

55 Fish Nutrition N Feed Technology 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 ARGASURE 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. *Tetrahyena* 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 murels
- 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) Which is the primary source of digestive enzymes in fish ?[Question ID = 5751][Question Description = 101_133_FNF_SEP22_Q01]

1. Liver [Option ID = 23001]
2. Gall bladder [Option ID = 23002]
3. Pancreas [Option ID = 23003]
4. Stomach [Option ID = 23004]

2) The term Minimum Information About Microarray Experiments (MIAME) is associated with ?[Question ID = 5752][Question Description = 102_133_FNF_SEP22_Q02]

1. Proteomics [Option ID = 23005]
2. Metabolomics [Option ID = 23006]
3. Genetics [Option ID = 23007]
4. Transcriptomics [Option ID = 23008]

3) Drug discovery for nutritional disorder is mainly related to ?[Question ID = 5753][Question Description = 103_133_FNF_SEP22_Q03]

1. Transcriptomics [Option ID = 23009]
2. Metabolomics [Option ID = 23010]
3. Proteomics [Option ID = 23011]
4. Nutri-genetics [Option ID = 23012]

4) In fish, dietary protein requirement is mainly dependent on ?[Question ID = 5754][Question Description = 104_133_FNF_SEP22_Q04]

1. Age [Option ID = 23013]
2. Season [Option ID = 23014]
3. Salinity [Option ID = 23015]
4. Water quality [Option ID = 23016]

5) The active form of vitamin thiamine is ?[Question ID = 5755][Question Description = 105_133_FNF_SEP22_Q05]

1. Thiamine acetate [Option ID = 23017]
2. Thiamine sulphate [Option ID = 23018]
3. Thiamine pyrophosphate [Option ID = 23019]
4. Thiamine chloride [Option ID = 23020]

6) The Acetyl CoA is converted into compounds like acetate and acetone by a process called as

[Question ID = 5756][Question Description = 106_133_FNF_SEP22_Q06]

1. Glycolysis [Option ID = 23021]
2. Beta oxidation [Option ID = 23022]
3. TCA cycle [Option ID = 23023]
4. Ketogenesis [Option ID = 23024]

7) The mineral required for the metabolism of vitamin A is

[Question ID = 5757][Question Description = 107_133_FNF_SEP22_Q07]

1. Cobalt [Option ID = 23025]
2. Zinc [Option ID = 23026]
3. Iron [Option ID = 23027]
4. Selenium [Option ID = 23028]

8) The minimum rate of metabolic activity needed to sustain the structure and function of the body tissues is called as ?

[Question ID = 5758][Question Description = 108_133_FNF_SEP22_Q08]

1. Minimum metabolism [Option ID = 23029]
2. Basal metabolism [Option ID = 23030]
3. Sustainable metabolism [Option ID = 23031]
4. Required metabolism [Option ID = 23032]

9) Chymotrypsin hydrolyses the bond on the[Question ID = 5759][Question Description = 109_133_FNF_SEP22_Q09]

1. Amino side [Option ID = 23033]
2. Between amino acids [Option ID = 23034]
3. Carboxyl side [Option ID = 23035]
4. From side chain [Option ID = 23036]

10) The mineral selenium is a component of an enzyme[Question ID = 5760][Question Description = 110_133_FNF_SEP22_Q10]

1. Glutathione peroxidase [Option ID = 23037]
2. Carboxylase [Option ID = 23038]
3. Metalloenzyme [Option ID = 23039]
4. Pepsinase [Option ID = 23040]

11) The amount of digestible energy (DE) supplied by the feed is commonly expressed as a

[Question ID = 5761][Question Description = 111_133_FNF_SEP22_Q11]

1. Percentage of Net Energy [Option ID = 23041]
2. Percentage of Metabolizable Energy [Option ID = 23042]
3. Percentage of Gross Energy [Option ID = 23043]
4. Percentage of Recovered Energy [Option ID = 23044]

12) The principal causes of pollution in aquaculture are

[Question ID = 5762][Question Description = 112_133_FNF_SEP22_Q12]

1. Airborne dust and wastes [Option ID = 23045]
2. Wastes drawn from run-off and in coming water [Option ID = 23046]
3. Bottom sediments and chemicals [Option ID = 23047]
4. Uneaten feed and faecal matter [Option ID = 23048]

13) Which of the following nutrients is the most expensive one in fish feed manufacture ?

[Question ID = 5763][Question Description = 113_133_FNF_SEP22_Q13]

1. Lipid [Option ID = 23049]
2. Protein [Option ID = 23050]
3. Carbohydrate [Option ID = 23051]
4. Vitamins and minerals [Option ID = 23052]

14) Channel catfish fry commence exogenous feeding in ?[Question ID = 5764][Question Description =

114_133_FNF_SEP22_Q14]

1. 5 - 6 days [Option ID = 23053]
2. 3 - 5 days [Option ID = 23054]
3. 6 - 8 days [Option ID = 23055]
4. 8 - 10 days [Option ID = 23056]

15) The dietary quantitative requirement (% of dietary protein) of carps for histidine is in the range of ?[Question ID = 5765][Question Description = 115_133_FNF_SEP22_Q15]

1. 1 to 1.2 [Option ID = 23057]
2. 1.3 to 2.1 [Option ID = 23058]
3. 2.5 to 3.0 [Option ID = 23059]
4. 3.1 to 3.8 [Option ID = 23060]

16) Which one of the following is considered as a semi-essential amino acid ?[Question ID = 5766][Question Description =

116_133_FNF_SEP22_Q16]

1. Glycine [Option ID = 23061]
2. Tryptophan [Option ID = 23062]
3. Cysteine [Option ID = 23063]
4. Serine [Option ID = 23064]

17) Match List I with List II

List I	List II
Fish Species	Vitamin C requirements (mg/kg diet)
A. Sea bass	I. 50
B. Atlantic salmon	II. 400
C. Channel catfish	III. 700
D. Rainbow trout	IV. 600
	V. 60

Choose the correct answer from the options given below:

[Question ID = 5767][Question Description = 117_133_FNF_SEP22_Q17]

1. A - I, B - II, C - V, D - IV [Option ID = 23065]
2. A - II, B - III, C - V, D - IV [Option ID = 23066]
3. A - IV, B - V, C - III, D - II [Option ID = 23067]

4. A - III, B - I, C - V, D - II [Option ID = 23068]

18) Choose the correct statements

- A. Catla is carnivore
- B. Sea bass is herbivore
- C. Mrigal is an iliophagous fish
- D. Common carp is an omniore
- E. Catla is herbivore

Choose the *correct* answer from the options given below

[Question ID = 5768][Question Description = 118_133_FNF_SEP22_Q18]

- 1. A, B, D only [Option ID = 23069]
- 2. B, C and E [Option ID = 23070]
- 3. C, D and E only [Option ID = 23071]
- 4. A, C, D and E only [Option ID = 23072]

19) Match List I with List II

List I	List II
Toxicants	Plants
A. Saponine	I. Derris root powder
B. Gossypol	II. Soybean
C. Rotenone	III. Cotton seeds
D. Trypsin inhibitors	IV. Mahua
	V. Subabul

Choose the correct answer from the options given below:

[Question ID = 5769][Question Description = 119_133_FNF_SEP22_Q19]

- 1. A - I, B - II, C - IV, D - V [Option ID = 23073]
- 2. A - IV, B - III, C - I, D - II [Option ID = 23074]
- 3. A - I, B - III, C - II, D - IV [Option ID = 23075]
- 4. A - V, B - I, C - II, D - III [Option ID = 23076]

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

Assertion A : Usually in the carp culture economic diets are preferred, soybean or groundnut cake or other pulses/oilseed cakes are used as protein source in place of fish meal.

Reason R : Fish meal is expenive and usually avoided in carp diets.

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

[Question ID = 5770][Question Description = 120_133_FNF_SEP22_Q20]

- 1. Both A and R are true and R is the correct explanation of A
[Option ID = 23077]
- 2. Both A and R are true but R is NOT the correct explanation of A
[Option ID = 23078]
- 3. A is true but R is false
[Option ID = 23079]
- 4. A is false but R is true
[Option ID = 23080]

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

Assertion A : In the policulture of Indian major carps (IMC) and freshwater prawn, a higher production is obtained than in IMC or freshwater prawn culture alone.

Reason R : Freshwater prawn eat worms, insects etc and do not pose competation with IMC for food.

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

[Question ID = 5771][Question Description = 121_133_FNF_SEP22_Q21]

- 1. Both A and R are true and R is the correct explanation of A [Option ID = 23081]
- 2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 23082]
- 3. A is true but R is false [Option ID = 23083]

4. A is false but R is true [Option ID = 23084]

22) Good fish meals available in the world are,

A. Ataltic salmon meal

B. Pacific halibut meal

C. Perivian anchovy meal

D. Herring meal

E. Sardine meal

Choose the *correct* answer from the options given below

[Question ID = 5772][Question Description = 122_133_FNF_SEP22_Q22]

1. A, B, C, D only [Option ID = 23085]

2. B, C and D only [Option ID = 23086]

3. A, C, D and E only [Option ID = 23087]

4. C, D and E only [Option ID = 23088]

23) Cyanocobalamin is also called as [Question ID = 5773][Question Description = 123_133_FNF_SEP22_Q23]

1. Vitamin C [Option ID = 23089]

2. Vitamin B₁₂ [Option ID = 23090]

3. Vitamin B₆ [Option ID = 23091]

4. Vitamin D [Option ID = 23092]

24) The ratio of the length of the digestive tract to body length is called as ? [Question ID = 5774][Question Description = 124_133_FNF_SEP22_Q24]

1. Absolute gut length [Option ID = 23093]

2. Net gut length [Option ID = 23094]

3. Relative gut length [Option ID = 23095]

4. Mean gut length [Option ID = 23096]

25) World latest aquaculture production (mmt) as per FAO is

[Question ID = 5775][Question Description = 125_133_FNF_SEP22_Q25]

1. 74 [Option ID = 23097]

2. 179 [Option ID = 23098]

3. 94 [Option ID = 23099]

4. 82 [Option ID = 23100]

26) The latest Indian fish production (mmt)(2020-2021) is

[Question ID = 5776][Question Description = 126_133_FNF_SEP22_Q26]

1. 14.2

[Option ID = 23101]

2. 10.9

[Option ID = 23102]

3. 16.2

[Option ID = 23103]

4. 12.9

[Option ID = 23104]

27) India is the second largest fish producing country in the world accounting for what percent of global production ?

[Question ID = 5777][Question Description = 127_133_FNF_SEP22_Q27]

1. 5.3 % [Option ID = 23105]

2. 10.5 % [Option ID = 23106]

3. 7.56 % [Option ID = 23107]

4. 12.6 % [Option ID = 23108]

28) Indian fish production contributes to the country's Gross Value Added (GVA) and Agricultural GVA are ? [Question ID = 5778][Question Description = 128_133_FNF_SEP22_Q28]

1. 3.24% and 9.28 % respectively [Option ID = 23109]

2. 1.24% and 7.28 % respectively [Option ID = 23110]

3. 4.2% and 6.89 % respectively [Option ID = 23111]

4. 3.4% and 11.21 % respectively [Option ID = 23112]

29) In the feeding behaviour of fish, when the temperature increases, feeding activity[Question ID = 5779][Question Description = 129_133_FNF_SEP22_Q29]

1. Decreases [Option ID = 23113]
2. Increases [Option ID = 23114]
3. No change [Option ID = 23115]
4. Lethargic [Option ID = 23116]

30) In the digestion of fish, catabolism of fats and carbohydrates results in the formation of[Question ID = 5780][Question Description = 130_133_FNF_SEP22_Q30]

1. Hydrogen and water [Option ID = 23117]
2. Oxygen and water [Option ID = 23118]
3. Carbon dioxide and water [Option ID = 23119]
4. Nitrogen and H₂O [Option ID = 23120]

31) Hypervitaminosis of which of the following were reported when seal and whale liver were used as one of the fresh meat components in salmon diets?[Question ID = 5781][Question Description = 131_133_FNF_SEP22_Q31]

1. Vitamin E and K [Option ID = 23121]
2. Vitamin C and B₁₂ [Option ID = 23122]
3. Vitamin K and B₂ [Option ID = 23123]
4. Vitamin D and A [Option ID = 23124]

32) Match List I with List II

List I	List II
Vitamins	Estimated requirements of common carp(mg/kg diet)
A. Thiamin	I. 7-10
B. Riboflavin	II. 5-10
C. Pyridoxine	III. 200-300
D. Pantothenic acid	IV. 2-3
	V. 30-40

Choose the correct answer from the options given below:

[Question ID = 5782][Question Description = 132_133_FNF_SEP22_Q32]

1. A - IV, B - I, C - V, D - II [Option ID = 23125]
2. A - IV, B - I, C - II, D - V [Option ID = 23126]
3. A - I, B - II, C - IV, D - III [Option ID = 23127]
4. A - III, B - II, C - V, D - I [Option ID = 23128]

33) In broodstock nutrition of fish, total egg volume is significantly greater when fish fed[Question ID = 5783][Question Description = 133_133_FNF_SEP22_Q33]

1. Higher ration [Option ID = 23129]
2. No ration [Option ID = 23130]
3. Lower ration [Option ID = 23131]
4. Double the required ration [Option ID = 23132]

34) In broodstock nutrition, which of the following vitamins has profound effect on spawning success, egg survival, hatchability and larval survival?[Question ID = 5784][Question Description = 134_133_FNF_SEP22_Q34]

1. Vitamin C [Option ID = 23133]
2. Vitamin D [Option ID = 23134]
3. Vitamin B₁ [Option ID = 23135]
4. Vitamin E [Option ID = 23136]

35) For marine fish larvae, which of the following is very essential nutrient?[Question ID = 5785][Question Description = 135_133_FNF_SEP22_Q35]

1. Sterols [Option ID = 23137]
2. HUFAs [Option ID = 23138]
3. Cholesterol [Option ID = 23139]
4. Palmitic acid [Option ID = 23140]

36) Forage material such as grass and macrophyte may form feed of which of the following animal?[Question ID = 5786][Question Description = 136_133_FNF_SEP22_Q36]

1. Catla [Option ID = 23141]
2. Silver carp [Option ID = 23142]
3. Freshwater cray fish [Option ID = 23143]

4. Freshwater prawn [Option ID = 23144]

37) In feeding of fish, live feeds are main diets of which of the following ?[Question ID = 5787][Question Description = 137_133_FNF_SEP22_Q37]

1. Fingelings [Option ID = 23145]
2. Fry [Option ID = 23146]
3. Larvae [Option ID = 23147]
4. Juveniles [Option ID = 23148]

38) The common molds associated with feeds stored in prolonged humid condition is ?[Question ID = 5788][Question Description = 138_133_FNF_SEP22_Q38]

1. Aspergillus [Option ID = 23149]
2. Saprolegnia [Option ID = 23150]
3. Bacteria [Option ID = 23151]
4. Saccharomyces [Option ID = 23152]

39) Oil seeds when compared to cereals, generally contain higher levels (varying from 20 to 50 %) of

[Question ID = 5789][Question Description = 139_133_FNF_SEP22_Q39]

1. Lipid content
[Option ID = 23153]
2. Protein content
[Option ID = 23154]
3. Carbohydrate content
[Option ID = 23155]
4. Fibre content
[Option ID = 23156]

40) Which of the following process makes feeds unpalatable and generates toxic compounds ?[Question ID = 5790][Question Description = 140_133_FNF_SEP22_Q40]

1. Hydrolysis [Option ID = 23157]
2. Autolysis [Option ID = 23158]
3. Saponification [Option ID = 23159]
4. Rancidity [Option ID = 23160]

41) Which one of the following compounds are carcinogenic to a wide range of aquatic animals and form whenever nitrite and secondary or tertiary amines occur together ?[Question ID = 5791][Question Description = 141_133_FNF_SEP22_Q41]

1. Nitrosamines [Option ID = 23161]
2. Phorphyrins [Option ID = 23162]
3. Antinutrients [Option ID = 23163]
4. Methanes [Option ID = 23164]

42) Dietary supplementation of certain minerals at concentrations above those required to support normal growth but below those causing toxicity has been shown to enhance the following in various animals including some fish species,

[Question ID = 5792][Question Description = 142_133_FNF_SEP22_Q42]

1. Toxicity tolerance [Option ID = 23165]
2. Immunity [Option ID = 23166]
3. Phagocytosis [Option ID = 23167]
4. Longevity [Option ID = 23168]

43) Which one of the following minerals is important because of its physiological interaction with certain vitamins and established role in improving disease resistance of aquatic animals ?[Question ID = 5793][Question Description = 143_133_FNF_SEP22_Q43]

1. Zinc [Option ID = 23169]
2. Calcium [Option ID = 23170]
3. Selenium [Option ID = 23171]
4. Phosperous [Option ID = 23172]

44) Which form of feed is preferred in the culture of Indian major carps ?[Question ID = 5794][Question Description = 144_133_FNF_SEP22_Q44]

1. Crumble feeds [Option ID = 23173]
2. Semi moist feeds [Option ID = 23174]
3. Mash feeds [Option ID = 23175]

4. Pelleted feeds [Option ID = 23176]

45) Quantitative amino acid requirements of fish and shellfish have been estimated by

- A. Growth studies
- B. A/E ratios
- C. Digestive studies
- D. Body composition of amino acids
- E. Metabolic studies

Choose the *correct* answer from the options given below

[Question ID = 5795][Question Description = 145_133_FNF_SEP22_Q45]

1. A, B and D only [Option ID = 23177]
2. A, C and D only [Option ID = 23178]
3. B, C and E only [Option ID = 23179]
4. A, B and E only [Option ID = 23180]

46) Which form of feed is desirable in shrimp feeding practice ?[Question ID = 5796][Question Description = 146_133_FNF_SEP22_Q46]

1. Floating feeds [Option ID = 23181]
2. Sinking feeds [Option ID = 23182]
3. Moist feeds [Option ID = 23183]
4. Mash feeds [Option ID = 23184]

47) Which of the following is used as a dietary component to enhance immunity and disease resistance in fish ?[Question ID = 5797][Question Description = 147_133_FNF_SEP22_Q47]

1. Probiotics [Option ID = 23185]
2. Calcium [Option ID = 23186]
3. Mannan oligo saccharides [Option ID = 23187]
4. Phosphorous [Option ID = 23188]

48) Which of the following is cheap source of carbohydrates in fish feeds ?[Question ID = 5798][Question Description = 148_133_FNF_SEP22_Q48]

1. Roots & tuber crops [Option ID = 23189]
2. Oil seeds [Option ID = 23190]
3. Pulses [Option ID = 23191]
4. Millets [Option ID = 23192]

49) Which one of the following is best suited for enrichment of HUFAs ?[Question ID = 5799][Question Description = 149_133_FNF_SEP22_Q49]

1. Copepod [Option ID = 23193]
2. Artemia [Option ID = 23194]
3. Cladocera [Option ID = 23195]
4. Moina [Option ID = 23196]

50) Match List I with List II

List I	List II
Common names of vitamins	Chemical form
A. Vitamin B ₁	I. Niacin
B. Vitamin B ₂	II. Pyridoxine
C. Vitamin B ₃	III. Cobalamin
D. Vitamin B ₁₂	IV. Thiamin
	V. Riboflavin

Choose the correct answer from the options given below:

[Question ID = 5800][Question Description = 150_133_FNF_SEP22_Q50]

1. A - IV, B - V, C - I, D - III [Option ID = 23197]
2. A - II, B - I, C - III, D - IV [Option ID = 23198]
3. A - I, B - III, C - II, D - V [Option ID = 23199]
4. A - V, B - IV, C - III, D - I [Option ID = 23200]

