56 Fish Genetics and Breeding 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: The optimization theory doesnot explain about the genetic variation required for adpatation arises.

Statement II: Quantitative genetics provides us the mechianistic understanding of evolutionary process.

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

[Question ID = 5851][Question Description = 101_198_FGB_SEP22_Q01]

1. Both Statement I and Statement II are true [Option ID = 23401]
2. Both Statement I and Statement II are false [Option ID = 23402]
3. Statement I is true but Statement II is false [Option ID = 23403]
4. Statement I is false but Statement II is true [Option ID = 23404]

2) The method of path analysis is proposed by[Question ID = 5852][Question Description = 102_198_FGB_SEP22_Q02]

1. Ronald Fisher [Option ID = 23405]
2. Karl Pearson [Option ID = 23406]
3. Sewall Wright [Option ID = 23407]
4. Francis Galton [Option ID = 23408]

3) Match List I with List II

List I	List II
Personalities	Name of Theory
A. Francis Galton	I. Correlation
B. Charles Darwin	II. Multiple factor hypothesis
C. H. Nilsson- Ehle	III. Evolution by natural selection
D. Karl Pearson	IV. Evolution by mutation of large effects

Choose the correct answer from the options given below:

[Question ID = 5853][Question Description = 103_198_FGB_SEP22_Q03]

1. A -IV , B -III , C -II , D - I [Option ID = 23409]
2. A -IV , B -III , C -I , D -II [Option ID = 23410]
3. A - IV, B -II , C -III , D - I [Option ID = 23411]
4. A - IV, B -I , C -II , D -III [Option ID = 23412]

4) Consider two alleles A1 and A2 in a population, the number of individuals with genotype A1A1, A1A2 and A2A2 are 30, 60 and 10 respectively. The allele frequency of A2 is

[Question ID = 5854][Question Description = 104_198_FGB_SEP22_Q04]

1. 0.6 [Option ID = 23413]
2. 0.4 [Option ID = 23414]
3. 0.5 [Option ID = 23415]
4. 0.24 [Option ID = 23416]

5) The value assigned to intra allelic interaction is called as[Question ID = 5855][Question Description = 105_198_FGB_SEP22_Q05]

1. Genotypic value [Option ID = 23417]
2. Phenotypic value [Option ID = 23418]
3. Dominance deviation [Option ID = 23419]
4. Interaction deviation [Option ID = 23420]

6) If there is complete dominance, the population mean for a locus with two alleles is[Question ID = 5856][Question Description = 106_198_FGB_SEP22_Q06]

1. Proportional to gene frequency [Option ID = 23421]
2. Proportional to square of gene frequency [Option ID = 23422]
3. Proportional to square root of gene frequency [Option ID = 23423]
4. Equal to genotypic value of homozygous dominant [Option ID = 23424]

7) If an individual is mated to number of individuals taken at random from the population, then the value which is expressed as twice the mean deviation of progeny from population mean is called as

[Question ID = 5857][Question Description = 107_198_FGB_SEP22_Q07]

1. Average effect [Option ID = 23425]
2. Breeding value [Option ID = 23426]
3. Average effect of gene substitution [Option ID = 23427]
4. Dominance deviation [Option ID = 23428]

8) The genetic covariance for full sib relationship is[Question ID = 5858][Question Description = 108_198_FGB_SEP22_Q08]

1. Half of additive genetic variance [Option ID = 23429]
2. One fourth of additive genetic variance [Option ID = 23430]
3. Equal to additive genetic variance and dominance variance [Option ID = 23431]
4. Equal to sum of half of additive genetic variance and one fourth of dominance variance [Option ID = 23432]

9) The regression of offspring parent is equal to[Question ID = 5859][Question Description = 109_198_FGB_SEP22_Q09]

1. Half of heritability [Option ID = 23433]
2. Heritability [Option ID = 23434]
3. One fourth of heritability [Option ID = 23435]
4. Twice of heritability [Option ID = 23436]

10) The sm allele is a bristle mutation that segregates in an Australian Drosophila population, where the genotypic values for wild type (+) and small alleles are as follows: ++; +sm; smsm have values 44:40:22. Suppose environmental variance of bristle number is 6 and there are no common environmnetal effects due to maternal environment. Assuming the sm locus is the only source of genetic variance, the regression of bristle number for halfsib relatives is ? Do calculation for population where frequency of sm allele is 0.1

[Question ID = 5860][Question Description = 110_198_FGB_SEP22_Q10]

1. 0.10 [Option ID = 23437]
2. 0.41 [Option ID = 23438]
3. 0.24 [Option ID = 23439]
4. 0.22 [Option ID = 23440]

11) Given below are two statements

Statement I: The heritability in narrow sense is also called as degree of genetic determination.

Statement II: The heritability in broad sense is also called as degree of resemblance between relatives.

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

[Question ID = 5861][Question Description = 111_198_FGB_SEP22_Q11]

1. Both Statement I and Statement II are true [Option ID = 23441]
2. Both Statement I and Statement II are false [Option ID = 23442]
3. Statement I is true but Statement II is false [Option ID = 23443]
4. Statement I is false but Statement II is true [Option ID = 23444]

12) The following pair is non additive genetic variance[Question ID = 5862][Question Description = 112_198_FGB_SEP22_Q12]

1. V_A and V_D [Option ID = 23445]
2. V_A and V_I [Option ID = 23446]
3. V_A and V_E [Option ID = 23447]
4. V_D and V_I [Option ID = 23448]

13) Given below are two statements

Statement I: GxE interactions become very important if individuals of a particular population are to be reared under same conditions.

Statement II: If there is no GxE interaction then the best genotype in one environment will be best in all environment.

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

[Question ID = 5863][Question Description = 113_198_FGB_SEP22_Q13]

1. Both Statement I and Statement II are true [Option ID = 23449]
2. Both Statement I and Statement II are false [Option ID = 23450]
3. Statement I is true but Statement II is false [Option ID = 23451]
4. Statement I is false but Statement II is true [Option ID = 23452]

14) For a nested hierarchial design, equal numbers per sub class, each sire is mated with several dams and each mating produces several progeny, the estimated additive genetic variance is

[Question ID = 5864][Question Description = 114_198_FGB_SEP22_Q14]

1. Two times sire variance [Option ID = 23453]
2. Equal to sire variance [Option ID = 23454]
3. Four times sire variance [Option ID = 23455]
4. Half of sire variance [Option ID = 23456]

15) Given below are two statements

Statement I: Repeatability is used to predict future performance from past records.

Statement II: Repeatability sets a lower limit to heritability.

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

[Question ID = 5865][Question Description = 115_198_FGB_SEP22_Q15]

1. Both Statement I and Statement II are true [Option ID = 23457]
2. Both Statement I and Statement II are false [Option ID = 23458]
3. Statement I is true but Statement II is false [Option ID = 23459]
4. Statement I is false but Statement II is true [Option ID = 23460]

16) The number of bristles on ventral surface of abdominal segments is a repeatable trait in Drosophila. In a population, between flies and within flies variance is 3.19 and 3.25, respectively. The repeatability for this trait is

[Question ID = 5866][Question Description = 116_198_FGB_SEP22_Q16]

1. 0.31 [Option ID = 23461]
2. 0.49 [Option ID = 23462]
3. 0.54 [Option ID = 23463]
4. 0.32 [Option ID = 23464]

17) The sum of transmitting ability of both the parent gives[Question ID = 5867][Question Description = 117_198_FGB_SEP22_Q17]

1. Breeding value [Option ID = 23465]
2. Heritability [Option ID = 23466]
3. Repeatability [Option ID = 23467]
4. Genetic correlation [Option ID = 23468]

18) The yearling weight of a heifer is 300 kg in a herd with mean of 250 kg, predict her breeding value if heritability of yearling weight is 0.45[Question ID = 5868][Question Description = 118_198_FGB_SEP22_Q18]

1. 31.5 kg [Option ID = 23469]
2. 45 kg [Option ID = 23470]
3. 22.5 kg [Option ID = 23471]
4. 300 kg [Option ID = 23472]

19) Given below are two statements

Statement I: When repeatability is low, the gain in accuracy is substantial as number of records increases.

Statement II: When repeatability is high there is little gain in accuarcy with repeated records compared with single records.

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

[Question ID = 5869][Question Description = 119_198_FGB_SEP22_Q19]

1. Both Statement I and Statement II are true [Option ID = 23473]
2. Both Statement I and Statement II are false [Option ID = 23474]
3. Statement I is true but Statement II is false [Option ID = 23475]
4. Statement I is false but Statement II is true [Option ID = 23476]

20) The estimated breeding values for the sire and dam of a heifer are 200 and 170 kg for yearling body weight, respectively. Predict breeding value of heifer at 12 months of age

[Question ID = 5870][Question Description = 120_198_FGB_SEP22_Q20]

1. 370 kg [Option ID = 23477]
2. 200 kg [Option ID = 23478]
3. 185 kg [Option ID = 23479]
4. 205 kg [Option ID = 23480]

21) Given below are two statements

Statement I: Selection index minimises the average square prediction error.

Statement II: Using selection index the probability of correctly ranking pairs of animals on their breeding value is maximised.

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

[Question ID = 5871][Question Description = 121_198_FGB_SEP22_Q21]

1. Both Statement I and Statement II are true [Option ID = 23481]
2. Both Statement I and Statement II are false [Option ID = 23482]
3. Statement I is true but Statement II is false [Option ID = 23483]
4. Statement I is false but Statement II is true [Option ID = 23484]

22) The standardised selection differential is called as[Question ID = 5872][Question Description = 122_198_FGB_SEP22_Q22]

1. Response to selection [Option ID = 23485]
2. Selection intensity [Option ID = 23486]
3. Genetic gain [Option ID = 23487]
4. Heritability [Option ID = 23488]

23) For the equation Y= XB +Zu + e, Y is vector of observations, B is[Question ID = 5873][Question Description = 123_198_FGB_SEP22_Q23]

1. Vector of random effects [Option ID = 23489]
2. Vector of fixed effects [Option ID = 23490]
3. Incidence matrix [Option ID = 23491]
4. Vector of random residual elements [Option ID = 23492]

24) Given below are two statements

Statement I: Kempthrone and Curnow coined the terms GCA and SCA.

Statement II: SCA is used to describe the average performance of a line in hybrid combinations.

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

[Question ID = 5874][Question Description = 124_198_FGB_SEP22_Q24]

1. Both Statement I and Statement II are true [Option ID = 23493]
2. Both Statement I and Statement II are false [Option ID = 23494]
3. Statement I is true but Statement II is false [Option ID = 23495]
4. Statement I is false but Statement II is true [Option ID = 23496]

25) The following selection method results in highest accuracy of selection

[Question ID = 5875][Question Description = 125_198_FGB_SEP22_Q25]

1. Tandem selection [Option ID = 23497]
2. Mass selection [Option ID = 23498]
3. Independent culling [Option ID = 23499]
4. Selection index [Option ID = 23500]

26) The measure of strength of relationship between environmental effects on one trait and environmental effects on another trait is called as[Question ID = 5876][Question Description = 126_198_FGB_SEP22_Q26]

1. Phenotypic correlation [Option ID = 23501]
2. Genetic correlation [Option ID = 23502]
3. GxE interaction [Option ID = 23503]
4. Environmental correlation [Option ID = 23504]

27) The probability that two alleles at a locus are identical by descent is called as[Question ID = 5877][Question Description = 127_198_FGB_SEP22_Q27]

1. Inbreeding depression [Option ID = 23505]
2. Hybrid vigour [Option ID = 23506]
3. Inbreeding coefficient [Option ID = 23507]
4. Genetic relatedness [Option ID = 23508]

28) Given below are two statements

Statement I: A locus will contribute to a change of mean value on inbreeding only if degree of dominance is not equal to zero.

Statement II: The direction of change of mean value on inbreeding is toward the value of the more dominant alleles.

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

[Question ID = 5878][Question Description = 128_198_FGB_SEP22_Q28]

1. Both Statement I and Statement II are true [Option ID = 23509]
2. Both Statement I and Statement II are false [Option ID = 23510]
3. Statement I is true but Statement II is false [Option ID = 23511]
4. Statement I is false but Statement II is true [Option ID = 23512]

29) Given below are two statements

Statement I: Phenomenon of heterosis is simply inbreeding depression in reverse.

Statement II: In absence of selection, inbreeding followed by crossbreeding of lines in a large population is not expected to make any permanent change in population mean.

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

[Question ID = 5879][Question Description = 129_198_FGB_SEP22_Q29]

1. Both Statement I and Statement II are true [Option ID = 23513]
2. Both Statement I and Statement II are false [Option ID = 23514]
3. Statement I is true but Statement II is false [Option ID = 23515]
4. Statement I is false but Statement II is true [Option ID = 23516]

30) The crossing of fullsibs in F2 results in an F of[Question ID = 5880][Question Description = 130_198_FGB_SEP22_Q30]

1. 0.50 [Option ID = 23517]
2. 0.125 [Option ID = 23518]
3. 0.25 [Option ID = 23519]
4. 1 [Option ID = 23520]

31) Growth and development of cell is the feature of[Question ID = 5881][Question Description = 131_198_FGB_SEP22_Q31]

1. G1 phase [Option ID = 23521]
2. G0 phase [Option ID = 23522]
3. S phase [Option ID = 23523]
4. G2 phase [Option ID = 23524]

32) Sister chromatids separate, becoming individual chromosomes that migrate toward spindle poles[Question ID = 5882] [Question Description = 132_198_FGB_SEP22_Q32]

1. Prophase [Option ID = 23525]
2. Metaphase [Option ID = 23526]
3. Anaphase [Option ID = 23527]
4. Telophase [Option ID = 23528]

33) When a trait exhibits incomplete dominance, a cross between two heterozygotes produces the following phenotypic ratio in the progeny?[Question ID = 5883][Question Description = 133_198_FGB_SEP22_Q33]

1. 1:3:1 [Option ID = 23529]
2. 1:2:1 [Option ID = 23530]
3. 9:3:3:1 [Option ID = 23531]
4. 3:1 [Option ID = 23532]

34) The degree to which a trait is expressed is called as[Question ID = 5884][Question Description = 134_198_FGB_SEP22_Q34]

1. Penetrance [Option ID = 23533]

2. Chaisma [Option ID = 23534]
3. Chemera [Option ID = 23535]
4. Expressivity [Option ID = 23536]

35) Given below are two statements

Statement I: In the XX-XY sex determination system the male is XX and homogametic and female is XY and heterogametic

Statement II: In the ZZ-ZW sex determination system the male is ZZ and homogametic and female is ZW and heterogametic

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

[Question ID = 5885][Question Description = 135_198_FGB_SEP22_Q35]

1. Both Statement I and Statement II are true [Option ID = 23537]
2. Both Statement I and Statement II are false [Option ID = 23538]
3. Statement I is true but Statement II is false [Option ID = 23539]
4. Statement I is false but Statement II is true [Option ID = 23540]

36) In a dihybrid cross, the phenotypic ratios produced by recessive epistasis interaction is

[Question ID = 5886][Question Description = 136_198_FGB_SEP22_Q36]

1. 9:3:3:1 [Option ID = 23541]
2. 12:3:1 [Option ID = 23542]
3. 9:3:4 [Option ID = 23543]
4. 9:7 [Option ID = 23544]

37) The genetic phenomenon wherein the phenotype is detrmined by genes on autosomal chromosomes that are more readily expressed in one sex is called as

[Question ID = 5887][Question Description = 137_198_FGB_SEP22_Q37]

1. Sex linked characteristic [Option ID = 23545]
2. Genomic imprinting [Option ID = 23546]
3. Sex limited characteristic [Option ID = 23547]
4. Sex influenced characteristic [Option ID = 23548]

38) Given below are two statements

Statement I: When two wild type alleles are on one homologous chromosome and two mutant alleles are on other, they are said to be in repulsion configuration.

Statement II: When each chromosome contains one wild type allele and one mutant allele, the alleles are in coupling configuration.

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

[Question ID = 5888][Question Description = 138_198_FGB_SEP22_Q38]

1. Both Statement I and Statement II are true [Option ID = 23549]
2. Both Statement I and Statement II are false [Option ID = 23550]
3. Statement I is true but Statement II is false [Option ID = 23551]
4. Statement I is false but Statement II is true [Option ID = 23552]

39) These are infectious agents consisting only of protein, they are thought to cause disease by altering the shape of proteins encoded by host genome

[Question ID = 5889][Question Description = 139_198_FGB_SEP22_Q39]

1. Retrovirus [Option ID = 23553]
2. Positive strand RNA virus [Option ID = 23554]
3. Negative strand RNA virus [Option ID = 23555]
4. Prions [Option ID = 23556]

40) The transforming principle in DNA was demonstrated by

[Question ID = 5890][Question Description = 140_198_FGB_SEP22_Q40]

1. Avery, MacLoed and McCarty [Option ID = 23557]
2. Erwin Chargaff [Option ID = 23558]
3. Watson and Crick [Option ID = 23559]
4. Frederick Griffith [Option ID = 23560]

41) The following fish is a paternal mouth brooder[Question ID = 5891][Question Description = 141_198_FGB_SEP22_Q41]

1. *Oreochromis mossambicus* [Option ID = 23561]

2. *Saratherodon melanotheran* [Option ID = 23562]
3. *Pterophyllum scalare* [Option ID = 23563]
4. *Cyprinus carpio* [Option ID = 23564]

42) The following hormone inhibits growth[Question ID = 5892][Question Description = 142_198_FGB_SEP22_Q42]

1. Proinsulin [Option ID = 23565]
2. Insulin [Option ID = 23566]
3. Glucagon [Option ID = 23567]
4. Stomatostatin [Option ID = 23568]

43) The most common sex determination system in fishes is[Question ID = 5893][Question Description = 143_198_FGB_SEP22_Q43]

1. WXY [Option ID = 23569]
2. XY1Y2/X1X2Y [Option ID = 23570]
3. XX-XY [Option ID = 23571]
4. Autosomal [Option ID = 23572]

44) Sex steriods are released from the following organ[Question ID = 5894][Question Description = 144_198_FGB_SEP22_Q44]

1. Hypopthalamus [Option ID = 23573]
2. Pituitary [Option ID = 23574]
3. Liver [Option ID = 23575]
4. Gonads [Option ID = 23576]

45) CITES is based in[Question ID = 5895][Question Description = 145_198_FGB_SEP22_Q45]

1. Montreal Canada [Option ID = 23577]
2. Geneva Switzerland [Option ID = 23578]
3. Rome Italy [Option ID = 23579]
4. Bern Germany [Option ID = 23580]

46) The following is a Type II molecular marker[Question ID = 5896][Question Description = 146_198_FGB_SEP22_Q46]

1. Allozyme [Option ID = 23581]
2. EST [Option ID = 23582]
3. SNP [Option ID = 23583]
4. Microsatellites [Option ID = 23584]

47) The following is a codominant molecular marker[Question ID = 5897][Question Description = 147_198_FGB_SEP22_Q47]

1. Allozyme [Option ID = 23585]
2. RAPD [Option ID = 23586]
3. Mitochondrial DNA [Option ID = 23587]
4. AFLP [Option ID = 23588]

48) The recommended marker system for paternity determination is[Question ID = 5898][Question Description = 148_198_FGB_SEP22_Q48]

1. Microsatellite [Option ID = 23589]
2. RAPD [Option ID = 23590]
3. RFLP [Option ID = 23591]
4. AFLP [Option ID = 23592]

49) The following is primarily a protein database[Question ID = 5899][Question Description = 149_198_FGB_SEP22_Q49]

1. NCBI [Option ID = 23593]
2. DDBJ [Option ID = 23594]
3. EMBL [Option ID = 23595]
4. Uniprot [Option ID = 23596]

50) The Ramachandran plot is used for[Question ID = 5900][Question Description = 150_198_FGB_SEP22_Q50]

1. Predicting secondary structure of protein [Option ID = 23597]
2. Predicting tertiary structure of protein [Option ID = 23598]
3. Protein structure validation [Option ID = 23599]
4. Protein homology search [Option ID = 23600]