58 Fish Physiology and Biochemistry 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 Secreatariat 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 f 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 3_PHD

1) What was the contribution of Theodore Boveri and Walter Sutton to Mendel's work?[Question ID = 5801][Question Description = 101_178_FSC3_SEP22_Q01]

1. Rediscovery of Mendal's law of Inheritance [Option ID = 23201]
2. Challenging Mendel [Option ID = 23202]
3. Re performing Mendel's experiments in lab conditions [Option ID = 23203]
4. Chromosome movement correlation with Mendel's predictions [Option ID = 23204]

2) Histone acetylation is important event of PTMs, which alters the chromatin structure and resulted into

[Question ID = 5802][Question Description = 102_178_FSC3_SEP22_Q02]

1. Activation of transcrition [Option ID = 23205]
2. Repression of transcription [Option ID = 23206]
3. Down-regulation [Option ID = 23207]
4. Complete halting of transcription [Option ID = 23208]

3) Mendel's Law of Inheritance was independently rediscovered by[Question ID = 5803][Question Description = 103_178_FSC3_SEP22_Q03]

1. Oswald Avery, Colin MacLeod, and Maclyn McCarty [Option ID = 23209]
2. Hugo DeVries, Carl Correns and Erich von Tschermak [Option ID = 23210]
3. Hin Tjio, Maclyn McCarty and Tschermak [Option ID = 23211]
4. William Bateson [Option ID = 23212]

4) The following is the most commonly used as an inducer of the *lac* operon for *in vivo* studies, because it cannot be metabolized by *E. coli*.[Question ID = 5804][Question Description = 104_178_FSC3_SEP22_Q04]

1. Isopropyl-ß-D-thiogalactopyranoside [Option ID = 23213]
2. Phenyl-ß-D-galactose [Option ID = 23214]
3. Thiomethyl galactoside (TMG) [Option ID = 23215]
4. Allolactose [Option ID = 23216]

5) A species numbers have decreased, or will decrease by 80% within three generations are categorized under[Question ID = 5805][Question Description = 105_178_FSC3_SEP22_Q05]

1. Vulnerable [Option ID = 23217]
2. Endangered [Option ID = 23218]
3. Critically endangered [Option ID = 23219]
4. Extremely endangered [Option ID = 23220]

6) Threatened animals and plants are placed in a separate care unit for protection. It is called[Question ID = 5806] [Question Description = 106_178_FSC3_SEP22_Q06]

1. Ex-situ conservation [Option ID = 23221]
2. In situ conservation [Option ID = 23222]
3. Wildlife sanctuary [Option ID = 23223]
4. National park [Option ID = 23224]

7) The genome sizes of different penaeid shrimp species (For e.g., *L. vannamei*) estimated around

[Question ID = 5807][Question Description = 107_178_FSC3_SEP22_Q07]

1. 2.0 Gb [Option ID = 23225]
2. 1.8 Gb [Option ID = 23226]

3. 2.5 Gb [Option ID = 23227]
4. 1.5 Gb [Option ID = 23228]

8) The following is NOT a genetic disease or disorder

[Question ID = 5808][Question Description = 108_178_FSC3_SEP22_Q08]

1. Cystic fibrosis [Option ID = 23229]
2. Hemophilia [Option ID = 23230]
3. Sickle cell anemia [Option ID = 23231]
4. Diabetes milletus [Option ID = 23232]

9) Alfred Sturtevant is known for

[Question ID = 5809][Question Description = 109_178_FSC3_SEP22_Q09]

1. Chromosome banding [Option ID = 23233]
2. Genetic map [Option ID = 23234]
3. Physical map [Option ID = 23235]
4. Meosis [Option ID = 23236]

10) Given below are two statements

Statement I: Histone code hypothesis states that gene regulation is fully dependent on histone modifications that primarily occur on histone tails.

Statement II: This also depends upon the type, location, and combination of histone PTMs which generate a signal which influences expression of underlying genes as well as state of chromatin configuration and accessibility.

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

[Question ID = 5810][Question Description = 110_178_FSC3_SEP22_Q10]

1. Both Statement I and Statement II are correct [Option ID = 23237]
2. Both Statement I and Statement II are incorrect [Option ID = 23238]
3. Statement I is correct but Statement II is incorrect [Option ID = 23239]
4. Statement I is incorrect but Statement II is correct [Option ID = 23240]

11) First completely sequenced bacterial genome is

[Question ID = 5811][Question Description = 111_178_FSC3_SEP22_Q11]

1. *Vibrio sp.* [Option ID = 23241]
2. *Streptococcus pneumoniae* [Option ID = 23242]
3. *E. coli* [Option ID = 23243]
4. *Haemophilus influenza* [Option ID = 23244]

12) The loss of both members of a homologous pair of chromosomes is called as

[Question ID = 5812][Question Description = 112_178_FSC3_SEP22_Q12]

1. Nullisomy [Option ID = 23245]
2. Monosomy [Option ID = 23246]
3. Trisomy [Option ID = 23247]
4. Tetrasomy [Option ID = 23248]

13) In 2D gel electrophoresis, second dimesion of seperation of proteins depends upon[Question ID = 5813][Question Description = 113_178_FSC3_SEP22_Q13]

1. Isoelectric point [Option ID = 23249]
2. Molecular mass [Option ID = 23250]
3. Charge [Option ID = 23251]
4. Folding state [Option ID = 23252]

14) The DNA is the genetic material in bacteriophage was proved by
[Question ID = 5814][Question Description = 114_178_FSC3_SEP22_Q14]

1. Hershey and Chase [Option ID = 23253]
2. Watson and Crick [Option ID = 23254]
3. Avery and Macleod [Option ID = 23255]
4. Kossel [Option ID = 23256]

15) The nucleotide DOES NOT contain

[Question ID = 5815][Question Description = 115_178_FSC3_SEP22_Q15]

1. Sugar [Option ID = 23257]

2. Phosphate [Option ID = 23258]
3. Nitrogen containing base [Option ID = 23259]
4. Amino acid [Option ID = 23260]

16) Illumina paired-end technology generates read length of .....bp[Question ID = 5816][Question Description = 116_178_FSC3_SEP22_Q16]

1. 40-50 [Option ID = 23261]
2. 150-300 [Option ID = 23262]
3. 300-400 [Option ID = 23263]
4. 400-500 [Option ID = 23264]

17) The average base pairs per turn in A DNA is[Question ID = 5817][Question Description = 117_178_FSC3_SEP22_Q17]

1. 10 [Option ID = 23265]
2. 11 [Option ID = 23266]
3. 12 [Option ID = 23267]
4. 9 [Option ID = 23268]

18) The following DNA is left handed helix[Question ID = 5818][Question Description = 118_178_FSC3_SEP22_Q18]

1. A DNA [Option ID = 23269]
2. B DNA [Option ID = 23270]
3. cDNA [Option ID = 23271]
4. Z DNA [Option ID = 23272]

19) Rohu and Magur whole genome sequencing consortium was based on multi-platform next generation sequencing and it was carried out by[Question ID = 5819][Question Description = 119_178_FSC3_SEP22_Q19]

1. ICAR-CIFA + ICAR-IASRI + ICAR-NBFGR [Option ID = 23273]
2. ICAR-CIFA + ICAR-CIFE + ICAR-NBFGR + AAU, Anand [Option ID = 23274]
3. ICAR-CIFA + ICAR-IASRI + ICAR-NBFGR + AAU, Anand [Option ID = 23275]
4. ICAR-CIFA + ICAR-IASRI + ICAR-NBFGR + ICAR-CIFRI [Option ID = 23276]

20) The genetic information passes from DNA to RNA in a process called[Question ID = 5820][Question Description = 120_178_FSC3_SEP22_Q20]

1. Replication [Option ID = 23277]
2. Transcription [Option ID = 23278]
3. Translation [Option ID = 23279]
4. Gene splicing [Option ID = 23280]

21) Green fluorescent protein (GFP) is the most commonly used fluorescent reporter proteins in transgenic experiment. Further GFP is being enginnered to produce more brighter fluroscence named as enhanced GFP (eGFP). Those eGFP have excitation wavelength of ..... and emission wavelength of

[Question ID = 5821][Question Description = 121_178_FSC3_SEP22_Q21]

1. 450 nm and 550 nm [Option ID = 23281]
2. 488 nm and 509 nm [Option ID = 23282]
3. 550 nm and 600 nm [Option ID = 23283]
4. 400 nm and 450 nm [Option ID = 23284]

22) The percentage of cytosine in a double-stranded DNA molecule is 40%.What is the percentage of thymine?

[Question ID = 5822][Question Description = 122_178_FSC3_SEP22_Q22]

1. 40 [Option ID = 23285]
2. 20 [Option ID = 23286]
3. 10 [Option ID = 23287]
4. 5 [Option ID = 23288]

23) RAPD PCR performed at which annealing temperature?[Question ID = 5823][Question Description = 123_178_FSC3_SEP22_Q23]

1. 50-60 °C [Option ID = 23289]
2. 20-30 °C [Option ID = 23290]
3. 55-65 °C [Option ID = 23291]
4. 36-40 °C [Option ID = 23292]

24) The genome size of *E.coli* is[Question ID = 5824][Question Description = 124_178_FSC3_SEP22_Q24]

1. 4.64 mbp [Option ID = 23293]
2. 300 mbp [Option ID = 23294]
3. 1 mbp [Option ID = 23295]

4. 2.54 mbp [Option ID = 23296]

25) The complete mitogenome size of *Clarias batrachus* (*magur*), which contains 13 protein-coding genes, 22 transfer RNAs, 2 ribosomal RNAs and 1 non-coding (control) region is

[Question ID = 5825][Question Description = 125_178_FSC3_SEP22_Q25]

1. 15800 bp [Option ID = 23297]
2. 16011 bp [Option ID = 23298]
3. 16510 bp [Option ID = 23299]
4. 17200 bp [Option ID = 23300]

26) The following is NOT a histone protein

[Question ID = 5826][Question Description = 126_178_FSC3_SEP22_Q26]

1. H1 [Option ID = 23301]
2. H2A [Option ID = 23302]
3. H2B [Option ID = 23303]
4. H5 [Option ID = 23304]

27) BIT score is the statistical indicator, which measures

[Question ID = 5827][Question Description = 127_178_FSC3_SEP22_Q27]

1. E-value [Option ID = 23305]
2. Sequence homology [Option ID = 23306]
3. Sequence similarity [Option ID = 23307]
4. Randomness [Option ID = 23308]

28) The function of DNA polymerase I is[Question ID = 5828][Question Description = 128_178_FSC3_SEP22_Q28]

1. Removes and replaces primers [Option ID = 23309]
2. Elongates DNA [Option ID = 23310]
3. DNA repair [Option ID = 23311]
4. DNA synthesis [Option ID = 23312]

29) The enzyme that unwinds DNA at replication fork is

[Question ID = 5829][Question Description = 129_178_FSC3_SEP22_Q29]

1. DNA helicase [Option ID = 23313]
2. DNA gyrase [Option ID = 23314]
3. DNA primase [Option ID = 23315]
4. DNA ligase [Option ID = 23316]

30) The ezyme that attaches amino acids to tRNAs is[Question ID = 5830][Question Description = 130_178_FSC3_SEP22_Q30]

1. aminoacyl-tRNA synthetase [Option ID = 23317]
2. Elongation factor Tu [Option ID = 23318]
3. GTP [Option ID = 23319]
4. Peptidyl transferase [Option ID = 23320]

31) Match List I with List II

List I	List II
Fluroscent Proteins	Derived from
A. GFP	I. *Discosoma*
B. DsRed	II. *Aequorea victoria*
C. Luciferase	III. *Firefly*
	IV. *Renilla reniformis*

Choose the correct answer from the options given below:

[Question ID = 5831][Question Description = 131_178_FSC3_SEP22_Q31]

1. A - II, B - I, C - III [Option ID = 23321]
2. A - I, B -II, C - IV [Option ID = 23322]
3. A - IV, B - I, C -II [Option ID = 23323]
4. A - III, B -II, C -I [Option ID = 23324]

32) The lac Z gene in Lac operon of *E.coli* encodes[Question ID = 5832][Question Description = 132_178_FSC3_SEP22_Q32]

1. Permease [Option ID = 23325]

2. Beta galactosidase [Option ID = 23326]
3. Thio galactosidase [Option ID = 23327]
4. Transacetylase [Option ID = 23328]

33) Which method can be used for detection of transgene copy number?

[Question ID = 5833][Question Description = 133_178_FSC3_SEP22_Q33]

1. Northern blotting [Option ID = 23329]
2. Southern blotting [Option ID = 23330]
3. RT-PCR [Option ID = 23331]
4. Western blotting [Option ID = 23332]

34) The mutation that changes a sense codon into a different sense codon, resulting in the incorporation of a different amino acid in the protein is called

[Question ID = 5834][Question Description = 134_178_FSC3_SEP22_Q34]

1. Nonsense mutation [Option ID = 23333]
2. Framehsift mutation [Option ID = 23334]
3. Missense mutation [Option ID = 23335]
4. Silent mutation [Option ID = 23336]

35) Which of the following gene is the potential antagonsit of myostatin gene responsible for muscle mass growth?

[Question ID = 5835][Question Description = 135_178_FSC3_SEP22_Q35]

1. MyoD [Option ID = 23337]
2. Follistatin [Option ID = 23338]
3. Myosin [Option ID = 23339]
4. MyHC [Option ID = 23340]

36) Steroid hormone involved in calcium homeostasis of fishes is

[Question ID = 5836][Question Description = 136_178_FSC3_SEP22_Q36]

1. Calcitonin [Option ID = 23341]
2. Cortisol [Option ID = 23342]
3. Calcitriol [Option ID = 23343]
4. Stanniocalcin [Option ID = 23344]

37) Given below are two statements

Statement I: 17-alpha 20-beta dihydroxy progesterone is produced in theca layer of the ovarian follicle.

Statement II: 17-alpha 20-beta dihydroxy progesterone is known as maturation inducing steroid (MIS).

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

[Question ID = 5837][Question Description = 137_178_FSC3_SEP22_Q37]

1. Both Statement I and Statement II are true [Option ID = 23345]
2. Both Statement I and Statement II are false [Option ID = 23346]
3. Statement I is true but Statement II is false [Option ID = 23347]
4. Statement I is false but Statement II is true [Option ID = 23348]

38) Which one of the following is NOT a glycoprotein?

[Question ID = 5838][Question Description = 138_178_FSC3_SEP22_Q38]

1. Vitellogenin [Option ID = 23349]
2. TSH [Option ID = 23350]
3. MSH [Option ID = 23351]
4. LH [Option ID = 23352]

39) The number of carbon atoms in estrogen

[Question ID = 5839][Question Description = 139_178_FSC3_SEP22_Q39]

1. 18 [Option ID = 23353]
2. 19 [Option ID = 23354]
3. 20 [Option ID = 23355]
4. 21 [Option ID = 23356]

40) Which one of the following endocrine glands in crustaceans is homoplastic to the HPG axis in fish?

[Question ID = 5840][Question Description = 140_178_FSC3_SEP22_Q40]

1. Pericardial gland [Option ID = 23357]
2. Post-commissural gland [Option ID = 23358]
3. X organ-sinus gland [Option ID = 23359]
4. Thoracic Ganglia [Option ID = 23360]

41) Which one of the following is NOT a sulphated polysaccharide?

[Question ID = 5841][Question Description = 141_178_FSC3_SEP22_Q41]

1. Heparin [Option ID = 23361]
2. Fucoidan [Option ID = 23362]
3. Hyaluronate [Option ID = 23363]
4. Dermatan sulphate [Option ID = 23364]

42) Which one of the following is NOT a ketone body formed in fish?

[Question ID = 5842][Question Description = 142_178_FSC3_SEP22_Q42]

1. Acetate [Option ID = 23365]
2. Acetoacetate [Option ID = 23366]
3. Oxaloacetate [Option ID = 23367]
4. Beta-hydroxybutyrate [Option ID = 23368]

43) Give an example for an aldotetrose[Question ID = 5843][Question Description = 143_178_FSC3_SEP22_Q43]

1. Xylulose [Option ID = 23369]
2. Erythrose [Option ID = 23370]
3. Sedoheptulose [Option ID = 23371]
4. Ribulose [Option ID = 23372]

44) Which is the monosaccharide unit of chitin?[Question ID = 5844][Question Description = 144_178_FSC3_SEP22_Q44]

1. Glucosamine [Option ID = 23373]
2. N-acetyl glucosamine [Option ID = 23374]
3. Glucose [Option ID = 23375]
4. chitosan [Option ID = 23376]

45) Absorption of which one of the following cation is activated by aldosterone?

[Question ID = 5845][Question Description = 145_178_FSC3_SEP22_Q45]

1. Calcium [Option ID = 23377]
2. Sodium [Option ID = 23378]
3. Potassium [Option ID = 23379]
4. Magnesium [Option ID = 23380]

46) Which one of the following enzyme of the urea cycle is NOT a mitochondrial enzyme?

[Question ID = 5846][Question Description = 146_178_FSC3_SEP22_Q46]

1. N-acetylglutamate synthase [Option ID = 23381]
2. Carbamyl phosphate synthetase III [Option ID = 23382]
3. Ornithine transcarbamylase [Option ID = 23383]
4. Arginosuccinate synthetase [Option ID = 23384]

47) How many intermolecular disulphide bonds are present in the insulin molecule?[Question ID = 5847][Question Description = 147_178_FSC3_SEP22_Q47]

1. 1 [Option ID = 23385]
2. 2 [Option ID = 23386]
3. 3 [Option ID = 23387]
4. 4 [Option ID = 23388]

48) Given below are two statements

Statement I: GLP-1 enhances gastric secretion and motility.

Statement II: GLP-2 enhances intestinal motility and growth.

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

[Question ID = 5848][Question Description = 148_178_FSC3_SEP22_Q48]

1. Both Statement I and Statement II are true [Option ID = 23389]
2. Both Statement I and Statement II are false [Option ID = 23390]
3. Statement I is true but Statement II is false [Option ID = 23391]
4. Statement I is false but Statement II is true [Option ID = 23392]

49) Which one of the following vitamin is involved in transamination reaction of amino acids?

[Question ID = 5849][Question Description = 149_178_FSC3_SEP22_Q49]

1. Thiamine [Option ID = 23393]
2. Biotin [Option ID = 23394]
3. Pyridoxine [Option ID = 23395]
4. Panthothenic acid [Option ID = 23396]

50) Which micronutrient deficiency causes hypochromic microcytic anemia?

[Question ID = 5850][Question Description = 150_178_FSC3_SEP22_Q50]

1. Folic acid

   [Option ID = 23397]
2. Cyanocobalamine

   [Option ID = 23398]
3. Iron

   [Option ID = 23399]
4. Zinc

   [Option ID = 23400]

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1) Given below are two statements

Statement I: Cathodic haemoglobins have higher affinities at lower pH.

Statement II: The haemoglobins exhibiting the Bohr effect are usually anodic.

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

[Question ID = 5951][Question Description = 101_180_FPB_SEP22_Q01]

1. Both Statement I and Statement II are correct [Option ID = 23801]
2. Both Statement I and Statement II are incorrect [Option ID = 23802]
3. Statement I is correct but Statement II is incorrect [Option ID = 23803]
4. Statement I is incorrect but Statement II is correct [Option ID = 23804]

2) Which of the following fish species has thyroid follicles as a compact gland?[Question ID = 5952][Question Description = 102_180_FPB_SEP22_Q02]

1. Eel [Option ID = 23805]
2. Catfish [Option ID = 23806]
3. Trout [Option ID = 23807]
4. Tuna [Option ID = 23808]

3) Which of the following is a genetic process which regulates testes/ovary development?[Question ID = 5953][Question Description = 103_180_FPB_SEP22_Q03]

1. Sex differentiation [Option ID = 23809]
2. Sex determination [Option ID = 23810]
3. Gonad differentiation [Option ID = 23811]
4. PGC migration [Option ID = 23812]

4) Name the RNA binding protein which controls the onset of PGC motility[Question ID = 5954][Question Description = 104_180_FPB_SEP22_Q04]

1. Vasa [Option ID = 23813]
2. Dnd1 [Option ID = 23814]
3. sdf-1 [Option ID = 23815]
4. HuR [Option ID = 23816]

5) Which of the following fish species is a differentiated gonochorist?[Question ID = 5955][Question Description = 105_180_FPB_SEP22_Q05]

1. *Anguilla anguilla* [Option ID = 23817]
2. *Cyprinus carpio* [Option ID = 23818]
3. *Labeo rohita* [Option ID = 23819]
4. *Danio rario* [Option ID = 23820]

6) Match List I with List II

List I	List II
A. Sphingomyelin	I. ω-3 Fatty acid
B. Linolenic acid	II. Sphingophospholipid
C. Cerebroside	III. 22:6 (n-3)
D. DHA	IV. Glycerophospholipid
E. Lecithin	V. Sphingolipid

Choose the correct answer from the options given below:

[Question ID = 5956][Question Description = 106_180_FPB_SEP22_Q06]

1. A - I, B - III, C -IV, D –II, E –V

   [Option ID = 23821]
2. A - III, B -IV, C - I, D –V, E –II

   [Option ID = 23822]
3. A - II, B -I, C -V, D –III, E – IV

   [Option ID = 23823]
4. A - IV, B -V, C -II, D – III, E – I

   [Option ID = 23824]

7) Which part of the pituitary produces prolactin?[Question ID = 5957][Question Description = 107_180_FPB_SEP22_Q07]

1. Proximal pars distalis [Option ID = 23825]
2. Rostral pars distalis [Option ID = 23826]
3. Pars intermedia [Option ID = 23827]
4. Neurohypophysis [Option ID = 23828]

8) Which amino acid acts as a precursor of catecholamines?

[Question ID = 5958][Question Description = 108_180_FPB_SEP22_Q08]

1. Phenylalanine [Option ID = 23829]
2. Asparagine [Option ID = 23830]
3. Tryptophan [Option ID = 23831]
4. Tyrosine [Option ID = 23832]

9) What is the type of receptors involved in the signalling of growth factors?[Question ID = 5959][Question Description = 109_180_FPB_SEP22_Q09]

1. Receptor tyrosine kinase [Option ID = 23833]
2. Ion channel receptor [Option ID = 23834]
3. G protein-coupled receptors [Option ID = 23835]
4. Glutamate receptor [Option ID = 23836]

10) Which of the following statements are true about neurotransmitters?

A. Neurotransmitters are hydrophilic

B. Neurotransmitters are hydrophobic

C. They are small molecules

D. They have extracellular receiptors

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

[Question ID = 5960][Question Description = 110_180_FPB_SEP22_Q10]

1. A and B only [Option ID = 23837]
2. A and C only [Option ID = 23838]
3. A, B and C only [Option ID = 23839]
4. A, C and D only [Option ID = 23840]

11) Which type of stress response involves an increase in serum cortisol?[Question ID = 5961][Question Description = 111_180_FPB_SEP22_Q11]

1. Primary [Option ID = 23841]
2. Secondary [Option ID = 23842]
3. Tertiary [Option ID = 23843]
4. Quarternary [Option ID = 23844]

12) Which amino acid is an essential part of the active site of caspases?

[Question ID = 5962][Question Description = 112_180_FPB_SEP22_Q12]

1. Methionine [Option ID = 23845]
2. Cysteine [Option ID = 23846]
3. Glutamate [Option ID = 23847]
4. Aspartate [Option ID = 23848]

13) Given below are two statements

Statement I: Most of the seawater crustaceans are osmotic and ionic conformers in normal seawater salinities (26-36 ppt).

Statement II: All Euryhaline crustaceans can perform osmotic and ionic regulation as efficiently as teleost fishes.

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

[Question ID = 5963][Question Description = 113_180_FPB_SEP22_Q13]

1. Both Statement I and Statement II are true [Option ID = 23849]
2. Both Statement I and Statement II are false [Option ID = 23850]
3. Statement I is true but Statement II is false [Option ID = 23851]
4. Statement I is false but Statement II is true [Option ID = 23852]

14) Which of the following is the mitochondrial paralog of HSP70?

[Question ID = 5964][Question Description = 114_180_FPB_SEP22_Q14]

1. HSPA1 [Option ID = 23853]
2. HSPA9 [Option ID = 23854]
3. HSPA4 [Option ID = 23855]
4. HSPA6 [Option ID = 23856]

15) What type of urine is produced by marine teleosts in minor volume, that is rich in divalent cation salts?

[Question ID = 5965][Question Description = 115_180_FPB_SEP22_Q15]

1. Isotonic [Option ID = 23857]
2. Hypotonic [Option ID = 23858]
3. Hypertonic [Option ID = 23859]
4. Hyper and isotonic [Option ID = 23860]

16) Which ion is exchanged in gills to get Na^+ transported inside the gills?[Question ID = 5966][Question Description = 116_180_FPB_SEP22_Q16]

1. Bicarbonate [Option ID = 23861]
2. Hydrogen [Option ID = 23862]
3. Unionized ammonia [Option ID = 23863]
4. Oxygen [Option ID = 23864]

17) Which of the following is an example of a suicide enzyme?[Question ID = 5967][Question Description = 117_180_FPB_SEP22_Q17]

1. HMG CoA reductase [Option ID = 23865]
2. Lysozyme [Option ID = 23866]
3. Caspase [Option ID = 23867]
4. Cycloxygenase [Option ID = 23868]

18) At what stage does the first meiotic arrest occur?

[Question ID = 5968][Question Description = 118_180_FPB_SEP22_Q18]

1. Leptotene stage of prophase 1 [Option ID = 23869]
2. Pachytene stage of prophase 1 [Option ID = 23870]
3. Leptotene stage of prophase 2 [Option ID = 23871]
4. Pachytene stage of prophase 2 [Option ID = 23872]

19) Which steroid is responsible for nuptial colouration during the breeding season in carp males?[Question ID = 5969] [Question Description = 119_180_FPB_SEP22_Q19]

1. Testosterone [Option ID = 23873]
2. Cortisol [Option ID = 23874]
3. Estradiol [Option ID = 23875]
4. Progesterone [Option ID = 23876]

20) Which of the following statements are true about signalling of nitric oxide?

A. NO receptors are intracellular

B. NO receptors are extracellular

C. Cyclic GMP act as the second messenger in NO signalling

D. NO mediates smooth muscle contraction

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

[Question ID = 5970][Question Description = 120_180_FPB_SEP22_Q20]

1. A and B only [Option ID = 23877]
2. A and C only [Option ID = 23878]
3. A, B and C only [Option ID = 23879]
4. B, C and D only [Option ID = 23880]

21) The liquid form of triglycerides at room temperature is known as[Question ID = 5971][Question Description = 121_180_FPB_SEP22_Q21]

1. Oil [Option ID = 23881]
2. Fat [Option ID = 23882]
3. Wax [Option ID = 23883]
4. Butter [Option ID = 23884]

22) Given below are two statements

Statement I: Hypoxia can enhance carbon dioxide excretion in fishes.

Statement II: Catecholamine mediated enhanced oxygen affinity is active in hypoxia.

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

[Question ID = 5972][Question Description = 122_180_FPB_SEP22_Q22]

1. Both Statement I and Statement II are correct [Option ID = 23885]
2. Both Statement I and Statement II are incorrect [Option ID = 23886]
3. Statement I is correct but Statement II is incorrect [Option ID = 23887]
4. Statement I is incorrect but Statement II is correct [Option ID = 23888]

23) The process of separation of one isomer from a racemic mixture of sugars is called as

[Question ID = 5973][Question Description = 123_180_FPB_SEP22_Q23]

1. Racemic resolution [Option ID = 23889]
2. Chiral resolution [Option ID = 23890]
3. Affinity resolution [Option ID = 23891]
4. Polar resolution [Option ID = 23892]

24) Given below are two statements

Statement I: Aromatase convert estradiol to testosterone.

Statement II: Maturation inducing steroid is produced in theca cells of the ovary.

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

[Question ID = 5974][Question Description = 124_180_FPB_SEP22_Q24]

1. Both Statement I and Statement II are correct [Option ID = 23893]
2. Both Statement I and Statement II are incorrect [Option ID = 23894]
3. Statement I is correct but Statement II is incorrect [Option ID = 23895]
4. Statement I is incorrect but Statement II is correct [Option ID = 23896]

25) Which of the following is the composition of cellobiose?[Question ID = 5975][Question Description = 125_180_FPB_SEP22_Q25]

1. Two α-D glucose joined by 1→4 glycosidic linkage [Option ID = 23897]
2. Two ß-D glucose joined by 1→4 glycosidic linkage [Option ID = 23898]
3. One α-D glucose and one ß -D glucose joined by 1→4 glycosidic linkage [Option ID = 23899]
4. One α-D glucose and one ß -D glucose joined by 4→1 glycosidic linkage [Option ID = 23900]

26) Given below are two statements

Statement I: Bradykinin mediates the drinking reflex in seawater fishes.

Statement II: Angiotensin II inhibits drinking reflex in freshwater fishes.

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

[Question ID = 5976][Question Description = 126_180_FPB_SEP22_Q26]

1. Both Statement I and Statement II are correct [Option ID = 23901]
2. Both Statement I and Statement II are incorrect [Option ID = 23902]
3. Statement I is correct but Statement II is incorrect [Option ID = 23903]
4. Statement I is incorrect but Statement II is correct [Option ID = 23904]

27) How many carbon atoms are present in the basic structure of prostaglandins?[Question ID = 5977][Question Description = 127_180_FPB_SEP22_Q27]

1. 18 [Option ID = 23905]
2. 20 [Option ID = 23906]
3. 22 [Option ID = 23907]
4. 24 [Option ID = 23908]

28) Which of the following pairs contain exclusively the naturally occurring aromatic amino acids?[Question ID = 5978] [Question Description = 128_180_FPB_SEP22_Q28]

1. Tyrosine and Histidine [Option ID = 23909]
2. Proline and phenylalanine [Option ID = 23910]
3. Tryptophan and phenylalanine [Option ID = 23911]
4. Proline and tryptophan [Option ID = 23912]

29) Which are the monosaccharide units of hyaluronic acid?[Question ID = 5979][Question Description = 129_180_FPB_SEP22_Q29]

1. N-acetyl-d-glucosamine and d-glucuronic acid [Option ID = 23913]
2. N-acetyl-d-glucosamine and d-iduronic acid [Option ID = 23914]
3. N-acetyl-d-galactosamine and d-glucuronic acid [Option ID = 23915]
4. N-acetyl-d-galactosamine-4 -sulfate and d-glucuronic acid [Option ID = 23916]

30) The pH at which half of the weak acid is dissociated is known as[Question ID = 5980][Question Description = 130_180_FPB_SEP22_Q30]

1. pKb [Option ID = 23917]
2. PKa [Option ID = 23918]
3. Isoelectric point [Option ID = 23919]
4. half equivalence point [Option ID = 23920]

31) Which of the following is the composition of a nucleotide?[Question ID = 5981][Question Description = 131_180_FPB_SEP22_Q31]

1. Contains a phosphate, a pentose sugar and a nitrogenous base attached through ß- N- glycosidic linkage [Option ID = 23921]
2. Contains one pentose sugar and one nitrogenous base attached through ß- N- glycosidic linkage [Option ID = 23922]
3. Contains a phosphate, a pentose sugar and a nitrogenous base attached through α- N- glycosidic linkage [Option ID = 23923]
4. Contains one pentose sugar and one nitrogenous base attached through α - N- glycosidic linkage [Option ID = 23924]

32) Match List I with List II

List I	List II
A. Chondroitin sulphate	I. Ribose sugar
B. DNA	II. Glycosaminoglycan
C. Hyaluronic acid	III. Monosaccharide
D. Dihydroxyacetone	IV. Sulphated polysaccharide
E. ATP	V. Deoxyribose sugar

Choose the correct answer from the options given below:

[Question ID = 5982][Question Description = 132_180_FPB_SEP22_Q32]

1. A - IV, B - V , C - II, D - I, E - III [Option ID = 23925]
2. A - IV, B - I, C - II, D - III, E - V [Option ID = 23926]
3. A - III, B - V, C - IV, D - I, E - II [Option ID = 23927]
4. A - IV, B - V , C - II , D - III, E - I [Option ID = 23928]

33) Which of the following is/are product/s of starch hydrolysis by α-amylase in the fish intestine?

A. Maltose

B. Isomaltose

C. Dextran

D. Dextrins

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

[Question ID = 5983][Question Description = 133_180_FPB_SEP22_Q33]

1. A and B only [Option ID = 23929]
2. A and C only [Option ID = 23930]
3. A, B and C only [Option ID = 23931]
4. A, B and D only [Option ID = 23932]

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

Assertion A: H+-ATPase is more active in the gills of freshwater fishes.

Reason R: Majority of the H+-ATPase in fish is related to active NaCl uptake.

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

[Question ID = 5984][Question Description = 134_180_FPB_SEP22_Q34]

1. Both **A** and **R** are correct and **R** is the correct explanation of **A** [Option ID = 23933]
2. Both **A** and **R** are correct but **R** is NOT the correct explanation of **A** [Option ID = 23934]
3. **A** is correct but **R** is not correct [Option ID = 23935]
4. **A** is not correct but **R** is correct [Option ID = 23936]

35) Given below are two statements

Statement I: CT max and CT min are the temperatures at which the fish would die when the ambient temperature is increased/decreased progressively.

Statement II: The more the area of the thermal polygon, the more resistant are the fishes.

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

[Question ID = 5985][Question Description = 135_180_FPB_SEP22_Q35]

1. Both Statement I and Statement II are correct [Option ID = 23937]
2. Both Statement I and Statement II are incorrect [Option ID = 23938]
3. Statement I is correct but Statement II is incorrect [Option ID = 23939]
4. Statement I is incorrect but Statement II is correct [Option ID = 23940]

36) Acrolein test is used to detect the presence of?

[Question ID = 5986][Question Description = 136_180_FPB_SEP22_Q36]

1. Fatty acid [Option ID = 23941]
2. Alcohol [Option ID = 23942]
3. Glycerine [Option ID = 23943]
4. Phosphate [Option ID = 23944]

37) Which of the following protein has a compulsory requirement of hydroxyproline in its structure?[Question ID = 5987] [Question Description = 137_180_FPB_SEP22_Q37]

1. Haemoglobin [Option ID = 23945]
2. Myoglobin [Option ID = 23946]
3. Collagen [Option ID = 23947]
4. Elastin [Option ID = 23948]

38) Which nitrogen of the purine is taken from glycine during purine biosynthesis?[Question ID = 5988][Question Description = 138_180_FPB_SEP22_Q38]

1. N3 [Option ID = 23949]
2. N7 [Option ID = 23950]
3. N9 [Option ID = 23951]
4. N11 [Option ID = 23952]

39) How can we break disulphide bonds in the protein?[Question ID = 5989][Question Description = 139_180_FPB_SEP22_Q39]

1. Addition of oxidising agent [Option ID = 23953]
2. Addition of reducing agent [Option ID = 23954]
3. Addition of acids [Option ID = 23955]
4. Addition of hydrolase enzyme [Option ID = 23956]

40) Which of the following enzyme activates chymotrypsinogen in the fish intestine?[Question ID = 5990][Question

Description = 140_180_FPB_SEP22_Q40]

1. Enterokinase [Option ID = 23957]
2. Trypsin [Option ID = 23958]
3. Pepsin [Option ID = 23959]
4. Chymotrypsin [Option ID = 23960]

41) Which of the following amino acid do NOT undergo transamination?

[Question ID = 5991][Question Description = 141_180_FPB_SEP22_Q41]

1. Aspartate [Option ID = 23961]
2. Glutamate [Option ID = 23962]
3. Alanine [Option ID = 23963]
4. Lysine [Option ID = 23964]

42) What is the nature of transmembrane receptors?[Question ID = 5992][Question Description = 142_180_FPB_SEP22_Q42]

1. Hydrophobic [Option ID = 23965]
2. Hydrophilic [Option ID = 23966]
3. Amphipathic [Option ID = 23967]
4. Acidic [Option ID = 23968]

43) Given below are two statements

Statement I: Secondary structures of protein have hydrogen bonds and disulphide bonds.

Statement II: Secondary structures of the protein are alpha helix and beta pleats.

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

[Question ID = 5993][Question Description = 143_180_FPB_SEP22_Q43]

1. Both Statement I and Statement II are true [Option ID = 23969]
2. Both Statement I and Statement II are false [Option ID = 23970]
3. Statement I is true but Statement II is false [Option ID = 23971]
4. Statement I is false but Statement II is true [Option ID = 23972]

44) Insulin is a

[Question ID = 5994][Question Description = 144_180_FPB_SEP22_Q44]

1. Large peptide [Option ID = 23973]
2. Small peptide [Option ID = 23974]
3. Protein [Option ID = 23975]
4. Polysaccharide [Option ID = 23976]

45) Which of the following compound inhibit H+ ATPases?[Question ID = 5995][Question Description = 145_180_FPB_SEP22_Q45]

1. Ouabain [Option ID = 23977]
2. Omeprazole [Option ID = 23978]
3. Benazepril [Option ID = 23979]
4. Cyanide [Option ID = 23980]

46) Which of the following are non-peptide secretions of eyestalk in shrimp?[Question ID = 5996][Question Description = 146_180_FPB_SEP22_Q46]

1. Serotonin [Option ID = 23981]
2. CHH [Option ID = 23982]
3. MIH [Option ID = 23983]
4. RPCH [Option ID = 23984]

47) Given below are two statements

Statement I: First two steps of the urea cycle occur in mitochondria, and the next three steps occur in the cytosol.

Statement II: Uric acid is produced from the breakdown of purine nucleotides only.

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

[Question ID = 5997][Question Description = 147_180_FPB_SEP22_Q47]

1. Both Statement I and Statement II are correct [Option ID = 23985]
2. Both Statement I and Statement II are incorrect [Option ID = 23986]
3. Statement I is correct but Statement II is incorrect [Option ID = 23987]
4. Statement I is incorrect but Statement II is correct [Option ID = 23988]

48) Which of the following metabolic pathway generate the maximum number of ATP in a single run?[Question ID = 5998] [Question Description = 148_180_FPB_SEP22_Q48]

1. Beta oxidation [Option ID = 23989]
2. TCA cycle [Option ID = 23990]
3. Glycolysis [Option ID = 23991]
4. Deamination [Option ID = 23992]

49) How many pairs of antennae do crustacea have?[Question ID = 5999][Question Description = 149_180_FPB_SEP22_Q49]

1. 1 [Option ID = 23993]
2. 2 [Option ID = 23994]
3. 3 [Option ID = 23995]
4. 4 [Option ID = 23996]

50) How many abdominal segments are present in shrimp?

[Question ID = 6000][Question Description = 150_180_FPB_SEP22_Q50]

1. 4 [Option ID = 23997]
2. 6 [Option ID = 23998]
3. 8 [Option ID = 23999]
4. 10 [Option ID = 24000]