

Dr. Rafiq Zakaria Campus
Maulana Azad College of Arts Science and Commerce.

Department of Botany

MCQ's

Semester V Paper No XV

CELL AND MOLECULAR BIOLOGY OF PLANTS

1. Nucleic acid were discovered by_____
 - (A) Watson
 - (B) Crick
 - (C) Friedrich miescher
 - (D) Altman
2. Purines in DNA Molecule are_____
 - (A) Cytocine and Uracil
 - (B) Uracil and Gaunine
 - (C) Aadenine and Guanine
 - (D) Adenine and Thymine
3. In the DNA molecule the ratio of purine to pyrimidine is always_____
 - (A) 3:1
 - (B) 2:1
 - (C) 1:3
 - (D) 1:1
4. Okazaki segment are_____
 - (A) Small segment of RNA
 - (B) Small peptides
 - (C) Small DNA segments
 - (D) Small DNA segments formed over DNA
5. m-RNA strand is constructed on which strand of DNA_____
 - (A) Sense Strand
 - (B) Antisense strand
 - (C) Both the strands
 - (D) Any one strand
6. Which of the following is the smallest RNA_____
 - (A) t-RNA
 - (B) r-RNA
 - (C) m-RNA
 - (D) ds-RNA
7. Which of the following nitrogen base is absent in RNA_____
 - (A) Adenine
 - (B) Guanine
 - (C) Thymine
 - (D) Uracil

8. Decoding of genetic code was done by_____
- (A) Crick
 - (B) Watson and Crick
 - (C) Khorana, Nirenberg and Holley
 - (D) All of the above.
9. Initiation codon of protein synthesis (In eukaryotes) is
- (A) GUA
 - (B) GCA
 - (C) CCA
 - (D) AUG
10. Lac operon is related with_____
- (A) Lactose metabolism
 - (B) Starch Metabolism
 - (C) Lipid Metabolism
 - (D) Protein Metabolism
11. The change in the virulence of *Diplococcus* is called_____
- (A) Transduction
 - (B) Transcription
 - (C) Translation
 - (D) Transformation
12. The phosphate group is joined with carbon of sugar by phosphodiester bond_____
- (A) 1st
 - (B) 2nd
 - (C) 4th
 - (D) 5th
13. Which of the following is the stop codon_____
- (A) AUG
 - (B) GUG
 - (C) UAA
 - (D) GGU
14. Entry of lactose in cell is influenced by_____
- (A) Permease
 - (B) Aldolase
 - (C) Ligase
 - (D) Transcriptase
15. Transcription involves formation of_____
- (A) DNA
 - (B) RNA
 - (C) mRNA
 - (D) rRNA

Serial No.	Key
1.	C
2	C
3	D
4	D
5	A
6	A
7	C
8	C
9	D
10	A
11	D
12	D
13	C
14	A
15	C

Dr. Rafiq Zakaria Campus
Maulana Azad College of Arts Science and Commerce.

Department of Botany

MCQ's

Semester IV Paper No XIX

GENETICS AND BIOTECHNOLOGY

1. The location on a chromosome where a particular gene is located is known as the:
- A) allele
 - B) dihybrid
 - C) locus
 - D) diploid

Answer: C

2. Which of the following is NOT a trait that is the result of, or is affected by, the interaction of more than one gene?
- A) human skin color
 - B) cleft palate
 - C) height
 - D) sickle cell anemia

Answer: D

3. Which of the following crosses would always result in offspring that only display the dominant phenotype?
- A) $TT \times tt$
 - B) $Tt \times Tt$
 - C) $TT \times TT$
 - D) both $TT \times tt$ and $TT \times TT$

Answer: D

4. What aspect of Mendel's background gave him the necessary tools to discover the laws of inheritance?
- A) He was a monk.
 - B) He was a teacher.
 - C) He lived in Austria.
 - D) He had studied mathematics and probability.

Answer: D

5. In a Mendelian monohybrid cross, which generation is always completely heterozygous?
- A) F_1 generation
 - B) F_2 generation
 - C) F_3 generation
 - D) All of these are possible

Answer: A

6. If a pea plant shows a recessive phenotype,
- A) it can be either TT or Tt.
 - B) it can be either Tt or tt.
 - C) it can be only TT.
 - D) it can be only tt.

Answer: D

7. The symbol "F" in the results of a testcross stands for
- A) Dominant.
 - B) Recessive.
 - C) First trait to show up.
 - D) Filial.

Answer: D

8. The F_2 offspring of a monohybrid cross would show the genotype(s)
- A) AA and Aa.
 - B) Aa and aa.
 - C) AA, Aa, and aa.
 - D) AA only.

Answer: C

9. If an individual with a dominant phenotype is crossed with an individual with a recessive phenotype, 4 of their 9 offspring show the recessive phenotype. What is the genotype of the first parent?
- A) AA
 - B) Aa
 - C) aa
 - D) AA or Aa

Answer: B

10. In which kind of cross would you expect to find a ratio of 3:1 among the F₂ offspring?
- A) monohybrid cross
 - B) dihybrid cross
 - C) testcross
 - D) a polygenic cross

Answer: A

11. The alternate forms of a gene on homologous chromosomes are called
- A) loci.
 - B) alleles
 - C) homozygotes.
 - D) tetrads.
 - E) different.

Answer: B

12. What are alleles?
- A) genes for different traits, such as hair color or eye color
 - B) alternative forms of a gene for a single trait, such as blue eyes or brown eyes
 - C) the locations of genes on a chromosome
 - D) recessive forms of a kind of characteristic carried by genes

Answer: B

13. "Phenotype" is based on the Greek root words for
- A) appearance and shape.
 - B) hereditary and image.
 - C) mathematical and form.
 - D) birth or origin, and shape.

Answer: A

14. In which kind of cross would you expect to find a ratio of 9:3:3:1 among the F₂ offspring?
- A) monohybrid cross
 - B) dihybrid cross
 - C) testcross
 - D) polygenic cross

Answer: B

15. In which kind of cross would you expect to find two different kinds of ratios among the offspring, either 1:1 or 1:1:1:1?
- A) monohybrid cross
 - B) dihybrid cross
 - C) testcross
 - D) polygenic cross.

Answer: C

16. In pea plants, the gene for round seed (R) is dominant, and wrinkled seeds (r) are recessive. The endosperm of the pea is also either starchy, a dominant gene (S), or waxy (s). What can be said of a fully heterozygous (or dihybrid) cross?
- A) It is impossible to secure offspring that are homozygous for both dominant genes.
 - B) It is impossible to secure offspring that are homozygous for both recessive genes.
 - C) It is impossible to secure offspring that are homozygous for one dominant gene such as round seed and homozygous recessive for the other recessive waxy gene.
 - D) All of these choices are possible combinations in a dihybrid cross.

Answer: D

17. If individuals exhibiting a dominant phenotype are crossed and produce only offspring with the dominant phenotype, what would be the logical genotype of the parents?
- A) homozygous recessive
 - B) heterozygous dominant
 - C) homozygous dominant
 - D) unable to determine by the given information

Answer: C

18. An individual with blood type A marries an individual with blood type B. What blood types could their offspring exhibit?
- A) AB
 - B) A
 - C) B
 - D) O
 - E) All of these are possible

Answer: E

19. The traits Mendel studied in garden peas showed
- A) Complete dominance.
 - B) Incomplete dominance.
 - C) Epistasis.
 - D) Pleiotropy.

Answer: A

20. A classical example of incomplete dominance is
- A) ABO blood groups in humans.
 - B) Height in garden peas.
 - C) Pink flowers in heterozygous snapdragons.
 - D) Coat color in rabbits.

Answer: C

21. A classical example of multiple alleles is
- A) coat color spotting in cattle.
 - B) height in garden peas.
 - C) pink flowers in heterozygous snapdragons.
 - D) ABO blood types in humans.

Answer: D

22. A gene interaction in which a pair of recessive genes at one locus prevents expression of a dominant allele at another locus is called
- A) complete dominance.
 - B) incomplete dominance.
 - C) epistasis.
 - D) pleiotropy.

Answer: C

23. If the parents are AO and BO genotypes for the ABO blood group, their children could include which of the following genotypes?
- A) AO and BO only
 - B) AO, BO, and AB only
 - C) AA, BB, and AB only
 - D) AO, BO, AB, and OO only

Answer: D

24. Which disease results in deformed red blood cells, poor circulation, and anemia?
- A) Achondroplasia
 - B) Sickle-cell disease
 - C) Huntington disease
 - D) Hemophilia

Answer: B

BIOTECHNOLOGY

25. Plasmids occur in _____
- (A) Viruses
 - (B) Chromosomes
 - (C) Bacteria
 - (D) Chloroplast
26. c-DNA is _____
- (A) Circular DNA
 - (B) Coiled DNA
 - (C) Cytoplasmic DNA
 - (D) Complementary DNA
27. Ti plasmids are present in _____
- (A) *Bacillus thuringiensis*
 - (B) *A. tumefaciens*
 - (C) *H. influenzae*
 - (D) *E. coli*.
28. The biological scissor is _____
- (A) Restriction endonuclease
 - (B) Gyrase
 - (C) DNA ligase
 - (D) Helicase
29. Flavr Savr is genetically modified _____
- (A) Cotton
 - (B) Rice
 - (C) Tomato
 - (D) Potato
30. Nif gene is isolated from _____
- (A) *Agrobacterium*
 - (B) *Thiobacillus*
 - (C) *Nitrosomonas*
 - (D) *Rizobium*

31. PCR technique was developed by_____
- (A) Stanley cohen
 - (B) Herbert Boyer
 - (C) W. Arber
 - (D) K. Mullis
32. A thermostable DNA polymerase can withstand temperature up to_____
- (A) 100⁰C
 - (B) 114⁰C
 - (C) 214⁰C
 - (D) 94⁰C
33. Which of the following enzymes is not a tool for rDNA technology_____
- (A) Endonucleases
 - (B) Polymerases
 - (C) Lipases
 - (D) Ligases
34. What is the synonymous word for transposons_____
- (A) Jumping genes
 - (B) Flying genes
 - (C) Sticky genes
 - (D) Plasmid
35. Golden rice developed through transgenic technique is enriched with high_____
- (A) Lysine
 - (B) Methionine
 - (C) Glutenin
 - (D) Pro-vitamin A Content
36. Cloning can be done in *vitro*, via_____
- (A) PCR
 - (B) Gel electrophoresis
 - (C) Transposons
 - (D) Lambda Phage

37. The molecular knives of DNA are _____
- (A) Ligases
 - (B) Polymerases
 - (C) Endonucleases
 - (D) Transcriptases
38. Restriction endonuclease cleave the DNA molecule by hydrolyzing _____
- (A) H-bonds
 - (B) Phosphodiester Bonds
 - (C) OH-Bonds
 - (D) Peptide Bonds
39. Most commonly used organells in biotechnology is _____
- (A) Plastid
 - (B) Plasmid
 - (C) DNA
 - (D) RNA

Sr. No	Key
25	C
26	D
27	B
28	A
29	C
30	D
31	D
32	D
33	C
34	A
35	D
36	A
37	C
38	B
39	B