

Shivaji University , Kolhapur
B.Sc. (Part- III (Semester –V) Examination, October-2020
BOTANY (PAPER-X) Subject. Code: 65837
(Genetics & Analytical Techniques in the Plant Science)

Signature of Student

Signature of Jr. Supervisor

Seat No.-

PRN:

Day and Date: October, 2020

Total Marks: 50

Time:

Instructions: A Attempt any 25 questions
B Each question carries 2 marks.
C First 25 solved questions will be considered for the evaluation.
D Write the correct alternative answer in the box

1. Free Martin condition is found in_____

- a) Man
- b) Sheep, goat etc.
- c) Rabbit
- d) Frog

2. A female with XXXX chromosome will have the following number of Barr bodies

- a) One
- b) Three
- c) Two
- d) Four

3. The chromosomes responsible for the determination of sex are called_____

- a) Autosomes
- b) Allosomes
- c) Multiple alleles
- d) Heterosis

4) How many linkage groups are present in Drosophilla

- a) 6
- b) 4
- c) 2
- d) 8

5. Who put forward the "Theory of linkage"
- a) Sutton b) Morgan
c) De Vries d) Bateson and Punnett
6. The sex determination pattern in honeybee is called _____
- a) Female haploidy b) Haplodiploidy
c) Gametic diploidy d) Gametogony
7. Sex of a human child is determined by _____
- a) Size of the egg at the time of fertilization
b) Size of the sperm at the time of fertilization
c) Sex chromosome of father
d) Sex chromosome of mother
8. Polygenes exhibit _____
- a) Different phenotypes
b) Different genotypes
c) Similar genotypes and phenotypes
d) Both (a) and (b)
9. In polygenic inheritance, traits are determined by _____
- a) Multiple alleles at a single locus
b) The interaction of multiple genes
c) Two dominant alleles on a gene
d) One gene being masked by another
10. How many different allele combinations can possibly be produced from two parents that are heterozygous for a polygenic trait controlled by three different genes with two allele pairs?
- a) 5 b) 7
c) 54 d) 64
11. In the Caucasian population of the US, 1 in 2500 babies is affected by a recessive condition – cystic fibrosis. In this population, the frequency of the dominant allele is
- a) 0.02 b) 0.98
c) 0.56 d) 0.36
12. *Mirabilis jalapa* is a good example of _____
- a) Complete dominance b) Plastid inheritance

c) Both (a) and (b)s

d) None of the above

13. Genes for cytoplasmic male sterility in plants are generally located in ____

a) Mitochondrial genome

b) Cytosol

c) Chloroplast genome

d) Nuclear genome

14. Plasmids are composed of _____

a) Folded RNA molecules

b) Single stranded DNA

c) Circular double stranded DNA

d) None of the above

15. Euploidy is a chromosomal variation in _____

a) Size

b) Number

c) Position of genes

d) Structure

16. Colchicine is used to cause _____

a) Mitotic non-disjunction

b) Meiotic non-disjunction

c) Mitotic disjunction

d) Meiotic disjunction

17. Normal wheat *Triticum aestivum* is _____

a) Monoploid

b) Tetraploid

c) Pentaploid

d) Hexaploid

18. Mosaic trisomy is _____

(a) Trisomic (b) Monosomic (c) Tetrasomics (d) Nullisomics

19. Which of the followings is octaploid?

(a) Wheat

(b) strawberry

(c) cotton

(d) Oat

20. How will you recognize a terminal deletion from breakage and loss at the terminal end?
- a) Indistinguishable
 - b) Terminal break will lead to shorter chromosome than that due to chunk deletion
 - c) Terminal break will be sticky
 - d) Deletion will be recognized by trans factors
21. What will be the effect of the deletion mutation of a gene at the telomere?
- a) Organism will die
 - b) Organism will develop serious hazards due to absence of the gene and its product
 - c) Mild effect on the phenotype
 - d) No effect
22. _____ inversions reduce crossing over in _____
- a) Paracentric, Heterozygous
 - b) Pericentric, Heterozygous
 - c) Paracentric, homozygous
 - d) Pericentric homozygous
23. Long pericentric inversions generally don't act as cross over suppressors. Why?
- a) Long stretches of DNA recombination not recognized
 - b) Mechanism is different for short and long inversions
 - c) Two events of crossing over take place
 - d) Cross over product in this is viable
24. Choose the wrong option.
- a) Paracentric inversion cross over products is non-viable
 - b) Paracentric non-cross over gametes segregates normally
 - c) Double cross over in paracentric inversion is lethal
 - d) There is genetic imbalance in gametes produced by paracentric inversion cross over

25. Which of the following is an example of inversion?
- a) Chromosome 22 and 9
 - b) Chromosome 8
 - c) Chromosome 14
 - d) Chromosome 3
26. Damage and errors in DNA cause _____
- a) Mutation
 - b) DNA repair
 - c) Translation
 - d) Transcription
27. Name the term given to the type of mutation which depends on the conditions of the environment?
- a) Forward mutation
 - b) Reverse mutation
 - c) Conditional lethal mutation
 - d) Gain of function mutation
28. Name the type of mutation in which the cause of mutation is not known?
- a) Spontaneous mutation
 - b) Suppressor mutation
 - c) Nonsense mutation
 - d) Mis-sense mutation
29. Which of the following chemical mutagen affects only replicating DNA?
- a) Acridine dye
 - b) Alkylating agent
 - c) Deaminating agent
 - d) Base analog
30. The kind of electron microscope which is used to study the internal structure of cells is _____
- a) scanning electron microscope
 - b) transmission electron microscope
 - c) light microscope
 - d) compound microscop