

Genetics A

1. The tendency of an offspring to resemble its parent is known as

1. Variation
2. Heredity
3. Resemblance
4. Inheritance

2. Who is known as the “Father of Genetics”?

1. Morgan
2. Mendel
3. Watson
4. Bateson

3. The alternate form of a gene is

1. Alternate type
2. Recessive character
3. Dominant character
4. Allele

4. The genotypic ratio of a monohybrid cross is

1. 1:2:1
2. 3:1
3. 2:1:1
4. 9:3:3:1

5. The crossing of F1 to either of the parents is known as

1. Test cross
2. Back cross
3. F1 cross
4. All of the above

6. Which of the following statements is true regarding the “law of segregation”?

1. Law of segregation is the law of purity of genes

2. Alleles separate from each other during gametogenesis
3. Segregation of factors is due to the segregation of chromosomes during meiosis
4. All of the above

7. Homozygosity and heterozygosity of an individual can be determined by

1. Back cross
2. Self-fertilization
3. Test cross
4. All of the above

8. An exception to Mendel's law is

1. Independent assortment
2. Linkage
3. Dominance
4. Purity of gametes

9. Pea plants were used in Mendel's experiments because

1. They were cheap
2. They had contrasting characters
3. They were available easily
4. All of the above

10. The smallest unit of genetic material which produces a phenotypic effect on mutation is

1. Muton
2. Gene
3. Recon
4. Nucleic acid

11. Mendel's findings were rediscovered by

1. Correns
2. De Vries
3. Tschermak
4. All

12. Alleles are

1. Alternate forms of genes
2. Linked genes
3. Chromosomes that have crossed over

4. Homologous chromosomes

13. When the activity of one gene is suppressed by the activity of a non-allelic gene, it is known as

1. Pseudo-dominance
2. Hypostasis
3. Epistasis
4. Incomplete dominance

14. Cystic fibrosis is

1. Sex-linked recessive disorder
2. Autosomal dominant disorder
3. Autosomal recessive disorder
4. Sex-linked dominant disorder

15. 9:7 ratio in the F₂ generation represents

1. Incomplete dominance
2. Co-dominance
3. Epistasis
4. Complementary interaction

16. A small amount of lethal mutation is always present in the population due to

1. Positive selection
2. Negative selection
3. Frequency-dependent selection
4. Mutation-selection balance

17. If a plant with genotype AaBb is self-fertilized, the probability of getting AABB genotype will be (A and B are not linked)

1. $\frac{1}{2}$
2. $\frac{1}{4}$
3. $\frac{1}{8}$
4. $\frac{1}{16}$

18. How many phenotypes can occur in the human blood group ABO with alleles $I^A I^B i$?

1. 2
2. 3
3. 4

4. 1

19. The geometrical device that helps to find out all the possible combinations of male and female gametes is known as

1. Bateson Square
2. Mendel Square
3. Punnett Square
4. Mendel's Cube

20. Which term represents a pair of contrasting characters?

1. Heterozygous
2. Homozygous
3. Codominant genes
4. Allelomorphs

1- 2	2- 2	3- 4	4- 1	5- 2
6- 4	7- 3	8- 2	9- 2	10- 1
11- 4	12- 1	13- 3	14- 3	15- 3
16- 4	17- 4	18- 3	19- 3	20- 4

Genetics B

1)-----is father of genetics.

- a) Mendel b) Darwin
- c) Lamark d) Robert Hook

2) The roan colour cattle is an example of-----

- a) co-dominance b) incomplete dominance
- c) multiple allele d) dominance

3) The genotype of blood group 'O' is-----

a) $I^A I^B$

b) $I^B I^B$

c) $I^i I^i$

d) $I^A I^A$

4) The ratio obtained in complementary interaction of genes is-----

a) 9:3:3:1

b) 9:7

c) 15:7

d) 13:3

5) Sickle cell anemia is-----

a) sex linked inheritance

b) autosomal heritable disease

c) infectious disease

d) deficiency disease

6) Crossing over occurs between-----

a) sister chromatids

b) non-sister chromatids

c) non-homologous chromosomes

d) none of the above

7) Cri-du-chat syndrome is due to-----

a) nullisomy

b) duplication

c) deletion

d) inversion

8) In case of honey bee, the mechanism of sex determination is of-----

a) XX, XY type

b) XX, XO type

c) ZZ, ZW type

d) haploidy, diploidy type

9)-----is phenotypic monohybrid ratio.

a) 2:1

b) 3:1

c) 4:1

d) 1:3

10) Various forms of a given gene are called-----

a) genotype

b) phenotype

c) gamete

d) allele

11)-----blood group is universal recipient.

a) 'B' b) 'A' c) 'AB' d) 'C'

12) The gene 'I' codes for an enzyme-----

a) isomerase

b) dehydrogenase

c) glycerol transferase

d) maltase

13) Linkage in *Drosophila* was first discovered by-----

a) Bridges b) Mendel

c) Morgan d) Bateson and Punnett

14) Mechanism of crossing over occurs during-----

a) Pachytene of prophase b) Second meiotic division

c) Before synapsis d) Diplotene

15) Patau's syndrome is due to-----

a) nullisomy b) monosomy

c) deletion d) trisomy

16) In *Drosophila* and in human, the mechanism of sex determination is of -----

- a) XX, XY type b) XX, XO type
- c) ZZ, ZW type d) haploidy, diploidy type

17) Griffith effect is related with-----

- a) DNA transcription b) RNA translation
- c) Bacterial transformation d) Bacterial transduction

18) In hybridization technique Mendel had selected two-----plants unlike genetical constitution.

- a) *Pisum sativum* b) Jawar
- c) Rice d) Sunflower

19) In supplementary interaction ratio obtained is-----

- a) 9:3:4 b) 9:7
- c) 9:3:3:1 d) 3:1

20) ABO blood group system is due to-----

- a) multifactorial inheritance b) incomplete dominance
- c) multiple allelism d) epistasis

21) An organism is $4n$. This condition is called as-----

- a) nullisomy b) tetraploidy
- c) trisomy d) aneuploidy

22) Philadelphia chromosome is formed due to-----

- a) inversion b) deletion
- c) duplication d) translocation

23) Recessive gene can be expressed in-----

- a) homozygous condition b) heterozygous condition
- c) both the above conditions d) none of these conditions

Cell cycle and cell division

1. _____ and _____ coined the term “Meiosis”.
 1. Van Burin and Hertwig
 2. Boveri and Stuka
 3. Walleye and Hofmeister
 4. Farmer and Moore
2. Chromatids coiling in the meiotic and mitotic division is _____.
 1. Plectonemic in both
 2. Paranemic in both
 3. Paranemic in mitosis and plectonemic in meiosis
 4. Plectonemic in mitosis and paranemic in meiosis
3. When there is an increase in the condensation of chromatin during the process of cell division _____.
 1. Heterochromatin increases
 2. Euchromatin increases
 3. Differentiation of euchromatin & heterochromatin decreases
 4. Differentiation of euchromatin & heterochromatin increases
4. The condensation of chromosomes is observed in _____.
 1. Prophase 1
 2. Anaphase 1
 3. Metaphase 1
 4. None of the above
5. Nuclear DNA replicates in the _____ phase.
 1. G2 phase
 2. M phase
 3. S phase
 4. None of the above
6. _____ is a form of cell division which results in the creation of gametes or sex cells.
 1. Mitosis
 2. Meiosis
 3. Miosis
 4. None of the above
7. ____ is the number of DNA in the chromosome at the G2 stage of the cell cycle:

1. 1
2. 2
3. 3
4. 0

8. The stage which serves as a connecting link between meiosis 1 and meiosis 2:

1. Interphase 2
2. Interphase 1
3. Interkinesis
4. None of the above

9. The longest stage in the cell cycle is

1. Interphase
2. Anaphase
3. Metaphase
4. None of the above

10. The _____ state implies the exit of cells from the cell cycle:

1. S
2. G₁
3. G₂
4. G₀

11. Synapsis is defined as the pairing of _____

1. Acentric chromosomes
2. Non-homologous chromosomes
3. Any chromosomes
4. Homologous chromosomes

12. Mitosis can be observed in _____

1. Polyploid individual
2. Diploid individual
3. Haploid individual
4. Both (1,) (2) and (3)

13. The spindle apparatus is formed during the _____ phase of mitosis.

1. Telophase
2. Metaphase
3. Prophase
4. Anaphase

14. Cyclin is associated with _____

1. Leptospirosis
2. Glycolysis
3. Cylosis
4. Mitosis

15. If an individual wants to view diakinesis, which of these would be:

1. Hair
2. Leaf
3. Onion root
4. Flower bud

16. Chromosome structure can be observed best during ____

1. Anaphase
2. Metaphase
3. Prophase
4. None of the above

1 – 4	2 – 4	3 – 3	4 – 1
5 – 3	6 – 2	7 – 2	8 – 3
9 – 1	10 – 4	11 – 4	12 – 4
13 – 2	14 – 4	15 – 4	16 – 2