

Subject: Animal Genetics & Breeding

- Q.1. Who first coined the word “Genetics”?
- A) Gregor Mendel
 - B) W. Johannsen
 - C) W. Bateson
 - D) T.H. Morgan
- Q.2. Mendel’s laws of inheritance were rediscovered in the year-----
- A. 1866
 - B. 1900
 - C. 1884
 - D. 1920
- Q.3. Who proposed the theory of “Pangenesis”?
- A. Charles Darwin
 - B. J. B. Lamarck
 - C. August Weismann
 - D. Boveri and Sutton
- Q.4. Linkage of genes through chromosomes was established by-----
- A. Muller
 - B. Bateson
 - C. Johannsen
 - D. T. H. Morgan
- Q.5. “AB” blood group in man is an example of -----
- A. Dominance
 - B. Co-Dominance
 - C. Over dominance
 - D. Epistasis
- Q.6. In White Leghorn breed of fowl the white plumage colour is because of-----
- A. Recessive
 - B. Co-dominance
 - C. Epistasis
 - D. Complementary gene action
- Q.7. In monohybrid test cross the dominant and recessive characters segregate in the ratio of-----
- A. 1:1
 - B. 3:1
 - C. 9:3:3:1
 - D. 1:2

- Q.8.** The phenomenon in which a gene influences several characters is known as-----

A. Polygenic inheritance
B. Genetic Slippage
C. Atavism
D. Pleiotropism
- Q.9.** If homozygous Rose Combed cocks are crossed with homozygous Pea combed hens the progeny will have-----
A. Rose Comb
B. Pea Comb
C. Walnut Comb
D. Single Comb
- Q.10.** In human there is loss of one X chromosome (X0) in -----
A. Klinefelter's Syndrome
B. Turner's Syndrome
C. Down's Syndrome
D. Edward's Syndrome.
- Q.11.** If creeper chicken birds are crossed together, the ratio of creeper to non-creeper birds in the progeny will be -----
A. 2:1
B. 1:1
C. 3:1
D. 1:2
- Q. 12.** DNA synthesis takes place in -----phase of cell cycle.
A. G1 phase
B. G2 phase
C. S phase
D. M phase
- Q. 13.** In Mitotic cell division, the chromosomes start moving to opposite poles during -----.
A. Prophase
B. Metaphase
C. Anaphase
D. Telophase
- Q.14.** In Meiosis I, the pairing of homologous chromosomes takes place during -----
---- sub stage under Prophase I.
A. Leptotene
B. Zygotene
C. Pachytene
D. Diplotene
- Q.15.** Which substance can arrest the cell division at metaphase?
A. Colchicine
B. Cytokinin
C. Gibberellins
D. Auxins

- Q.16.** Diploid chromosome no. in domestic sheep (*Ovisaries*) is-----
A. 60
B. 50
C. 48
D. 54
- Q.17.** The Y chromosome of Indigenous cattle (*Bosindicus*) is -----
A. Metacentric
B..Submetacentric
C. Telocentric
D. Acrocentric
- Q.18.** Which banding is most suitable for visualization of centromeres in chromosomes?
A. Q banding
B. C banding
C. G banding
D. R banding
- Q.19.** Which cell organelle is associated with extra-chromosomal inheritance in mammals?
A. Endoplasmic Reticulum
B. Golgi apparatus
C. Mitochondria
D. Centrosome
- Q.20.** Crossing Over is absent in -----
A. Male mice
B. Female mice
C. Female *Drosophila*
D. Male *Drosophila*
- Q.21.** If there is complete linkage of genes A and B in coupling phase then the individual with genotype, AaBb, will produce ----- types of gametes.
A. 4
B. 2
C. 3
D. 1
- Q.22.** Frameshift mutation is caused by-----
A. Acridines
B. Di EthyleSulphate
C. Di MethyleSulphate
D. Mono MethyleSulphate.
- Q. 23.** Which type of chromosome is found in the salivary gland of *Drosophila* flies?
A. Lamp brush chromosome
B. B- Chromosome
C. Polytene Chromosome
D. Holokinetic Chromosome

- Q. 24. In Lymphocyte Culture Technique which substance is used for inducing mitosis?
A. Colchicine
B. Bovine fetal Serum
C. Potassium Chloride
D. PHA(Phytohaemagglutinin)
- Q.25. Prokaryotes lack nuclear membrane and other cell organelles except-----.
A. Mitochondria
B. Ribosomes
C. Golgi Apparatus
D. Endoplasmic Reticulum.
- Q.26. Which cell organelle is associated with the formation of spindle fibres during cell division?
A. Centriole
B. Mitochondria
C. Endoplasmic Reticulum
D. Golgi apparatus
- Q.27. The diploid chromosome number in African buffalo (*Syncerus caffer nanus*) is -----
A. 50
B. 48
C. 54
D. 52
- Q.28. The total no. of spermatozoa formed During gametogenesis from each primary spermatocyte in a bull is -----.
A. 2
B. 8
C. 4
D. 1
- Q. 29. The number of genotypic classes in the F₂ of a di-hybrid cross is -----
A. 4
B. 9
C. 16
D. 3
- Q.30. Famous transformation experiment in pneumococcus was first performed by
A. Griffith
B. Avery
C. Watson
D. Khorana
- Q. 31. Barred plumage in chicken is a-
A. Sex limited trait
B. Sex linked trait
C. Sex influenced trait
D. Maternal trait.

- Q.32. The Least Squares Analysis of Variance technique with unequal subclass numbers was given by-
- A. Henderson
 - B. Harvey
 - C. Robertson
 - D. Lush
- Q.33. The BLUP procedure for evaluation of dairy sires has been given by-
- A. Henderson
 - B. Harvey
 - C. Robertson
 - D. Kempthorn
- Q.34. The concept of heritability was given by-
- A. Mendel
 - B. Henderson
 - C. Lush
 - D. Harvey
- Q.35. Heritability in narrow sense is the ratio of-
- A. Additive Genetic Variance to Phenotypic Variance
 - B. Genotypic Variance to Phenotypic Variance
 - C. Dominance Variance to Phenotypic Variance
 - D. Environmental Variance to Phenotypic Variance
- Q.36. Accuracy of Individual selection is equal to-
- A. h^2
 - B. h
 - C. Square root of h
 - D. $0.5 h$
- Q.37. Repeatability is always-----
- A. Equal to heritability in broad sense
 - B. Equal to heritability in narrow sense
 - C. More than or equal to heritability in broad sense
 - D. Less than heritability in broad sense.
- Q.38. The breed of poultry, totally black in colour, with black meat and native to Jabua District of M.P. is-
- A. RIR
 - B. White Leg Horn
 - C. Aseel
 - D. Kadaknath
- Q.39. The home tract of Toda breed of buffalo lies in-
- A. Maharashtra
 - B. Punjab
 - C. Tamil Nadu
 - D. Andhra Pradesh

- Q.40.** Motu breed of cattle is native to-
- A. Odisha
 - B. M.P.
 - C. Maharashtra
 - D. Bihar
- Q.41.** Which Indian pig breed is most prolific?
- A. NiangMegha
 - B. Ghoongroo
 - C. Nicobari
 - D. Ghurrah
- Q.42.** Mudhol Hound, a registered dog breed of India belongs to ----- state.
- A. Tamil Nadu
 - B. Kerala
 - C. Andhra Pradesh
 - D. Karnataka
- Q.43.** Estimation of heritability from regression of offspring on dam equals
- A. 2 x regression of offspring on one parent
 - B. 2x regression of offspring on midparent
 - C. Regression of offspring on one parent
 - D. Regression of offspring on mid parent.
- Q.44.** Intra-class correlation among the half-sibs is equal to -----
- A. Half of heritability.
 - B. One fourth of heritability
 - C. Heritability
 - D. Twice the heritability.
- Q. 45.** Which category of traits have low heritability?
- A. Structural traits.
 - B. Growth traits
 - C. Productive traits.
 - D. Reproductive traits.
- Q. 46.** For which of the following traits, repeatability can not be estimated?
- A. Lactation yield
 - B. Service period
 - C. Birth weight
 - D. Lactation length.
- Q. 47.** Genetic correlation between two traits is caused by---
- A. Linkage of genes.
 - B. Pleiotropism.
 - C. Linkage and/or pleiotropism
 - D. Linkage disequilibrium.

- Q.48.** The correlated response in trait Y (Cry) as a result of selection for trait X, depends on the following factors except---
- A. Genetic correlation between the two traits.
 - B. Environmental correlation between the two traits.
 - C. Heritability of the two traits.
 - D. Intensity of selection for trait X
- Q. 49.** Which component of variance is included in repeatability but not in heritability?
- A. VA (Additive Genetic Variance).
 - B. VD (Dominance Variance)
 - C. VI (Interaction Variance)
 - D. VEP (Permanent Environmental Variance).
- Q.50.** Which one of them is a collateral relative?
- A. Brother
 - B. Father
 - C. Mother
 - D. Grand Mother.
- Q.51** Theory of Path Coefficient was given by ----
- A. Fisher
 - B. Wright.
 - C. Lush
 - D. Kempthorn
- Q.52.** Inbreeding coefficient of the progeny produced from full-sib mating will be ----
- A. 0.50
 - B. 0.125
 - C. 0.25
 - D. 0.37
- Q.53.** Coefficient of relationship between dam and daughter is equal to---
- A. 0.75
 - B. 0.125
 - C. 0.25
 - D. 0.50
- Q.54.** The accuracy of selection of heifers on the basis of their dams' records is equal to -----
- A. 0.25 h
 - B. 0.5 h²
 - C. 0.5 h
 - D. 0.25 h²
- Q.55.** Which method of multi-trait selection is considered to be the best?
- A. Tandem Method
 - B. Selection Index
 - C. Independent Culling Level Method
 - D. Family Selection.

- Q.56.** Which of the following information is not required for construction of Selection Index?
- A. Repeatability of the traits.
 - B. Genotypic Variance and co-variance.
 - C. Phenotypic variance and covariance.
 - D. Relative Economic Values.
- Q.57.** In case of Recurrent Reciprocal Selection, the parents of each line are selected on the basis of ----
- A. Individuality.
 - B. Pedigree
 - C Progeny
 - D. Family
- Q.58.** If a gene has two alleles, A1 and A2 and if the frequency of A1 allele is 0.6 then the frequency of the allele A2 shall be--
- A. 0.3
 - B. 0.2
 - C 0.4
 - D. 0.6
- Q.59.** If a gene has 3 alleles, A1,A2 and A3 with frequency of A1 and A2 alleles being 0.5 and 0.3, respectively, then the frequency of A3 allele shall be -----
- A. 0.3
 - B. 0.2
 - C 0.5
 - D. 0.8
- Q.60.** In a population, under Hardy-Weinberg equilibrium, a gene has two alleles, A1 and A2 with their frequencies as, 0.6 and 0.4, respectively. What is expected frequency of the genotype A1A2 in the population?
- A. 0.48
 - B. 0.24
 - C 0.20
 - D. 0.10
- Q.61.** In a population, under Hardy-Weinberg equilibrium, a gene has 3 alleles, A1, A2 and A3 with their frequencies as, 0.5 and 0.3 and 0.2, respectively. What is expected frequency of the genotype A1A3 in the population?
- A. 0.30
 - B. 0.20
 - C 0.12
 - D. 0.04
- Q.62.** In a population, the frequency of A1 allele in males and females is 0.4 and 0.6, respectively. If random mating takes place in the population, then the frequency of A1 allele in males in the progeny generation should be-----
- A. 0.4
 - B. 0.5
 - C 0.6
 - D. 0.2

- Q.63.** The dispersive process that can change the gene frequency of a population is ---
-----.
- A. Selection.
 - B. Mutation
 - C Migration
 - D. Random Genetic Drift.
- Q.64.** If the selection coefficient of a genotype is 0.2, its fitness shall be ----
- A. 0.8
 - B. 0.4
 - C. 0.6
 - D. 0.2
- Q.65.** In a mixed population after immigration, if the proportion of immigrants is 0.5 and the difference in the gene frequency between immigrants and natives is 0.3, the change in gene frequency shall be ---
- A. 0.20
 - B. 0.15
 - C. 0.30
 - D. 0.80
- Q. 66.** For estimation of heritability by half-sib correlation method the intra-class correlation 't' is multiplied by-
- A. 2
 - B. 4
 - C. 0.5
 - D. 0.25
- Q.67.** In complete di-allele crossing, involving 4 breeds, the total no. of breed combinations, including the reciprocal crosses, will be-
- A. 4
 - B. 8
 - C. 10
 - D. 16
- Q.68.** Heterosis in F₂ generation is –
- A. Equal to F₁ generation.
 - B. Half of F₁ generation
 - C. Twice the F₁ generation.
 - D. Nil
- Q.69.** If the frequency of a lethal gene in a population under Hardy-weinberg equilibrium is 0.1 then the proportion of carriers in the population would be-.
- A. 0.9
 - B. 0.81
 - C. 0.18
 - D. 0.01

- Q.70.** Breed of buffalo that developed as a result of crossing Murrah with Surati is ---

A. Godavari
B. Jafarabadi
C. Mehsana
D. Banni
- Q.71.** The ICAR institute associated with the conservation of domestic animal biodiversity is-
A. IVRI, Izatnagar.
B. NDRI, Karnal
C. CIRB, Hissar
D. NBAGR, Karnal
- Q.72.** The population mean is the mean of-
A. Phenotypic Values
B. Genotypic Values
C. Breeding Values
D. All
- Q.73.** The breeding system essential for the Hardy-Weinberg equilibrium is-
A. Random mating
B. Inbreeding
C. Outbreeding
D. Top Crossing
- Q.74.** The enzymes that act as Molecular Scissors in recombinant DNA technology are –
A) Topoisomerases
B) Restriction Endonucleases
C) Proteinases
D. Polymerases.
- Q. 75.** The “operon” model for regulating gene expression in bacteria was proposed by-
A. Nathan and Smith
B. Jacob and Monod
C. Meselson and Stahl
D. Tjio and Leven
- Q.76.** The process of protein synthesis from mRNA is called as-
A. Transcription
B. Translation
C. Replication
D. Transduction
- Q.77.** A codon codes for –
A. an amino acid
B. a protein
C. a polypeptide chain
D. an enzyme

- Q.78.** The initiation codon is-
- A. AAA
 - B. AUA
 - C. AUG
 - D. AGG
- Q.79.** Which one of them is not a termination codon?
- A. UAA
 - B. UAG
 - C. UGA
 - D. UGC
- Q.80.** Which technology was used to produce “Dolly”, the first cloned sheep, in 1996 at Roslin Institute, Edinburg?
- A. E.T.T. (Embryo Transfer Technology)
 - B. I.V.F. (In vitro Fertilization)
 - C. SCNT (Somatic Cell Nuclear Transfer)
 - D. Transgenesis.
- Q.81.** What is the reason for heterosis?
- A. Additive gene action
 - B. Temporary Environment
 - C. Permanent environment
 - D. Non additive gene action
- Q.82.** Which of the following cattle breed was studied by Sir Robert Bakewell
- A. Hereford cattle
 - B. Ancus cattle
 - C. Long horn cattle
 - D. Short horn cattle
- Q.83.** Name the mating system of animals where an elite male of a recognized breed is used on nondescript females
- A. Crossbreeding
 - B. Grading up
 - C. Outcrossing
 - D. Species hybridization
- Q.84.** In which year was the double helical model of DNA structure proposed?
- A. 1953.
 - B. 1958
 - C. 1970
 - D. 1944
- Q.85.** Who established that the DNA replication is semi-conservative?
- A. Watson and Crick
 - B. Meselson and Stahl
 - C. Hershey and Chase
 - D. Nathans and Smith

- Q.86.** Who synthesized the first DNA molecule in vitro?
A. Watson
B. Nirenberg
C. Kornberg
D. Nathans
- Q.87.** The complete genetic code was deciphered by-
A. Nathans and Smith
B. Kornberg
C. Watson and Crick
D. Nirenberg and Khorana.
- Q.88.** Who created the recombinant DNA first?
A. Paul Berg and Co-workers.
B. Nathans and Smith
C. Korn berg
D. Nirenberg.
- Q.89.** In which year the Human Genome Project was completed?
A. 1990
B. 1995
C. 2000
D. 2003
- Q.90.** For discovery of which of the following technologies, Doudna and Charpentier have been awarded Noble Prize?
A. FISH
B. CRISPER
C. PCR
D. OPU-IVF
- Q.91.** Which cell organelle is associated with protein synthesis?
A. Mitochondria
B. Endoplasmic Reticulum.
C. Ribosome
D. .Golgi Body
- Q.92.** Which technology is applied for locating specific DNA sequences in a chromosome?
A. FISH
B. CRISPER
C. PCR
D. Chromosomal banding
- Q.93.** The number of protein coding genes in the human genome ranges from-
A. 19 thousand to 20 thousand
B. 30 thousand to 40 thousand
C. 40 thousand to 50 thousand
D. More than 50 thousand

- Q.94.** The proportion of genome that codes for protein in man is-
- A. 10-15 %
 - B. 30-40 %
 - C. 1-2 %
 - D. 45-50 %
- Q.95.** In man, on which chromosome the MHC genes are located?
- A. Chromosome-7
 - B. Chromosome -5
 - C. Chromosome-4
 - D. Chromosome-6
- Q. 96.** Antibodies are produced by ---cells.
- A. T cells
 - B Erythrocytes
 - C. Plasma Cell
 - D. Macrophases.
- Q.97.** The cells responsible for cell mediated immune response are-----
- A. B cells
 - B. T cells
 - C. Macrophases
 - D. Plasma cell.
- Q.98.** The MHC locus in poultry is known as -----.
- A. B-locus.
 - B. BoLA
 - C. HLA
 - D. PLA
- Q.99.** In ONBS with MOET the young bulls are selected on the basis of-
- A. Progeny Testing
 - B.. Pedigree Selection
 - C. Sib Selection
 - D. Individual Selection.
- Q. 100.** The diploid Chromosome number in rat is-----
- A. 44.
 - B. 38.
 - C. 40.
 - D. 42.
- Q.101.** In nucleic acid two adjacent nucleotide molecules in a strand are linked by ---- bond.
- A. N-H bond
 - B. Hydrogen Bond.
 - C. Phosphodiester bond.
 - D. Di-sulphide bond.

- Q.102.** What is the gestation period in albino rabbits?
A. 40-45 days
B. 28-33 days.
C. 50-55 days
D. 20-25 days
- Q.103.** What is the average litter size at birth in rabbits?
A. 5-8
B. 10-15
C. 1-3
D. 15-20
- Q.104.** Which of the following is involved in the formation of Institutional Animal Ethics Committees (IAEC) of an institution?
A. National Biodiversity Board
B. Committee for the purpose of control and supervision on experiments on animals
C. Animal Welfare Board
D. National Institute of Animal Welfare
- Q. 105.** Histamine is produced by ----- cell.
A. Plasma cell
B. B cell
C. Mast cell.
D. Macrophage
- Q.106.** Which type of gene action is not responsible for heterosis?
A. Dominance
B. Over dominance
C. Epistasis
D. Additive gene action.
- Q.107.** The diploid chromosome number of Rhesus Monkey is-----
A. 60
B. 40
C. 42
D. 62.
- Q.108.** Which of the following is in situ conservation?
A. Establishment of a breeding farm away from the home tract.
B. Establishment of a breeding farm in the home tract.
C. Preservation of semen
D. Preservation of Embryos.
- Q.109.** Purnathadi breed of buffalo, recently registered by the NBAGR belongs to ----- state.
A. Maharashtra.
B. Karnataka
C. Odisha
D. Himachal Pradesh

- Q.110.** What is the total no. of registered cattle breeds in India as of 2023?
- A. 50
 - B. 53
 - C. 55
 - D. 48
- Q.111.** The full form of “IUCN” is-
- A. Indian Union for Conservation of Natural Resources.
 - B. International University for Conservation of Nature.
 - C. International Union for Conservation of Nature.
 - D. Indian Union Code for Nature.
- Q.112.** Which is the closest to extinction of a breed/species?
- A. Threatened.
 - B. Vulnerable
 - C. Critically Endangered.
 - D. Endangered.
- Q. 113.** Which of the following Indian breed of cattle is threatened?
- A. Red Sindhi
 - B. Gir
 - C. Haryana
 - D. Kankrej
- Q.114.** Which of the following techniques is primarily undertaken to amplify DNA?
- A. PCR
 - B. Gel Electrophoresis
 - C. Northern Blotting
 - D. Southern Blotting
- Q.115.** Which of the following does not have introns?
- A. DNA
 - B. Non-processed pseudo genes
 - C. Processed m RNA
 - D. Primary mRNA transcript
- Q.116.** Which histone is NOT part of the nucleosome core?
- A. H1
 - B. H2A
 - C. H2B
 - D. H3

- Q. 117.** Which of the following carries anticodons?
A. Ribosomal RNA
B. tRNA
C. RNA polymerase
D. mRNA
- Q.118.** The amount of Adenine is always equal to the amount of _____ in DNA.
A. Cytosine
B. Uracil
C. Guanine
D. Thymine
- Q.119.** In our immune system, which of the following cells provide the first line of defense?
A. Neutrophil
B. Basophil
C. Macrophage
D. Lymphocyte
- Q.120.** The breed of cattle, developed by crossbreeding, has recently been registered by the NBAGR, Karnal. The name of the breed is---
A) Sunandini
B) Frieswal
C) Karan-Swiss
D) Karan Fries.

1.	C
2.	B
3.	A
4.	D
5.	B
6.	C
7.	A
8.	D
9.	C
10.	B
11.	A
12.	C
13.	C
14.	B
15.	A
16.	D
17.	D
18.	B
19.	C
20.	D
21.	B
22.	A
23.	C
24.	D
25.	B
26.	A
27.	D
28.	C
29.	B
30.	A

31.	B
32.	B
33.	A
34.	C
35.	A
36.	B
37.	C
38.	D
39.	C
40.	A
41.	B
42.	D
43.	A
44.	B
45.	D
46.	C
47.	C
48.	B
49.	D
50.	A
51.	B
52.	C
53.	D
54.	C
55.	B.
56.	A
57.	C
58.	C
59.	B
60.	A

61.	B
62.	C
63.	D
64.	A
65.	B
66.	B
67.	D
68.	B
69.	C
70.	C
71.	D
72.	D
73.	A
74.	B
75.	B
76.	B
77.	A
78.	C
79.	D
80.	C
81.	D
82.	C
83.	B
84.	A
85.	B
86.	C
87.	D
88.	A
89.	D
90.	B

91.	C
92.	A
93.	A
94.	C
95.	D
96.	C
97.	B
98.	A
99.	C
100.	D
101.	C
102.	B
103.	A
104.	B
105.	C
106.	D
107.	C
108.	B
109.	A
110.	B
111.	C
112.	C
113.	A
114.	A
115.	C
116.	A
117.	B
118.	D
119.	A
120.	B

