1. Which of the followings is a well known autosomal abnormality at birth?
   a. Klinefelter syndrome
   b. Patau syndrome
   c. Down syndrome
   d. Turner syndrome

2. The genotype of a plant showing the dominant phenotype can be determined by
   a. Back cross
   b. Test cross
   c. Dihybrid cross
   d. Pedigree analysis

3. Mendel's principle of segregation means that the germ cells always receive
   a. One pair of alleles
   b. One quarter of the genes
   c. One of the paired alleles
   d. Any pair of alleles

4. What is the composite display (paired and arranged according to size) of all the chromosomes of an organism called?
   a. Linotype
b. Karyotype
c. Phenotype
d. Chrootype

5. Mating of an organism to a double recessive in order to determine whether it is homozygous or heterozygous for a character under consideration is called

a. reciprocal cross
b. test cross
c. dihybrid cross
d. back cross

6. In blood group typing in human, if an allele contributed by one parent is I^A and an allele contributed by the other parent is i, the resulting blood group of the offspring will be

a. A
b. B
c. AB
d. O

7. Phenotype of an organism is the result of

a. Environmental changes and sexual dimorphism
b. Cytoplasmic effects and nutrition
c. Mutations and linkages
d. Genotype and environment interactions
8. Excessive growth of hair on the pinna is a feature found only in males because

a. The gene responsible for the character is recessive in females and dominant only in males
b. The character is induced in males as males produce testosterone
c. The female sex hormone estrogen suppresses the character in females
d. The gene responsible for the character is present on the Y chromosome only

9. The **genotype** is called a ______ when a person is heterozygous at two different loci.

a. Trihybrid
b. Dihybrid
c. Monohybrid
d. Mutant

10. Individuals with Down syndrome have _____ copies of chromosome 21.

a. One
b. Two
c. Three
d. Four

11. The **genetic** defect-adenosine deaminase (ADA) **deficiency** may be cured permanently by

a. Enzyme replacement therapy
b. Periodic infusion of genetically engineered lymphocytes having functional ADA cDNA
c. Administering adenosine deaminase activators

d. Introducing bone marrow cells producing ADA into cells at early embryonic stages

12. When the effects of both alleles are equally expressed in the heterozygote which one of the followings occurs?

a. Segregation
b. Codominance
c. Pleiotropy
d. Incomplete dominance

13. When a tall plant with round seeds (TTRR) crossed with a dwarf plant with wrinkle seeds (ttrr). The F₁ generation consists of tall plants with round seeds. What would be the proportion of dwarf plant with wrinkle seeds in F₁ generation?

a. 0
b. 1/2
c. 1/4
d. 1/16

14. An individual who has two different alleles of a gene is called ______.

a. Allelopathic
b. Homozygous
c. Heterozygous
d. Codominant
15. Nondisjunction may occur due to the failure of ______ chromosomes to separate properly in meiosis I.

a. Defective  
b. Heterozygous  
c. Homologous  
d. Autosomal

16. haploids are more suitable for mutation studies than the diploids. This is because

a. All mutations, whether dominant or recessive are expressed in haploids  
b. Haploids are reproductively more stable than diploids  
c. Mutagens penetrate in haploids more effectively than is diploids  
d. Haploids are more abundant in nature than diploids

17. Which one of the followings is caused by a recessive allele of a gene on chromosome 7?

a. Phenylketonuria (PKU)  
b. Tay-Sachs disease  
c. Cystic fibrosis (CF)  
d. Huntington disease

18. ABO blood groups in humans are controlled by the gene I. It has three alleles – IA, IB and i. Since there are three different alleles, six different genotypes are possible. How many phenotypes can occur?

a. Two  
b. Three
19. During meiosis I, the ______ chromosomes of each pair come together to lie side by side.
   
   a. Homologous
   b. Homozygous
   c. Heterozygous
   d. Linked

20. ______ are heterozygous with regard to only one pair of alleles.
   
   a. Testcrosses
   b. Dihybrids
   c. Monohybrids
   d. None of these

21. Which one of the followings is assigned an uppercase letter?
   
   a. Superior allele
   b. Dominant allele
   c. Inferior allele
   d. Mutant allele

22. Test cross is a cross between
a. Hybrid × Hybrid parent
b. Hybrid × Recessive parent
c. Hybrid × Dominant parent
d. Two distantly related species

23. A man and a woman, who do not show any apparent signs of a certain inherited disease, have seven children (2 daughters and 5 sons). Three of the sons suffer from the given disease but none of the daughters are affected. Which of the following mode of inheritance do you suggest for this disease?

a. Sex-linked recessive
b. Autosomal dominant
c. Sex-limited recessive
d. Sex-linked dominant

24. If a colour-blind woman marries a normal visioned man, their sons will be

a. Three-fourths colour-blind and one-fourth normal
b. One-half colour-blind and one-half normal
c. All normal visioned
d. All colour-blind

25. Select the correct statement from the ones given below with respect to dihybrid cross

a. Tightly linked genes on the same chromosome show higher recombinations
b. Genes far apart on the same chromosome show very few recombinations
c. Tightly linked genes on the same chromosome show very few recombinations

d. Genes loosely linked on the same chromosome show similar recombinations as the tightly linked ones

26. A character which is expressed in a hybrid is called

a. Dominant

b. Recessive

c. Co-dominant

d. Epistatic

27. How many different kinds of gametes will be produced by a plant having the genotype AABbCC?

a. Three

b. Four

c. Nine

d. Two

28. The inactivated X chromosome is referred to as a _____ body.

a. Nuclear

b. Barr

c. Polar

d. Golgi
29. A polygenic trait is controlled by 3 genes A, B and C. In a cross AaBbCc × AaBbCc, the phenotypic ratio of the offsprings was observed as 1 : 6 : x : 20 : x : 6 : 1. What is the possible value of x?

a. 3  
b. 9  
c. 15  
d. 25

30. Point mutation involves

a. Deletion  
b. Insertion  
c. Change in single base pair  
d. Duplication

31. Which of the following pairs is correctly matched?

a. Sickle cell anemia - X chromosome  
b. Down's syndrome - 21st chromosome  
c. Haemophilia - Y chromosome  
d. Parkinson's disease - X and Y chromosome

32. In Drosophila, the sex is determined by:

a. The ratio of pairs of X-chromosomes to the pairs of autosomes  
b. X and Y chromosomes
c. The ratio of number of X-chromosomes to the sets of autosomes
d. Whether the egg is fertilized or develops parthenogenetically

33. Which one of the followings is not correct for Huntington disease ________?

a. Caused by a dominant allele
b. Marked by progressive nerve degeneration
c. Causes tumors and affects the liver as well
d. Affects the brain leading to mental disability and death

34. Which one of the following cannot be explained on the basis of Mendel’s Law of Dominance?

a. Factors occur in pairs
b. The discrete unit controlling a particular character is called a factor
c. Out of one pair of factors one is dominant, and the other recessive
d. Alleles do not show any blending and both the characters recover as such in F_2 generation

35. Which one of the following conditions in humans is correctly matched with its chromosomal abnormality/linkage?

a. Color blindness – Y-linked
b. Klinefelter’s syndrome – 44 autosomes + XXY
c. Down syndrome – 44 autosomes + XO
d. Erythroblastosis fetalis – X-linked
36. The exchange of segments of non-sister chromatids between chromosomes of a homologous pair is termed
   a. Transformation
   b. Translocation
   c. Crossing over
   d. Chromosomal aberration

37. Lysosomes and ribosomes
   a. Lysosomes and ribosomes
   b. Ribosomes and chloroplast
   c. Endoplasmic reticulum and mitochondria
   d. Mitochondria and chloroplasts

38. What is the pattern of inheritance called in which phenotype is influenced by many genes?
   a. Polygenic inheritance
   b. Epistasis
   c. Monohybrid cross
   d. Dihybrid cross

39. Test cross of dihybrid ratio 1 : 1 : 1 : 1 then it proves that
   a. F₁ hybrid produces four different progenies
   b. F₁ hybrid produces two different progenies
c. F₁ hybrid is homozygous

d. Four different progenies are produced by parents

40. Select the incorrect statement from the following?

a. Baldness is a sex-limited trait

b. Linkage is an exception to the principle of independent assortment in heredity

c. Galactosemia is an inborn error of metabolism

d. Small population size results in random genetic drift in a population

41.

Assertion: An organism with lethal mutation may not even develop beyond the zygote stage.

Reason: All types of gene mutations are lethal.

a. Both assertion and reason are true and the reason is the correct explanation of the assertion.

b. Both assertion and reason are true but the reason is not the correct explanation of the assertion.

c. Assertion is true statement but reason is false.

d. Both assertion and reason are false.

42. The F₂ generation offspring in a plant showing incomplete dominance, exhibit

a. variable genotypic and phenotypic ratios

b. a genotypic ratio of 1 : 1

c. a phenotypic ratio of 3 : 1

d. similar phenotypic and genotypic ratios of 1 : 2 : 1
43. In pea plants, yellow seeds are dominant to green. If a heterozygous yellow seeded plant is crossed with a green seeded plant, what ratio of yellow and green seeded plants would you expect in $F_1$ generation?

a. 3 : 1  
b. 50 : 50  
c. 9 : 1  
d. 1 : 3

44. A common test to find the **genotype** of a hybrid is by:

a. Crossing of one $F_1$ progeny with male parent  
b. Crossing of one $F_2$ progeny with male parent  
c. Crossing of one $F_2$ progeny with female parent  
d. Studying the sexual behaviour of $F_1$ progenies

45. A person with unknown blood group under ABO system, has suffered much blood loss in an accident and needs immediate blood transfusion. His one friend who has a valid certificate of his own blood type, offers for blood donation without delay. What would have been the type of blood group of the donor friend?

a. Type A  
b. Type B  
c. Type AB  
d. Type O

46. haemophilia is more commonly seen in human males than in human females because
a. This disease is due to a Y-linked recessive mutation
b. This disease is due to an X-linked recessive mutation
c. This disease is due to an X-linked dominant
d. A greater proportion of girls die in infancy

47. A self-fertilizing trihybrid plant forms:

a. 8 different gametes and 32 different zygotes
b. 8 different gametes and 16 different zygotes
c. 8 different gametes and 64 different zygotes
d. 4 different gametes and 16 different zygotes

48. Given below is a pedigree chart of a family with five children. It shows the inheritance of attached ear lobes as opposed to the free ones. The squares represent the male individuals and circles the female individuals. Which one of the following conclusions drawn is correct?

![Pedigree Chart]

a. The parents are homozygous recessive
b. The trait is Y-linked
c. The parents are homozygous dominant
d. The parents are heterozygous
49. Rh factor can produce life-threatening disease ______.

a. Erythroblastosis fetalis

b. Turner's Syndrome

c. AIDS

d. Sickle cell anemia

50. Grain colour in wheat is determined by three pairs of polygene. Following the cross AABBCC (dark colour) x aabbcc (light colour), in F₂-generation what proportion of the progeny is likely to resemble either parent

a. One fourth

b. Less than 5 percent

c. One third

d. None of these

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