1.

An individual with AaBb genotype is producing four types of gametes as AB, aB, Ab and ab by meiosis. If the frequency of these gametes is 25% each then, it explains

1. Incomplete linkage
2. Mutations
3. Independent assortment
4. Complete linkage

2.

Which one of the following Mendelian trait controlling unit is expressed in homozygous condition only?

1. Axial flower
2. Yellow seed
3. Yellow pod
4. Smooth seed

3.

A pure tall - red flower plant was crossed with dwarf - white-flowered plant. In F_1, all were tall with pink flowers. What is the percentage probability of getting red and pink-flowered plants respectively?

1. 25% and 50%
2. 50% and 25%
3. Zero and 75%
4. Zero and 50%

4.

Which one of the following traits are controlled by genes located on the differential part of X-chromosome?

1. Porcupine skin and epidermolysis bullosa
2. Beard in man and milk glands in female
3. Color blindness and hemophilia
4. Color blindness and cystic fibrosis

5.

In pea, the gene that controls starch synthesis shows all of the following except

1. Dominance
2. Incomplete dominance
3. Multiple allelism
4. Pleiotropy

6.

What is incorrect for genetic maps?

1. Alfred Sturtevant prepared it for the first time using monohybrid test cross
2. It is a measure of the distance between genes present on the same chromosome
3. Stronger the linkage lesser is the distance between two genes
4. It was extensively used in the case of the Human Genome Sequencing Project

7.

Match the column correctly

Column l	**Column ll**
a. Phenylketonuria	i. Autosomal trisomy associated with mongolism
b. Down's syndrome	ii. Gynaecomatia
c. Klinefelter's syndrome	iii. Autosomal recessive trait associated with mental retardation
d. Turner's syndrome	iv. Sterile females with rudimentary ovaries

1. a(iii), b(i), c(iv), d(ii)
2. a(ii), b(iii), c(i), d(iv)
3. a(ii), b(i), c(iii), d(iv)
4. a(iii), b(i), c(ii), d(iv)

8.

All are X-linked traits, except

1. Colourblindness
2. Haemophilia
3. Deficiency of glucose-6-phosphate dehydrogenase
4. Hypertrichosis

9.

If we change the position of genes on chromosomes it will be included in

1. Gene mutation
2. Chromosomal mutation
3. Polyploidy
4. Transversion mutation

10.

If size of strach grains in pea is considered as phenotype, Bb alleles show

1. Dominance
2. Codominance
3. Incomplete dominance
4. Pleiotropism

11.

Both the alleles produce their effect in

1. Heterozygous B blood group
2. Sickle cell hemoglobin
3. Snapdragon flower color
4. Cucurbits fruit color

12.

Law of segregation can be proved with

1. The presence of dominant genotype in F_2
2. The presence of recessive genotype in F_1
3. The presence of recessive homozygous in F_2
4. The presence of a heterozygous individual in F_2

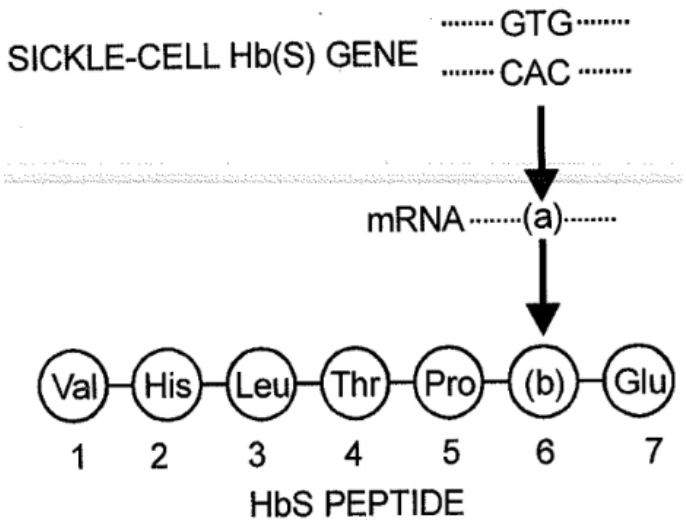
13.

Which of the following traits shows expression in only homozygous condition?

1. Yellow seed
2. Inflated pod
3. Axial flower
4. Wrinkled seed

14.

In the given below figure what does (a) and (b) represent



1. GAG, Glumatic acid
2. GUG, Valine
3. GAG, Valine
4. GUG, Glumatic acid

15.

Choose odd one out w.r.t. chromosomal disorder

1. Down's syndrome
2. Klinefelter's syndrome
3. Turner's syndrome
4. Thalassemia

16.

Morgan worked with the tiny fruit flies - Drosophila melanogaster, which were suitable for genetical studies, as

a. They could be grown on simple medium

b. They complete their life cycle in about two weeks

c. Single mating could produce a large number of progeny flies

d. No clear cut sexual dimorphism is found

1. Only d is incorrect
2. Both a and d are incorrect
3. Only b is correct
4. Both c and d are incorrect

17.

Match the following

Column-l	**Column-ll**
a. Haemophilia	i. Rudimentary ovaries
b. Sickle cell anaemia	ii. X-linked recessive
c. Turner's syndrome	iii. Gynaecosmastia
d. Klinefelter's syndrom	iv. Autosomal recessive

a. a(ii), b(iv), c(i), d(iii)

b. a(ii), b(iv), c(iii), d(i)

c. a(iv), b(ii), c(i), d(iii)

d. a(iv), b(i), c(ii), d(iii)

18.

Who noticed that the behaviour of chromosomes is parallel to the behaviour of genes?

1. Temin and Baltimore
2. Correns and Tschermak
3. Beadle and Tatum
4. Sutton and Boveri

19.

How many possible genotypes can be observed in a human population for ABO blood group system?

1. 3
2. 6
3. 10
4. 4

20.

Experiment verification of the chromosomal theory of inheritance was given by

1. Sutton and Boveri
2. Thomas Hunt Morgan
3. de Vries
4. Mendal

21.

Down's syndrome and Klinefelter's syndrome both can be included in

1. Autosomal trisomy
2. Monosomy
3. Trisomy
4. Allosomal trisomy

22.

In human ABO group system _____ different alleles allow the possibility of _____ different types of genotypes in population.

1. 3, 4
2. 2, 4
3. 3, 6
4. 6, 3

23.

The phenotype of an individual may be affected if the modified allele produces

A. The normal/less efficient enzyme

B. No enzyme at all

C. A non-functional enzyme

1. Only A is correct
2. C & A are correct
3. Only B is correct
4. B & C are correct

24.

Ability of a gene to have multiple phenotypic effects is known as

1. Co-dominance
2. Pleiotropy
3. Multiple allelism
4. Incomplete dominance

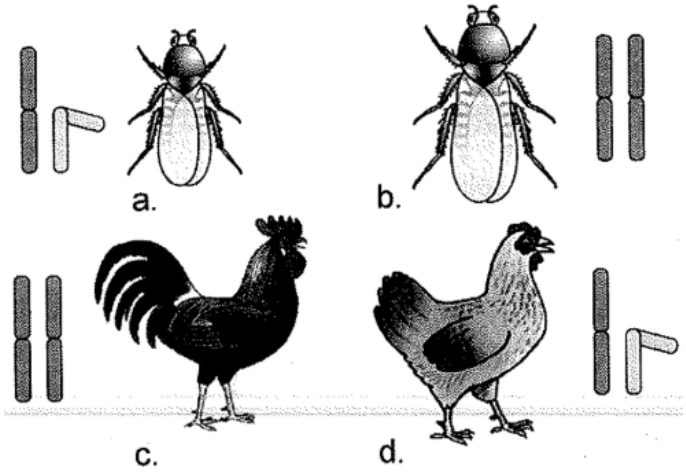
25.

Morgan and his group observed when the two genes in a dihybrid cross were situated on the same chromosome, the proportion of parental gene combinations were much higher than the non-parental type, this is due to

1. Independent assortment
2. Linkage
3. Crossing over
4. Competence

26.

Choose correct option w.r.t. given figure for determination of sex by chromosomal differences.



1. b after spermatogenesis forms only one type of gametes
2. b & c represents same sex
3. a, d are heterogametic
4. Sex determination in d is similar to grasshopper

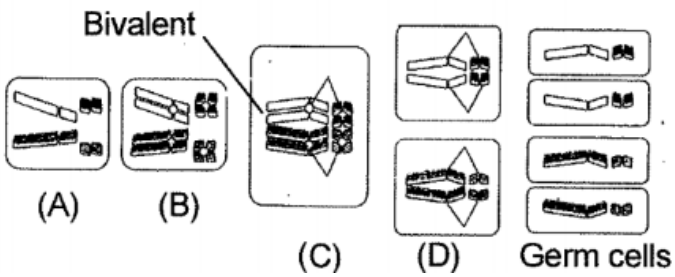
27.

Which one of the following statement is incorrect?

1. Sturtevant used the frequency of recombination between gene pairs on the same chromosome as a measure of the distance between genes
2. Sutton and Boveri argued that the pairing and separation of a pair of chromosomes would lead to the segregation of a pair of factors they carried.
3. Y-linked genes are holandric
4. 7 : 1 : 1 : 7 as linkage ratio in case of dihybrid test cross means that there are 8 parental and 8 recombinant plants

28.

The figure below shows the chromosome segregation during germ cells formation with four stages labelled as (A), (B), (C) and (D). Select the right option giving all the four stages correctly identified



1. (A) Interphase (B) Metaphase-l
   (C) Telophase-l (D) Anaphase-ll
2. (A) G_1 (B) G_2
   (C) Anaphase-l (D) Anaphase-ll
3. (A) G_1 (B) G_2
   (C) Metaphase-l (D) Anaphase-l
4. (A) G_1 (B) G_2
   (C) Anaphase-l (D) Metaphase-ll

29.

Males are heterogametic and females are homogametic in

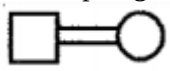
1. Human beings and birds
2. Fruit fly and butter fly
3. Grasshopper and cockroach
4. Birds and silkworm

30.

Mendel's work on Pisum sativum shows that

1. Alleles show blending inheritance
2. F_1 resembled either of the two parents
3. In a dissimilar pair of factors, members of the pair are codominant
4. Genotype of F_2 tall plant can be determined by cross with recessive parent

31.

In the pedigree analysis, the meaning of the symbol  is

1. Still birth
2. Dizygotic twin
3. Mating between relatives
4. Sex unspecified

32.

What is correct for AB blood group system?

a. The effect of both alleles of a gene is equally expressed.

b. Produces an intermediate phenotypic effect.

c. The blending of both alleles occurs.

d. There is no intermediate phenotypic effect.

1. a, c, d
2. a, b, c
3. a, d
4. b. c

33.

In pea plant, the intermediate size of starch grains is due to

1. Dominant epistasis
2. Codominance
3. Incomplete dominance
4. Recessive epistasis

34.

How many diseases in the list given below are Mendelian disorders?

Thalassaemia, Klinefelter's Syndrome, Colour-blindness, Down's Syndrome, Haemophilia, Cystic fibrosis, Phenylketonuria

1. Four
2. Five
3. Six
4. Seven

35.

Read the following four statements (A-D)

A. The characters never blend in heterozygous condition.

B. Change in a single base pair of DNA does not cause mutation.

C. Cancer cells commonly show chromosomal aberrations.

D. In chicken, sex chromosomes in males are ZW and in females are ZZ.

How many of the above statements is/are right?

1. Two
2. Three
3. Four
4. One

36.

Which of the following pair is wrongly matched?

1. Factors - Discrete units
2. Multiple alleles - ABO blood group
3. Female Drosophila - Heterogametic
4. Inborn error - Phenylketonuria

37.

Morgan observed tight linkage in Drosophila with only 1.3 percent recombination for

1. White eye and yellow body
2. Normal wing and yellow body
3. White eye and miniature wing
4. Yellow body and miniature wing

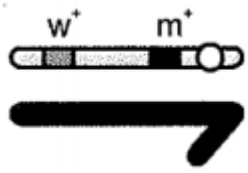
38.

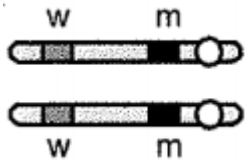
Morgan coined the term recombination to describe

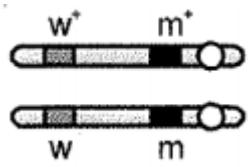
1. Physical association of genes on a chromosome
2. Generation of new traits by mutation
3. Linkage of two genes on different chromosomes
4. Generation of non-parental gene combinations

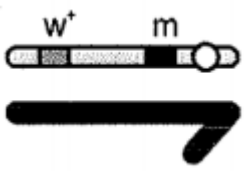
39.

Which of the following is a non-parental type of progeny obtained by Morgan while carrying out a dihybrid cross?

1. 

2. 

3. 

4. 

40.

Select incorrect option w.r.t. sickle cell anaemia

1. It is an example of point mutation
2. it occurs due to base substitution i.e. transition
3. Glumatic acid is replaced by Valine at sixth position in a polypeptide chain
4. Mutant haemoglobin molecule undergoes polymerization under low oxygen tension

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