

**B.V.Sc. & A.H. (Second Professional) Examination – 2023**  
**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 The population parameters are denoted by using..... alphabets.
- 1.2 A..... graph is plotted by taking lower class limit as X -axis & the cumulative frequencies less than & cumulative frequency more than as Y-axis.
- 1.3 Body coat colours in cattle, wool types in sheep, comb pattern in poultry are examples of ..... traits/characters.
- 1.4 The discrete data follow .....
- 1.5 The fourth moment about the arithmetic mean is used as a measure of .....
- 1.6 In computer analysis, the mathematical expression for multiplication is denoted by ..... symbol
- 1.7 The machine language used in internet is .....
- 1.8 .....is used as the largest subject directory used on the internet.
- 1.9 The regression coefficient has the unit same as ..... variable.
- 1.10 In C.R.D, out of three basic principles of experimental design, principle of ..... is not applicable since there is one way classification of data.
- 1.11 The experiments of Mendel were rediscovered by ....., ..... &.....
- 1.12 The diploid chromosome number in riverine buffalo is.....
- 1.13 The cell division can be arrested at a particular stage by the use of .....chemical.
- 1.14 Methionine is coded by..... codon.
- 1.15 ..... is the fastest way to bring about change in gene frequency.
- 1.16 The heritability of reproduction traits is.....

- 1.17 The strength of linkage is ..... to percentage of crossing over.
- 1.18 In..... inheritance the result of reciprocal crosses between parental varieties shows different results.
- 1.19 Semi conservative mode of DNA replication was given by.....
- 1.20 Polytene chromosomes are found in salivary glands 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 On the internet the two protocols used are: ( )
1. TCP & TP
  2. IP & CP
  3. IP & TP
  4. TCP & IP
- 2.2 The relationship between the different types of means is represented as: ( )
1.  $AM \geq GM < HM$
  2.  $AM \leq GM \leq HM$
  3.  $AM \leq GM \geq HM$
  4.  $AM \geq GM \geq HM$
- 2.3 The normal distribution curve was given by: ( )
1. Karl Pearson
  2. R.A.Fischer
  3. Abraham Demoivre
  4. D.Bell
- 2.4 The correlation coefficient ranges from: ( )
1. -1 to +1
  2.  $-\infty$  to  $+\infty$
  3. 0 to +1
  4. 1 to 100
- 2.5 In statistics the measure of precision of a sample is: ( )
1. Coefficient of variation
  2. Variance
  3. Standard Error
  4. Skewness
- 2.6 An Interpreter converts ( )
1. High level language to Assembly language
  2. High level language to Tool language
  3. High level language to another High level language
  4. High level language to Machine language
- 2.7 In C.R.D. and R.B.D after analysis of variance if the F-value comes non-significant, we go further for- ( )
1. LSD (Least Significant Difference)
  2. LSD (Latin Square Design)
  3. Both a & b
  4. None a & b

- 2.8 F-test is conducted to test the equality of ( )  
1. Mean  
2. Variance  
3. Both a & b  
4. None of the above
- 2.9 Amount of change in the dependent variable for one unit change in the independent variable is given by ( )  
1. Correlation coefficient  
2. Regression coefficient  
3. Coefficient of variation  
4. Kurtosis
- 2.10 If there are 6 treatments each having 4 replications then degree of freedom for treatment will be ( )  
1. 2  
2. 5  
3. 6  
4. 3
- 2.11 In a population under Hardy-Weinberg equilibrium if the frequency of  $A_1$  allele is 0.6 then the frequency of heterozygous ( $A_1A_2$ ) genotype will be ( )  
1. 0.04  
2. 0.16  
3. 0.36  
4. 0.48
- 2.12 Diagrammatic representation of chromosome morphology, used diagnostically for the comparison of the karyotypes of different species ( )  
1. Mitotic index  
2. Karyotype  
3. Idiogram  
4. Morphological index
- 2.13 Milk yield in cattle is ( )  
1. Sex linked trait  
2. Sex limited trait  
3. Sex influenced trait  
4. Qualitative trait
- 2.14 A gene influencing several traits is called ( )  
1. Pleiotropic  
2. Linkage  
3. Correlation  
4. Polygene
- 2.15 Diploid chromosome number in goat is ( )  
1. 54  
2. 56  
3. 58  
4. 60

- 2.16 Among the following, which one is the dispersive process ( )  
1. Migration  
2. Mutation  
3. Selection  
4. Genetic drift
- 2.17 Crossing over occurs in which stage of cell division. ( )  
1. Leptotene  
2. Zygotene  
3. Pachytene  
4. Diplotene
- 2.18 Commonly observed epistatic ratio in duplicate recessive genes is ( )  
1. 9:3:4  
2. 9:6:1  
3. 15:1  
4. 9:7
- 2.19 The two strands of DNA double helix are ( )  
1. Coaxial  
2. Perpendicular to each other  
3. Complementary to each other  
4. Identical to each other
- 2.20 Heritability in narrow sense is the ratio of ( )  
1.  $V_G$  to  $V_P$   
2.  $V_A$  to  $V_P$   
3.  $V_E$  to  $V_P$   
4. All of these

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

3.1 Define probability distribution

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3.2 What are Skewness and its types ?

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3.3 What is an Internet?

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Please write your Roll Number above this line

3.4 What is a completely randomized design

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3.5 Z-test and its limits

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3.6 Define mitosis cell division and its importance

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3.7 Define penetrance

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3.8 Define linkage

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3.9 Write on sex influence traits with example

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3.10 Define quantitative traits

3.11 Define gene frequency

3.12 Define genetic drift

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

4.1 Write down on graphical representation of data

Please write your Roll Number above this line

4.2 Write short note on regression

Handwritten answer for question 4.2: A faint, illegible note is written across the lined paper.

4.3 Describe sex-linked inheritance with suitable example

Handwritten answer for question 4.3: A faint, illegible note is written across the lined paper.

Do not write across this line

4.4 What is a genotype-environment interaction? What are its applications in animal breeding

4.5 Write short note on extra chromosomal inheritance

Please write your Roll Number above this line

4.6 Write short note on average effect of gene and its importance

Handwritten scribble in blue ink covering the writing area for question 4.6.

4.7 Computer languages and its applications

Handwritten scribble in blue ink covering the writing area for question 4.7.

4.8 Describe the DNA structure

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

(2x12.0 = 24)

- 5.1 What is the Hardy Weinberg law? Describe the different factors affecting the gene frequency? What are the various applications of Hardy Weinberg law?  
(Marks: 2+5+5=12)
- 5.2 Enlist the seven contrasting characters studied by Mendel with their dominance relationship? Why Mendel used the pea plant as his experimental material? Explain in details the Mendel's law of independent assortment with suitable example?  
(Marks: 2+5+5=12)
- 5.3 Write down the different measures of central tendency with their merits and demerits. Write down the qualities of a good measure of central tendency?  
(Marks: 8+4 = 12)