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B.V.Sc. & A.H. (Second Professional) Examination – 2022
Animal Genetics and Breeding Paper -I

Time: Three Hours **Maximum Marks: 100**
Weightage: 20

Unit-1 (Biostatistics and Computer Application)
Unit-2 (Principles of Animal and Population Genetics)

Instructions:
1) Attempt all questions
2) Answer of all questions is to be written in the space provided along with the question in question-booklet.
3) Overwriting is not allowed in the objective type question.

Q.1 Fill in the blanks. **(20x0.5 = 10)**

1.1 When total observations in the data are divided in to four equal parts, each part is called as_____.

1.2 _____ is a simple arithmetical process of sorting out the components of variation in a given data.

1.3 The site for protein synthesis is _____.

1.4 _____is the diagrammatically representation of the chromosomes arranged in descending order of length.

1.5 Geometric mean of 1, 3, 9 is _____.

1.6 The range of $\mu \pm 2\sigma$ for a normal distribution includes _____ % of the observations.

1.7 The coefficient of correlation was given by _____.

1.8 Baldness in human being is a _____ character.

1.9 An individual with one extra chromosome in a single pair of chromosome is known as _____.

1.10 If in a large random mating population p=1.0, then proportion of heterozygote in a population will be_____.

1.11 Exchange between non homologous chromosome is known as _____

1.12 The genotypic ratio of dihybrid cross is _____

1.13 _____ is an exception to independent assortment.

1.14 Mutation in the gene leading to an alteration in protein expression is called _____ mutation.

1.15 The change of gene frequency resulting from sampling in small populations is known as _____

1.16 Asymmetry of the frequency distribution is known as _____.

1.17 Basic principle not used in completely randomized design is _____

1.18 The chromosome complement on Turner's syndrome is _____.

1.19 For linked genes, maximum proportions of parental types of progenies produced in back cross are _____ %.

1.20 A 12:3:1 ratio in F_2 is an example of _____.

Q.2 Choose the most suitable answer and write the number of the correct answer 1 or 2 or 3 or 4 in the space given against each sub question: **(20x0.5 = 10)**

2.1 Which of the following variable is not continuous type ( )

1. Fat%
2. Litter size
3. Milk Yield
4. Wool Yield

2.2 Replication=6& treatment =5 in CRD, then error degree of freedom will be ( )

1. 20
2. 25
3. 16
4. 12

2.3 The criss cross pattern of inheritance follows in _____ traits ( )

1. Sex linked traits
2. Sex limited traits
3. Sex influence traits
4. All of these

2.4 The theory of Pangenesis was given by ( )

1. William Bateson
2. Jan Swammerdam
3. Charles Darwin
4. August Weismann

2.5 The feather at shank in poultry is an example of _____ epistasis. ( )
1. Dominance epistasis
2. Duplicate recessive epistasis
3. Duplicate dominant epistasis
4. Duplicate gene with Interaction

2.6 The measure of central tendency affected by extreme values ( )
1. Arithmatic Mean
2. Geomatric Mean
3. Harmonic Mean
4. Median

2.7 The electronic part used in first generation computer was ( )
1. Transistor
2. IC
3. Microchip
4. Vaccume Tube

2.8 First crossing over at one point that reduces the chances of second crossing over nearby is known as ( )
1. Interference
2. Cross over suppressor
3. Translocation
4. Coefficient of co-incidence

2.9 Variance of mid-parent value is equal to: ( )
1. Vp
2. 1 /2 V p
3. 1/4Vp
4. 1/16 Vp

2.10 A 12:3:1 ratio in dihybrid cross is an example for ( )
1. Recessive epistasis
2. Dominant epistasis
3. Duplicate recessive epistasis
4. Duplicate dominant epistasis.

2.11 Probability ranges from ( )
1. 0 to 1
2. –1 to +1
3. –1 to 0
4. 0 to α

2.12 Relationship between two qualitative variables is studied by ( )
1. Z test
2. t test
3. Chi-square
4. F test

2.13 If covariance xy is 25, variance x is 5 and variance y is 8 then the byx is ( )
1. 5
2. 3.12
3. 0.2
4. 0.32

2.14 Percentage of AB gamete from an individual with AB genotype with Crossing over of 10% ( )

1. 10%
2. 90 %
3. 50 %
4. 45 %

2.15 A Drosophila fly with sex index of 0.50 is ( )

1. Superfemale
2. Intersex
3. Supermale
4. Normal male

2.16 Heritability in broad sense is defined as ( )

1. VA / VP
2. VP / VA
3. VE / VP
4. VG / VP

2.17 Type of relationship between egg number and egg weight is ( )

1. positive
2. negative
3. positive or negative
4. not related

2.18 Location of two dominant genes of two linked gene pairs on separate members of a chromosome pair. ( )

1. Repulsion Phase
2. Transition
3. Coupling phase
4. Transversion

2.19 A Drosophila fly with sex index of 0.33 is ( )

1. Superfemale
2. Intersex
3. Supermale
4. Normal male

2.20 Coiling pattern in snail is the example of : ( )

1. Nuclear inheritance
2. Maternal effect
3. Mendelian inheritance
4. Sex influenced trait.

Q.3 Attempt any <u>ten</u> out of the following twelve questions. Answer of each question should be in 2 to 3 lines. (10x2.0= 20)

3.1 Define: Standard Normal Deviate.

3.2 State Law of independent assortment.

3.3 Enlist the different components of computers. What is the main function of CPU?

3.4 Enlist principles involved in Designs of experiments. Which principle are used in CRD?

3.5 What is a Test cross? Give its utility.

3.6 Define: Sex index. Give sex index for super male in Drosophila.

3.7 What is linkage? What is the unit of measurement of linkage? Which unit is used to measure the distance between two genes?

3.8 Define: Lethal alleles. Enlist various examples.

3.9 Explain: cytoplasmic inheritance. Enlist at least two examples of it.

3.10 Define: Breeding value. How it is related to transmitting ability.

3.11 Define: Gene frequency. What is the frequency of a fixed allele?

3.12 Define: Bioassay

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Q.4 **Attempt any <u>six</u> out of the following eight questions. Answer of each question should be in 8 to 10 lines.** **(6 x 6.0 = 36)**

4.1 Define repeatability. Which estimate for a trait will be higher, heritability or repeatability? Why?

4.2 Explain in brief: Genetic correlation. Give formula for coefficient of correlation. What are the causes of genetic correlation between two traits?

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4.3 What is Down's syndrome? Describe briefly its phenotypic and chromosomal characters.

4.4 State Hardy-Weinberg Law. Which force changes gene frequency only in small population?

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4.5 Differentiate between sex linked and sex influenced traits.

4.6 Enlist various measures of central tendency. Which measure is most commonly used? Give its formula and properties.

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4.7 Give formula and applications of Chi-square test of significance.

4.8 Differentiate between : Mutually exclusive and independent events

Q.5 Answer the following question in 1-2 pages (attempt any two). (2x12.0 = 24)

5.1 What are probability distributions? Enlist them. Which distribution is used for continuous frequency data? Describe properties of Normal Distribution curve.

5.2 State Hardy-Weinberg law of genetic equilibrium. Enlist factors affecting gene frequency. Describe in detail selection against recessive alleles.

5.3 Explain heritability. Describe in details methods of estimation and application of heritability.