pathogens in a single sample

B. Real-time PCR	II. Annealing temperature is gradually reduced during each PCR cycle
C. Multiplex PCR	III. Quantification of viral load
D. Touchdown PCR	IV. Involves two sequential amplification reaction, each with different pair of primers

Choose the correct answer from the options given below:

[Question ID = 5749][Question Description = 149_132_FHM_SEP22_Q49]

1. A - IV, B - III, C - I, D - II [Option ID = 22993]
2. A - IV, B - I, C - III, D - II [Option ID = 22994]
3. A - III, B - IV, C - II, D - I [Option ID = 22995]
4. A - III, B - I, C - IV, D - II [Option ID = 22996]

50) Match List I with List II

List I	List II
(Pathogenic agent)	(Disease)
A. <i>Flavobacterium branchiophilum</i>	I. Bacterial Kidney Disease
B. <i>Renibacterium salmoninarum</i>	II. Haemorrhagic septicaemia
C. <i>Yersinia ruckeri</i>	III. Bacterial Gill Disease
D. <i>Aeromonas hydrophila</i>	IV. Enteric Redmouth Disease

Choose the correct answer from the options given below:

[Question ID = 5750][Question Description = 150_132_FHM_SEP22_Q50]

1. A - III, B - IV, C - II, D - I [Option ID = 22997]
2. A - III, B - I, C - IV, D - II [Option ID = 22998]
3. A - IV, B - III, C - II, D - I [Option ID = 22999]
4. A - IV, B - I, C - III, D - II [Option ID = 23000]

