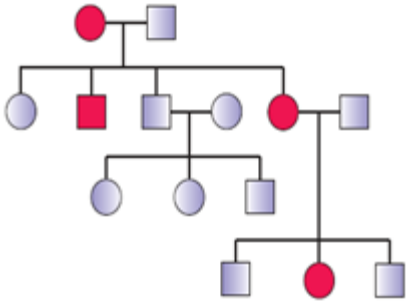
1. Identify the type of gene inheritance by analyzing the chart



① Autosomal recessive ② Autosomal dominant
③ Allosomal recessive ④ Allosomal dominant

2. The unit of heredity is
① chromosome ② DNA and RNA molecules ③ nucleus ④ gene.

3. A complete set of chromosomes inherited from parent to offspring is called
① genome ② allele ③ diploid ④ gamete.

4. The external appearance of an individual for particular contrasting character is called
① genotype ② phenotype ③ recessive ④ phenocopy.

5. The segregation of the paired genes occur during
① interphase between two meiotic divisions ② metaphase of first meiotic division
③ anaphase of first meiotic division ④ none above.

6. An organism with two copies of the same allele is
① homozygous for that trait ② homologous for the allele
③ heterozygous for the trait ④ heterologous for the allele.

7**. The offspring of a cross between two individuals differing in at least one set of characters is called**
① polyploid ② mutant ③ hybrid ④ variant.

8. The offspring's of mating between two pure strains are called
① hybrids ② mutants ③ P generation ④ F_2 generation.

9. Inbreeding is also known as
① cross fertilization ② self fertilization
③ cross pollination ④ none above.

10. The process of removing stamens from flowers during hybridization is
① crossing ② selfing ③ emasculation ④ all above.

11. In Pisum sativum, the dwarfness of plant is a…character
① dominant ② recessive ③ codominant
④ incomplete dominance.

12. When both the alleles are equally expressed in hybrid, the phenomenon is known as
① dominance ② bivalence ③ codominance ④ all of these.

13. .**Read the following question and select the answer**.
Assertion : Man has 23 linkage groups and fruit fly only 4.
Reason: Man has 46 chromosoms and fruit fly only8.
① Assertion is correct but reason is the correct explanation for assertion.

② Assertion is correct but reason is not the correct explanation for assertion.
③ Assertion is not correct but reason is correct.
④ Both assertion and reason both are wrong

14. **Mendel selected pea plant for his experiments because it has**

① short cycle ② large number of offspring ③ sexual reproduction ④ all above.

15. Mendel's law of independent assortment

① will not apply to two genes on the same chromosome

② will apply only if two genes are on the same chromosome

③ will apply to all genes. ④ has now been completely disproved.

16. The characters that appear in the first generation are called

① recessive characters ② dominant characters

③ both recessive and blend characters ④ none of these.

17. It is exception to Mendel's laws

① Purity of gametes ② Dominance

③ Linkage and crossing over ④ Independent assortment.

18. If a scientist studying Mendel's laws, instead of seven, finds eighth pair also; the law would be

① segregation ② unit character ③ independent assortment ④ dominance.

19. Mendel studied seven contrasting characters for his breeding experiment with pea. Which of the following characters he did not use?

① Pod shape ② Leaf shape ③ Plant height ④ Pod colour.

20. **Read the following question and select the answer**.

Assertion : Discontinuous variation are inheritable.

Reason: These are produced by the effect of environment.

① Assertion is correct but reason is the correct explanation for assertion.

② Assertion is correct but reason is not the correct explanation for assertion.

③ Assertion is not correct but reason is correct.

④ Both assertion and reason both are wrong.

21. The appearance of a hidden character in some offsprings in F_2 generation obeys the law of

① purity of gametes ② dominance

③ codominance ④ independent assortment.

22. If it is imagined in pea plants that genes for controlling seed coat colour and shape are present on the same chromosome very closely; performing dihybrid experiments with these characters Mendel couldn't have been able to arrive at the idea of

① independent assortment ② dominance

③ segregation ④ incomplete dominance.

23. One of the following is the correct statement.

① Mendel's laws were not postulated by Mendel himself

② Mendel simply gave theoretical and statistical explanation of his research work

③ Correns represented the findings of Mendel into 'laws of heredity'

④ all above.

24. One of the following principles was not proposed by Mendel. It was law of

① segregation ② blending inheritance ③ dominance④ none of the above.

25. The set of dominant characters are

① shrunken endosperm of maize and coloured coat of rabbit

② starchy seeds of maize and long stature of man

③ albino colour and horned character of cattle

④ all above.

26. Mendelian laws of heredity include

① gene linkage, segregation and independent assortment
② gene linkage, dominance and independent assortment
③ segregation, dominance and independent assortment
④ segregation, independent assortment and recombination.

27. Which of the following law of genetics has been proved to be true in all the cases? Law of

① segregation ② independent assortment ③ dominance ④ All above.

28. In codominance, F_1 hybrids show

① both dominant and recessive characters side by side ② only dominant characters
③ only recessive characters ④ none above.

29. The phenomenon of segregation and independent assortment occurs in

① meiosis I during gamete formation ② zygote division
③ segregation during meiosis I and independent assortment of characters during fusion
④ fusion of male and female gametes

30. Pink coloured flowers are obtained from a cross between a red flower pea plant and white flower pea plant. The appearance of this pink colour character is known as

① codominance ② complete dominance ③ incomplete dominance ④ segregation.

31. From a cross PPCC x ppCC, following genotypic ratio will be obtained in F_1 generation

① 1 Pp CC : 3 pp CC ② 3 PpCC : 1 pp CC ③ all Pp CC : No ppCC ④ 1 PpCC : 1 ppCC.

32. A heterozygous individual carrying recessive sex linked gene is called

① carrier ② crossing over ③ transmitter ④ albino.

33. A pure tall pea plant can be differentiated from hybrid tall by

① treating with GBA ② measuring and comparing height
③ selfing and noticing that all progeny is tall ④ selfing and noticing that all progeny is short.

34. **Read the following question and select the answer**.

Assertion : It is not possible for human parents heterozygous for skin colour to have children darker or lighter than themselves.

Reason: Human skin colour is controlled by a single pair of alleles.

① Assertion is correct but reason is the correct explanation for assertion.
② Assertion is correct but reason is not the correct explanation for assertion.
③ Assertion is not correct but reason is correct.
④ Both assertion and reason both are wrong.

35. On inbreeding, the homozygous parents will produce

① all similar offsprings ② 25% similar and 75% dissimilar
③ 75% similar and 25% dissimilar ④ 50 % similar and 50% dissimilar.

36. A testcross is done to find out

① the genotype of an individual by examining the phenotypes of its offsprings from a particular mating
② the genotype of an individual for testing for its DNA content
③ whether a mating is fertile
④ whether two species can interbreed.

37. From a single ear of corn a farmer planted 200 kernels which produced 140 tall and 40 short plants. The genotypes of these offsprings are most likely

① TT and Tt only ② TT, Tt; tt ③ Tt and tt only ④ TT and tt only.

38. When one member of a pair of allelic genes express itself as a whole, it is a case of

① dominance ② co-dominance ③ incomplete dominance ④ none.

39. In wheat when a green plant was self fertilized the progeny had 209 green seedling and 14 white seedling; this result indicates that the parents were

① true breeding ② homozygous for one allele

③ heterozygous for one allele ④ heterozygous for two duplicate allele.

40. A cross between offspring and recessive parent is

① monohybrid cross ② test cross ③ back cross ④ reciprocal cross

41. Hemolytic jaundice is caused by a dominant gene but only 10% of the people actually develop it; What proportion of the children would be expected to develop the disease if a heterozygous man marries a homozygous normal woman?

① $\frac{1}{5}$. ② $\frac{1}{10}$ ③ $\frac{1}{15}$ ④ $\frac{1}{20}$.

42. If the cell of an organism heterozygous for two pairs of genes represented by Xx, Zz undergoes meiosis; then the possible genotypic combination of gametes will be

① XZ; xz; Xz; Xz ② XZ; xz; Xz ③ Xx; Zz; Xz

④ data incomplete.

43. An individual heterozygous for two allele (Ww Tt) produce two million sperms. How many of the sperms will have both the recessive alleles (in millions)?

① 1 ② 2 ③ 0.5 ④ 0.25.

44**. Inheritance of the skin colour in man is an example of**

① blending inheritance ② pleiotropism ③ codominance ④ cumulative genes.

45. **When red flowered plants are crossed with white flowered plants the F_2 generation gives a ratio of 3 : 1. What do you conclude?**

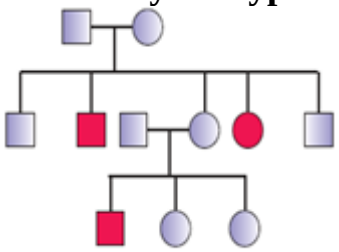
① That there are lethal genes ② That there is independent assortment

③ That white colour is dominant ④ That red colour is dominant.

46. **In genetic crosses, showing recessive epistasis such as mice coat colour, F_2 phenotypic ratio is**

① 9 : 3 : 4 ② 9 : 6 : 1 ③ 12 : 3 : 4 ④ 13 : 3.

47. **Identify the type of gene inheritance by analyzing the pedigree chart**



① autosomal dominant ② autosomal recessive ③allosomal dominant ④ allosomal recessive

48. Which is the correct set?

	Column I	Column II
I.	Wild type	A. Chromosomes other than sex chromosomes
II.	Syngamy	B. Not cultivated or domesticated
III.	Autosome	C. Union of gametes in fertilization
IV.	Apomixis	D. Asexual reproduction

① I-D, II-B, III-C, IV-A ② I-A, II-B, III-C, IV-D

③ I-B, II-C, III-A, IV-D ④ I-B, II-C, III-D, IV-A

49. **Read the statements and select the answer from the following**
Statement A: The segregation of alleles occur during gamete formation
Statement B: The independent of two allelic pair occurs during the fusion of characters
a) Statement A is correct and statement B is incorrect.
b) Statement B is correct and statement A is incorrect
c) Both the statement are correct
d) Both the statement are incorrect

Directions. In the following questions 50,51, 52 and 53 there are two statements A (Assertion) and R (Reason). Consider them accordingly:

① If A and R both are correct and R is true explanation of A
② If A and R both are correct but R is not true explanation of A
③ If A is correct and R is wrong
④ If A is wrong and R is correct

50. A. In dihybrid cross, the two pairs of factors are located in two pairs of homologous chromosomes.
R. Each homologous pair of chromosome bears two pairs of factors.
① ② ③ ④

51. A. A gene affecting the character of another gene not located on similar locus of the homologous chromosome is called epistatic gene.
R. Epistatic gene hides the expression of an allele at a different locus.
① ② ③ ④

52. A. Heterosis us defined as superiority of F_1, hybrid of two genetically dissimilar parents.
R. Heterosis can be measured in terms of growth, size and yield.
① ② ③ ④

53. The phenomenon in which one gene masks the activity of other gene is
① epistasis ② codominance ③ complimentary ④ dominant

54. Which of the following explains, how progeny can possess the combinations of traits that none of the parent possessed?
① Chromosome theory ② Polygenic inheritance
③ Law of segregation ④ Law of independent assortment.

55. The presence of continuous phenotypic variation in an F_1 generation suggests that a character is inherited by
① epistasis ② recombination
③ gene linkage ④ polygenic inheritance.

56. Match the columns.

Column I	Column II
I. Genetics	A. Monoploid
II. Checker board	B. Heredity and variation
III. Haploid	C. Punnett
IV. Allele	D. Factors which control contrasting expression of a character

① I-B, II-C, III-A, IV-D ② I-C, II-B, III-A, IV-D ③ I-A, II-C, III-B, IV-D ④ I-D, II-A, III-C, IV-C

57. Number of linkage groups in Pisum sativum is
① 2 ② 4 ③ 7 ④ 8

58. A cross between pure tall, green seeds and pure dwarf, yellow seeds is crossed with pure dwarf and green seeds then number of phenotype produced are
① 2 ② 6 ③ 4 ④ 1

59. The crossing of an organism with a double (homozygous) recessive in order to determine whether it is homozygous or heterozygous for a character under consideration is known as

① back cross ② test cross ③ reciprocal cross ④ dihybrid cross

60. Two crosses between the same pair of genotypes or phenotypes in which the sources of the gametes are reversed in one cross, is known as

① test cross ② reciprocal cross ③ dihybrid cross ④ reverse cross

Answer key

1	2	11	2	21	2	31	3	41	1	51	1
2	4	12	3	22	1	32	1	42	4	52	1
3	1	13	1	23	4	33	3	43	3	53	4
4	2	14	4	24	2	34	4	44	4	54	4
5	3	15	1	25	2	35	1	45	4	55	2
6	1	16	2	26	3	36	1	46	2	56	1
7	3	17	3	27	1	37	2	47	2	57	3
8	1	18	3	28	1	38	1	48	3	58	4
9	2	19	2	29	1	39	4	49	1	59	2
10	3	20	3	30	3	40	2	50	2	60	2