57 Fish Biotechnology 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]

Topic:- 57 Fish Biotechnology_PHD

1) Which of the following protein involved in intrinsic pathways of apoptosis?

[Question ID = 5901][Question Description = 101_179_FBT_SEP22_Q01]

1. Cytochrome c [Option ID = 23601]
2. Cytochrome a [Option ID = 23602]
3. Cytochrome d [Option ID = 23603]
4. Cytochrome b [Option ID = 23604]

2) In the cell, microfilaments are composed of which kind of proteins?[Question ID = 5902][Question Description = 102_179_FBT_SEP22_Q02]

1. Chitin [Option ID = 23605]
2. Myosin [Option ID = 23606]
3. Keratin [Option ID = 23607]
4. Actin [Option ID = 23608]

3) The CO_2 and O_2 diffuses through plasma membrane of cell by which process

[Question ID = 5903][Question Description = 103_179_FBT_SEP22_Q03]

1. Facilitated diffusion

   [Option ID = 23609]
2. Active diffusion

   [Option ID = 23610]
3. Passive diffusion

   [Option ID = 23611]
4. Random diffusion

   [Option ID = 23612]

4) Given below are two statements
Statement I: Proteins destined for post-translational import to the endoplasmic reticulum (ER) are synthesized on free ribosomes and maintained in an unfolded state by cytosolic chaperones.

Statement II: Those protein are targeted to ER using signal sequences, which are recognized and bound by a signal recognition particle (SRP) consisting of six polypeptides

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

[Question ID = 5904][Question Description = 104_179_FBT_SEP22_Q04]

1. Both Statement I and Statement II are true [Option ID = 23613]
2. Both Statement I and Statement II are false [Option ID = 23614]
3. Statement I is true but Statement II is false [Option ID = 23615]
4. Statement I is false but Statement II is true [Option ID = 23616]

5) Following which membrane proteins catalyzes the rapid translocation of phospholipids across the ER membrane, resulted in even growth of both halves of the bilayer?[Question ID = 5905][Question Description = 105_179_FBT_SEP22_Q05]

1. Phospholipase [Option ID = 23617]
2. Flippases [Option ID = 23618]
3. Translocase [Option ID = 23619]
4. Lipase [Option ID = 23620]

6) The fatty acid ß-oxidation is the process by which fatty acids are broken down, where two carbon atoms are removed in the form of acetyl-CoA from acyl-CoA at the carboxyl terminal. This process takes place in....

[Question ID = 5906][Question Description = 106_179_FBT_SEP22_Q06]

1. Peroxisomes and Endoplasmic Reticulum

   [Option ID = 23621]
2. Peroxisomes and Mitochondria

   [Option ID = 23622]
3. Mitochondria and Chloroplast

   [Option ID = 23623]
4. Endoplasmic Reticulum and Lysosomes

   [Option ID = 23624]

7) Given below are two statements
Statement I: G protein-coupled receptor (GPLRs) is a plasma membrane receptor with seven-(pass)-transmembrane domain receptors and works with the help of a G protein. The G proteins consist of three subunits, designated α, ß, and γ.

Statement II: Binding of hormone promotes the interaction of the GPLRs with a G protein. The activated G protein ß subunit then dissociates from the receptor and stimulates adenylyl cyclase, which catalyzes the conversion of ATP to cAMP.

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

[Question ID = 5907][Question Description = 107_179_FBT_SEP22_Q07]

1. Both Statement I and Statement II are correct [Option ID = 23625]
2. Both Statement I and Statement II are incorrect [Option ID = 23626]
3. Statement I is correct but Statement II is incorrect [Option ID = 23627]
4. Statement I is incorrect but Statement II is correct [Option ID = 23628]

8) Which protein is required in the transport vesicles for selective export of newly synthesized proteins from the endoplasmic reticulum (ER) and involved in secretary pathway?

[Question ID = 5908][Question Description = 108_179_FBT_SEP22_Q08]

1. Coat protein complex (COP) I [Option ID = 23629]
2. Coat protein complex (COP) II [Option ID = 23630]
3. Coat protein complex (COP) III [Option ID = 23631]
4. Translocase [Option ID = 23632]

9) Receptor tyrosine kinases are activated by ligand binding to their extracellular domain followed by dimerization and kinase activation. Those activities of RTKs are regulated by

[Question ID = 5909][Question Description = 109_179_FBT_SEP22_Q09]

1. Protein phosphorylation [Option ID = 23633]
2. Oxidative phosphorylation [Option ID = 23634]
3. Glucose phosphorylation [Option ID = 23635]
4. Dephosphorylation [Option ID = 23636]

10) In lac operon of *E. coli* , which conditions favours lac genes to be transcribed at high levels?[Question ID = 5910] [Question Description = 110_179_FBT_SEP22_Q10]

1. Low lactose and absence of glucose [Option ID = 23637]
2. High lactose and absense of glucose [Option ID = 23638]
3. Absense of lactose and presence of glucose [Option ID = 23639]
4. Presense of both lactose and glucose [Option ID = 23640]

11) Post-transcriptional processing of the 5' end of the *RNA* product of DNA transcription known as 5' capping, which protects the newly-synthesized mRNA from degradation. This capping results in

[Question ID = 5911][Question Description = 111_179_FBT_SEP22_Q11]

1. 7-methylguanylate [Option ID = 23641]

2. 5-methylguanylate [Option ID = 23642]
3. 3-methylguanylate [Option ID = 23643]
4. 5-methyl 7-hydroxyl guanylate [Option ID = 23644]

12) Following which proteins are required for passage of the cell to restriction point and commitment to divide, where the transition from G_1 to S phase of the cell cycle takes place?[Question ID = 5912][Question Description = 112_179_FBT_SEP22_Q12]

1. Cyclin E/CDK1 [Option ID = 23645]
2. Cyclin E/CDK2 [Option ID = 23646]
3. Cyclin E/CDK4 [Option ID = 23647]
4. Cyclin A/CDK2 [Option ID = 23648]

13) Match List I with List II

List I	List II
Lac operon genes	Encodes
A. lacA	I. Beta-galactoside permease
B. lacY	II. ß-galactosidase
C. lacZ	III. Galactoside transacetylase
	IV. RNA polymerase

Choose the correct answer from the options given below:

[Question ID = 5913][Question Description = 113_179_FBT_SEP22_Q13]

1. A - II, B - I, C - IV [Option ID = 23649]
2. A - III, B - I, C - II [Option ID = 23650]
3. A - II, B -III, C - I [Option ID = 23651]
4. A - III, B - II, C - I [Option ID = 23652]

14) Given below are two statements

Statement I: The nucleosome model of chromosome proposed by R. Kornberg which consist of two each of the histones H2A, H2B, H3, and H4 and which come together to form a histone octamer.

Statement II: Around the histone octamer, DNA molecule is wrapped which contains 1.7 turns of about 200 bp and further H1 protein wraps another 20 base pairs, results into two full turns around the octamer and this structure known as chromatosome.

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

[Question ID = 5914][Question Description = 114_179_FBT_SEP22_Q14]

1. Both Statement I and Statement II are correct [Option ID = 23653]
2. Both Statement I and Statement II are incorrect [Option ID = 23654]
3. Statement I is correct but Statement II is incorrect [Option ID = 23655]
4. Statement I is incorrect but Statement II is correct [Option ID = 23656]

15) Pfu DNA polymerase is the thermostable enzyme derived from *Pyrococcus furiosus*, which differs from Taq polymerases by

[Question ID = 5915][Question Description = 115_179_FBT_SEP22_Q15]

1. Having 3' to 5' endonuclease proofreading activity [Option ID = 23657]
2. Lacks 3' to 5' exonuclease proofreading activity [Option ID = 23658]
3. Having 3' to 5' exonuclease proofreading activity [Option ID = 23659]
4. Having 5' to 3' exonuclease proofreading activity [Option ID = 23660]

16) Cre-lox recombination system catalyses site-specific recombination event between two loxP sites using *Cre-recombinase*, this enzyme derived from

[Question ID = 5916][Question Description = 116_179_FBT_SEP22_Q16]

1. P1 phage

   [Option ID = 23661]
2. P1 phagemid

   [Option ID = 23662]
3. Lytic phage

   [Option ID = 23663]
4. T2 phage

   [Option ID = 23664]

17) Most commonly used restriction endonuclease (REs) in Recombinant DNA technology[Question ID = 5917][Question Description = 117_179_FBT_SEP22_Q17]

1. Type I RE [Option ID = 23665]
2. Type II RE [Option ID = 23666]
3. Type III RE [Option ID = 23667]
4. Type I-A RE [Option ID = 23668]

18) Reagent used for preparation of competent cells

[Question ID = 5918][Question Description = 118_179_FBT_SEP22_Q18]

1. HCl

   [Option ID = 23669]
2. NaCl

   [Option ID = 23670]
3. $CaCl_2$

   [Option ID = 23671]
4. Glycine

   [Option ID = 23672]

19) Following which co-factor is required for T4 DNA ligase which catalyzes the formation of phosphodiester bonds between dsDNA fragments with 3'-OH and 5'-phosphate ends

[Question ID = 5919][Question Description = 119_179_FBT_SEP22_Q19]

1. GTP [Option ID = 23673]
2. ATP [Option ID = 23674]
3. NAD+ [Option ID = 23675]
4. FAD+ [Option ID = 23676]

20) Which of the following vector can NOT accommodate largest size of foreign DNA?

[Question ID = 5920][Question Description = 120_179_FBT_SEP22_Q20]

1. Cosmids [Option ID = 23677]
2. YAC [Option ID = 23678]
3. Plasmids [Option ID = 23679]
4. Bacteriophages [Option ID = 23680]

21) Follwing which enzyme can be used to avoid unwanted self-ligation of vector DNA molecules during cloning?[Question ID = 5921][Question Description = 121_179_FBT_SEP22_Q21]

1. Pfu polymerase [Option ID = 23681]
2. Alkaline phosphatase [Option ID = 23682]
3. Terminal phosphatase [Option ID = 23683]
4. DNA ligase [Option ID = 23684]

22) Given below are two statements

Statement I: *AquAdvantage salmon* is a FDA approved genetically engineered Atlantic salmon developed by AquaBounty Technologies using growth hormone gene from Chinook salmon under the control of a promoter derived from ocean pout.

Statement II: The company generates triploid female fish (sterile) containing a rDNA construct which imparts a rapid-growth phenotype and attains marketable size within 24 months.

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

[Question ID = 5922][Question Description = 122_179_FBT_SEP22_Q22]

1. Both Statement I and Statement II are true [Option ID = 23685]
2. Both Statement I and Statement II are false [Option ID = 23686]
3. Statement I is true but Statement II is false [Option ID = 23687]
4. Statement I is false but Statement II is true [Option ID = 23688]

23) *Moloney Murine Leukemia Virus* (MoMuLV) enveloped, single stranded (+) RNA retroviruses which integrates into the host genome and is present in infected cells as a DNA provirus. These types of viruses belong to which genus?

[Question ID = 5923][Question Description = 123_179_FBT_SEP22_Q23]

1. Alpharetrovirus [Option ID = 23689]
2. Betaretrovirus [Option ID = 23690]
3. Gammaretrovirus [Option ID = 23691]
4. Lentivirus [Option ID = 23692]

24) Trojan Gene Hypothesis proposed by Muir W. and Howard R. belongs to following matter/event?

[Question ID = 5924][Question Description = 124_179_FBT_SEP22_Q24]

1. LMO [Option ID = 23693]
2. GMO [Option ID = 23694]
3. Selective breeding [Option ID = 23695]
4. Molecular evolution [Option ID = 23696]

25) The first reported DNA vaccine, which was licensed and commercialized for use in aquaculture and developed against[Question ID = 5925][Question Description = 125_179_FBT_SEP22_Q25]

1. Infectious hematopoietic necrosis [Option ID = 23697]
2. Infectious pancreatic necrosis [Option ID = 23698]
3. Infectious spleen and kidney necrosis [Option ID = 23699]
4. Spring viremia of carps [Option ID = 23700]

26) For genomic selection, following are the best markers that can be used for estimating breeding values of candidate species for quantitative traits.[Question ID = 5926][Question Description = 126_179_FBT_SEP22_Q26]

1. STRs [Option ID = 23701]
2. RAPD [Option ID = 23702]
3. SNPs [Option ID = 23703]
4. SSRs [Option ID = 23704]

27) The core principle of Illumina next-generation sequencing (NGS) is

[Question ID = 5927][Question Description = 127_179_FBT_SEP22_Q27]

1. Pyrosequencing [Option ID = 23705]
2. Sequencing by synthesis [Option ID = 23706]
3. Sequencing by ligation [Option ID = 23707]
4. Capillary/cluster sequencing [Option ID = 23708]

28) In Maxam-Gilbert sequencing method, which enzyme is used for radioactive labeling of the 5′-P ends of dsDNA with ^{32}P-dATP?[Question ID = 5928][Question Description = 128_179_FBT_SEP22_Q28]

1. DNA polyemerase [Option ID = 23709]
2. Alkaline phosphatase [Option ID = 23710]
3. Polynucelotide kinase [Option ID = 23711]
4. Terminal transferase [Option ID = 23712]

29) Suppose researchers are provided with 100 set of known genes asscociated immunity. You have performed challenge experiment for *Aeromonas spp*. in channel catfish. Following which techniques you will use to analyse expression of those genes among challenged one and control group of fish?[Question ID = 5929][Question Description = 129_179_FBT_SEP22_Q29]

1. qPCR [Option ID = 23713]
2. Micro-array [Option ID = 23714]
3. RNAseq [Option ID = 23715]
4. RT-PCR [Option ID = 23716]

30) Following which component of gene can be used for restricting transgene expression?[Question ID = 5930][Question Description = 130_179_FBT_SEP22_Q30]

1. Inducer [Option ID = 23717]
2. Reporter [Option ID = 23718]
3. Promoter [Option ID = 23719]
4. Silencer [Option ID = 23720]

31) The following is NOT a protein sequence database?

[Question ID = 5931][Question Description = 131_179_FBT_SEP22_Q31]

1. SWISS PROT [Option ID = 23721]
2. PIR [Option ID = 23722]
3. EMBL [Option ID = 23723]
4. UNI-PROT [Option ID = 23724]

32) Given below are two statements

Statement I: GenBank is the nucleotide sequence database managed by the NCBI and it contains an annotated collection of all publicly available DNA sequences.

Statement II: Researcher can submit generated sequenes directly to the GenBank via Web based submission tools such as BankIt or tbl2asn, a command-line program, which require to upload sequences via the Submission Portal or email to gb-sub@ncbi.nlm.nih.gov.

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

[Question ID = 5932][Question Description = 132_179_FBT_SEP22_Q32]

1. Both Statement I and Statement II are correct [Option ID = 23725]
2. Both Statement I and Statement II are incorrect [Option ID = 23726]
3. Statement I is correct but Statement II is incorrect [Option ID = 23727]
4. Statement I is incorrect but Statement II is correct [Option ID = 23728]

33) Match List I with List II

List I	List II
Name of Database	Use/Application
A. PROSITE	I. Protein sequence database
B. UNIPROT	II. Protein families and domains
C. PIR	III. 3D protein structures
D. ENA-EMBL	IV. Annotated protein sequence database
	V. Nucleotide sequence database

Choose the correct answer from the options given below:

[Question ID = 5933][Question Description = 133_179_FBT_SEP22_Q33]

1. A -II , B -IV , C -I , D - V [Option ID = 23729]
2. A -I , B -II , C -III , D - V [Option ID = 23730]
3. A - II, B -IV , C -III , D - V [Option ID = 23731]
4. A -II , B -I , C - IV, D - V [Option ID = 23732]

34) Recently development and advancement of sequencing technologies resulted in huge sequence data for aquaculture species. The genomic resources are being helpful for understanding fish biology, evolution, comparative genomics etc. Suppose 'X' biologist want to identify genetic basis of growth trait perfromance of snakehead murrel using sequencing. But initially, he would like to develop whole genome of murrel using next generation sequencing technologies. Choose the correct steps for that as below.

A. Genome assembly and annotation

B. Fragmentation of Genomic DNA

C. Library Construction

D. Pair-end sequencing

E. Genomic DNA isolation

Choose the *correct* answer from the options given below

[Question ID = 5934][Question Description = 134_179_FBT_SEP22_Q34]

1. A, B, C, D, E [Option ID = 23733]
2. B, E, C, D, A [Option ID = 23734]
3. B, E, C, A, D [Option ID = 23735]
4. E, B, C, D, A [Option ID = 23736]

35) Which of the following next generation sequencing (NGS) platform can generate longest read length?

[Question ID = 5935][Question Description = 135_179_FBT_SEP22_Q35]

1. 454 Roche [Option ID = 23737]
2. ABI-SoLiD [Option ID = 23738]
3. PacBio [Option ID = 23739]
4. Illumina [Option ID = 23740]

36) Following which format mainly used for sequencing data retrival and alignment information from high-throughput sequencing platforms?

[Question ID = 5936][Question Description = 136_179_FBT_SEP22_Q36]

1. FASTQ [Option ID = 23741]
2. FASTA [Option ID = 23742]
3. SRA [Option ID = 23743]
4. BAM [Option ID = 23744]

37) In microarray experiment, following which fluroscent dye commonly used for analysing differential expression of genes? [Question ID = 5937][Question Description = 137_179_FBT_SEP22_Q37]

1. Cy3 (green) and Cy5 (red) [Option ID = 23745]
2. Cy3 (yellow) and Cy5 (red) [Option ID = 23746]
3. Cy3 (blue) and Cy5 (red) [Option ID = 23747]
4. Cy3 (green) and Cy5 (blue) [Option ID = 23748]

38) Given below are two statements

Statement I: Trojan gene hypothesis states that mate selection depends upon size of fish not on fitness, where for eg., medaka female chooses larger which may be genetically modified or inferior one. This will result into extinction.

Statement II: This hypothesis further states that transgenic fish could present a significant threat to native wildlife as this could bring a wild population to extinction in 40 generations.

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

[Question ID = 5938][Question Description = 138_179_FBT_SEP22_Q38]

1. Both Statement I and Statement II are correct [Option ID = 23749]
2. Both Statement I and Statement II are incorrect [Option ID = 23750]
3. Statement I is correct but Statement II is incorrect [Option ID = 23751]
4. Statement I is incorrect but Statement II is correct [Option ID = 23752]

39) Who developed novel coloured varieties of the Zebrafish using different fluorescent proteins such as GFP, RFP, and YFP?

[Question ID = 5939][Question Description = 139_179_FBT_SEP22_Q39]

1. Zhang *et al.*, 2003

   [Option ID = 23753]
2. Chen *et al.*, 2003

   [Option ID = 23754]
3. Gong *et al.*, 2003

   [Option ID = 23755]
4. Devlin *et al.*, 2003

   [Option ID = 23756]

40) AquAdvantage® Salmon, genetically modified organisms generated by introducing foreign genes into its genome. The following genes were used.[Question ID = 5940][Question Description = 140_179_FBT_SEP22_Q40]

1. AFP (Ocean pout) + GH (Pacific salmon) [Option ID = 23757]
2. GH (Pacific salmon) + GFP (Ocean pout) [Option ID = 23758]
3. CMV (Ocean pout) + GH (Pacific salmon) [Option ID = 23759]
4. RFP (Ocean pout) + GH (Pacific salmon) [Option ID = 23760]

41) National Respository of Fish Cell Lines (NRFC) developed and mainatined by ICAR-NBFGR, Lucknow for different fish species and those cell lines are available for research communities. How many fish cell lines are currently available at NRFC?

[Question ID = 5941][Question Description = 141_179_FBT_SEP22_Q41]

1. 40 [Option ID = 23761]
2. 50 [Option ID = 23762]
3. 30 [Option ID = 23763]
4. 25 [Option ID = 23764]

42) What is the ideal level of Fetal bovine serum (FBS) for cell growth, which is most commonly used culture medium supplement for cell culture?[Question ID = 5942][Question Description = 142_179_FBT_SEP22_Q42]

1. 5-10% [Option ID = 23765]
2. 2-5% [Option ID = 23766]
3. 10-20% [Option ID = 23767]
4. 15-25% [Option ID = 23768]

43) Embryonic stem (ES) cells derived from early developing embryos, which are characterized by pluripotency markers. The following which is NOT a ES cell marker?[Question ID = 5943][Question Description = 143_179_FBT_SEP22_Q43]

1. NANOG [Option ID = 23769]
2. OCT4 [Option ID = 23770]
3. VASA [Option ID = 23771]
4. MYLZ2 [Option ID = 23772]

44) Which is the largest cell line repository in the world?[Question ID = 5944][Question Description = 144_179_FBT_SEP22_Q44]

1. NIGMS [Option ID = 23773]
2. ATCC [Option ID = 23774]
3. ECACC [Option ID = 23775]
4. NRFC [Option ID = 23776]

45) Which of the following is the most widely used bioreactor for mammalian cell culture system?

[Question ID = 5945][Question Description = 145_179_FBT_SEP22_Q45]

1. Airlift [Option ID = 23777]
2. Stirred-tank [Option ID = 23778]
3. Hollow fiber [Option ID = 23779]
4. Rotary cell culture system [Option ID = 23780]

46) Given below are two statements
Statement I: Loop-mediated isothermal amplification (LAMP) is a DNA amplification in single tube and employed for diagnosis of infectious diseases.

Statement II: In LAMP, a set of four different primers are utilized for specific amplification of four regions on the target gene at 60-65 °C. This creates strand displacement DNA synthesis and generates stem-loop structure.

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

[Question ID = 5946][Question Description = 146_179_FBT_SEP22_Q46]

1. Both Statement I and Statement II are correct [Option ID = 23781]
2. Both Statement I and Statement II are incorrect [Option ID = 23782]
3. Statement I is correct but Statement II is incorrect [Option ID = 23783]
4. Statement I is incorrect but Statement II is correct [Option ID = 23784]

47) Reverse transcriptases is the RNA dependent DNA polymerases which transcribes single-stranded RNA into DNA. This enzyme initially discovered by H. Temin at University of Wisconsin and isolated from

[Question ID = 5947][Question Description = 147_179_FBT_SEP22_Q47]

1. *Murine leukemia virus* [Option ID = 23785]
2. *Rous sarcoma virus* [Option ID = 23786]
3. Avian myeloblastosis virus [Option ID = 23787]
4. *Moloney murine leukemia virus* [Option ID = 23788]

48) Hybridoma technology is the method of production of monoclonal antibodies that can be used for diagnosis, prevention and treatment of disease. The following is the method of sequence of production of these identical antibodies.

A. Isolation and screening of Hybridoma cells

B. Fusion between spleen cell and myeloma cells

C. Isolation of myeloma cells

D. Selection of HAT medium

E. Immunization of Mice which generates antibody producing B cells (spleen cells)

Choose the *correct* answer from the options given below

[Question ID = 5948][Question Description = 148_179_FBT_SEP22_Q48]

1. C, B, A, D, E [Option ID = 23789]
2. E, B, C, D, A [Option ID = 23790]
3. E, C, B, D, A [Option ID = 23791]
4. E, C, B, A, D [Option ID = 23792]

49) Which of the following is NOT a GnRH based synthetic hormone?

[Question ID = 5949][Question Description = 149_179_FBT_SEP22_Q49]

1. Spawn-PRO [Option ID = 23793]
2. Wova-FH [Option ID = 23794]
3. CPE [Option ID = 23795]
4. Ovaprim [Option ID = 23796]

50) From which candidate aquaculture fish first permanent cell line was developed?[Question ID = 5950][Question Description = 150_179_FBT_SEP22_Q50]

1. Tilapia [Option ID = 23797]
2. Rainbow trout [Option ID = 23798]
3. Channel catfish [Option ID = 23799]
4. Rohu [Option ID = 23800]