BIOLOGY

BOOKS - A2Z BIOLOGY (HINGLISH)

PRINCIPLES OF INHERITANCE AND VARIATION

Section A Topicwise Questions Topic 2 Inheritance Of One Gene Law Of Dominance Law Of Segregatio

1. Genes which code for a pair of contrasting traits are known as

A. Cistron

B. Allele

C. Exon

D. Intron

Answer: B

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2. Alleles are

A. Similar forms of different gene

B. Slightly different forms of the different gene

C. Similar forms of the same gene

D. Slightly different forms of the same gene

Answer: D

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3. In Punnett square, the possible gametes are written on two sides, usually the

A. Top row and left columns

B. Top row and right columns

C. Bottom row and right columns

D. Bottom row and left columns

Answer: A

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4. Punnett square was developed by

A. British Zoologist, Reginald C. Punnett

B. German Botanist, Reginald C. Punnett

C. Stanford Geneticist Reginald C. Punnett

D. British Geneticist Reginald C. Punnett

Answer: D

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5. Select one word for the statement.

a. If F_1 resembled both the parents

b. If F_1 did not resemble either of the two parents and was in between the two

c. If F_1 resembled either of the two parents

A. c-dominance, b-co dominance, a - incomplete dominance

B. a-dominance, c-co dominance, c-incomplete dominance

C. b-dominance, a-co dominance, c-incomplete dominance

D. c-dominance, a-co dominance, b-incomplete dominance

Answer: D

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6. When a violet flower of unknown genotype is crossed with white flower, the progenies are violet and white in equal proportion. Then read the following statements

(i) This is called test cross

(ii) Unknown flower is heterozygous

(iii) Unknown flower is heterozygous

(iv) This test is used to determine the phenotype of the plant at F_2.

(v) In test cross, violet or white flower is crossed with the recessive parent instead of self-crossing.

Select the incorrect statement :

A. iii, iv, v

B. ii, iv

C. i, ii, v

D. ii, iv, v

Answer: D

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7. "Both the characters in a monohybrid cross are recovered as such in the F_2 generation though one of these in not seen at the F_1 stage". This

interpretation is based on the

A. First Law of Mendel

B. Second Law of Mendel

C. Second set of generalisations

D. Incomplete dominance

Answer: B

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8. In the case of Antirrhinum sp. The recessive trait is seen in progenies due to the

(i) The normal enzyme

(ii) Less-efficient enzyme

(iii) Non-functional enzyme

(iv) No enzyme at all

A. ii, iii

B. iii, iv

C. i, iii

D. i, ii

Answer: B

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9. The proportion of 3:1 at the F_2 generation is explained by the

A. Law of Dominance

B. Law of Segregation

C. Law of Independent assortment

D. Test cross

Answer: A

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10. In Mendelian dihybrid cross how many are recombinants?

A. 37.2%

B. 62.8%

C. 37.5%

D. 62.5%

Answer: C

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11. Starch synthesis in the pea seed is controlled by one gen.

It has two alleles B and b. If the starch size is considered as the phenotype, then from this angle allele show

A. Multiple allele

B. Incomplete Dominance

C. Co-dominance

D. Polygenic inheritance

Answer: B

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12. In incomplete dominance, the ratio which not deviates from the Mendelian monohybrid cross?

A. Genotypic ratio

B. Phenotypic ratio

C. Both A and B

D. Either A or B

Answer: A

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13. Which is correct?

A. Each back cross is test cross

B. Each test cross is back cross

C. Crossing F_2 with F_1 is called test cross

D. Crossing F_2 with either parent is called test cross

Answer: B

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14. A cross between black flowered plant and white flowered plant yielded grey flowered

A. Co-dominance

B. Pseudo-dominance

C. Incomplete dominance

D. Epistasis

Answer: C

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15. Mendel proposed something was being stably passed down unchanged from parents to offspring called

A. Genes

B. Genotype

C. Factors

D. Alleles

Answer: C

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16. Tt mates with tt. What will be characteristic of offsprings?

A. 75% recessive

B. 50% recessive

C. 25% recessive

D. All dominant

Answer: B

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17. Sexually reproducing organism contribute in their offspring

A. All of the genes

B. One half of their genes

C. One fourth of their genes

D. Double the number of genes

Answer: B

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18. An allele is dominant if it is expressed in:

A. Both homozygous and heterozygous states

B. Second generation

C. Heterozygous combination

D. Homozygous combination

Answer: A

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19. The child of 'O' group has 'B' group father .The genotype of the father will be :

A. ii

B. $I^B I^B$

C. $I^A I^B$

D. $I^B i$

Answer: D

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20. Mendel's law of segregation was based on the separation of alleles in the garden pea during:

A. Gamete formation

B. Seed formation

C. Pollination

D. Embryonic development

Answer: A

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21. Law of dominance-recessiveness is proved by:

A. Back cross

B. Incomplete dominance

C. Monohybrid cross

D. Dihybrid cross

Answer: C

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22. O group mother with O group child sues AB group man for fathership of child. What is true ?

A. The claim is correct

B. Father is true but mother is not

C. Both parent are false

D. Mother is true but father's claim is wrong.

Answer: D

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23. Genes located on same locus but having different expressions are

A. Multiple alletes

B. Oncogenes

C. Polygenes

D. Co-dominants

Answer: A

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24. Cross between hybrid and recessive parent is

A. Back cross

B. Reciprocal cross

C. Monohybrid cross

D. Dihybrid cross

Answer: A

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25. Blood grouping in human beings is controlled by

A. 4 alleles in which I^A is dominat

B. 3 alleles in which I^A and I^B is codominant, and i is recessive

C. 3 alleles in which none is dominant

D. 3 alleles in which i is dominant.

Answer: B

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26. Sickle cell anaemia is an example of

A. Epistasis

B. Codominance

C. Pleiotropy

D. Incomplete dominance

Answer: C

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27. Heterozygous tall plant is selfed. It produces both tall and dwarf plants. This confirms Mendel's law

A. Law of Dominance

B. Law of Segregation

C. Law of Independent assortment

D. Incomplete dominance

Answer: B

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28. Which of the following cross determines heterozygosity or homozogosity ?

A. Monohybrid cross

B. Dihybrid cross

C. Test cross

D. Back cross

Answer: C

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29. The allele which is unable to express its effect in the presence of another is called

A. Co-dominant

B. Supplementary

C. Complementary

D. Recessive

Answer: D

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30. Alleles are

A. Alternate forms of a gene

B. Pairs of sex chromosomes

C. Homologous chromosomes

D. None of the above

Answer: A

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31. Incomplete dominance was discovered by

A. Correns

B. Mendel

C. Johnnsen

D. Bateson

Answer: A

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32. In human beings, multiple genes are involved in the inheritance of:

A. Skin colour

B. Phenylketonuria

C. Colour blindness

D. Sickle cell anaemia

Answer: A

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33. In case of incomplete dominance, F_2 generation has

A. Genotypic ratio equal to phenotypic ratio

B. Genetypic ratio is 3:1

C. Phenotypic ratio is 3:1

D. None of the above

Answer: A

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34. Human skin colour is polygenic trait with each dominant determing a part of melanin deposition while the recessive are coding for no melanin. If a very dark skinned person marries a very light skinned women, the chances of a very dark skinned offspring are

A. $1/64$

B. $1/4$

C. $5/8$

D. $9/64$

Answer: A

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35. How many types of gametes will be produced by individuals of AABbcc genotype ?

A. Two

B. Four

C. Six

D. Eight

Answer: A

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36. A pure tall pea plant is crossed with pure dwarf Pea Plant. The progeny is self-pollinated. The ratio of true breeding tall Pea plants to true breeding dwarf Pea plants shall be

A. $2:1$

B. $1:1$

C. $3:1$

D. $1:2$

Answer: B

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37. The offspring of mating between two pure breeding strains called

A. Hybrid

B. Progeny

C. Cybrid

D. Heterosis

Answer: A

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38. In heterozygous condition, both the alleles express in

A. Colour blindness

B. AB blood group

C. Rh factor

D. A and B blood types

Answer: B

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39. When both alleles express their effect on being present together, the phenomenon is called

A. Dominance

B. Codominance

C. Pseudodominance

D. Amphidominance

Answer: B

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40. Inheritance of blood group is a condition of

(a) Codominance

(b) Incomplete dominance

(c) Multiple allelism

(d) Dominance

A. a, b, and c

B. b and d

C. a, c, and d

D. b and c

Answer: C

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41. The graphical representation to calculate the probability of all possible genotypes of offspring in a genetic cross is called

A. Pedigree analysis

B. Punnet square

C. Chromosome map

D. Genotypic ratio

Answer: B

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42. In a polygenic crosss $\mathrm{Aa\,Bb\,Cc} \times \mathrm{Aa\,Bb\,Cc}$, the phenotypic ratio offspring is 1:6:'X':20:X:6:1. What is the value of 'X'?

A. 7

B. 9

C. 15

D. 25

Answer: C

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43. Children in a family have blood type O, A, AB and B respectively. What are the genotypes of their parents.

A. I^AI and I^Bi

B. I^AI^B and ii

C. I^BI^B and I^AI^A

D. I^AI^A and I^B i

Answer: A

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Section A Topic 3 Inheritance Of Two Genes Law Of Independent Assortment Chromosomal Theory Of I

1. Read the following statements and find out the incorrect statement.

a. Though the genotypic ratios can be calculated using mathematical probability, by simply looking at the phenotype of recessive trait, it is not possible to know the genotypic composition.

The 1/4 : 1/2 : 1/4 ratio of TT : Tt : tt is mathematically condensable to form of the binomial expression $(ax + by)^2$, that has the gametes bearing genes T and t in equal frequency of 1/2.

c. Based on his observations on dihybrid crosses Mendel proposed two rules that are called Principles or Laws of Inheritance : the First Law or Law of Dominance and the Second Law or Law of Segregation.

d. If in test cross, all the progenies shows dominant trait then the unknown parent is heterozygous dominant.

e. ABO blood group controlled by three alleles I^A, I^B and i. I^A and I^B produce a slightly different type of the sugar while allele i doesn't produce any sugar.

A. a, c and d

B. b, d and e

C. a and c only

D. c and d only

Answer: A

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2. The chromosome movement during meiosis had been worked out by the year.

A. 1865

B. 1900

C. 1902

D. 1891

Answer: C

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3. Who argued that the pairing and separation of a pair of chromosomes would lead to the segregation of a piar of factors they carried?

A. Sutton and Boveri

B. T.H. Morgan

C. Alfred Sturtevant

D. Both B and C

Answer: A

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4. In the Morgan's experiment on Drosophila, the strength of linkage between y and w is

A. Higher than w and m

B. Lower than w and m

C. Same as w and m

D. Can't be predicted

Answer: A

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5. In Mendelian dihybrid cross the yellow and green colour of seed is segregated in the ratio of

A. $3:1$

B. $10:6$

C. $9:4$

D. $9:7$

Answer: A

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6. Read the following statements.

(i) Morgan carried out several monohybrid crosses in Drosophila to study genes that were sex-linked.

(ii) Morgan attributed that proportion of parental gene combination is less than the non-parental type due to the physical association.

(iii) Term recombination was coined by Morgon to describe the generation of non-parental gene combinations.

(iv) Alfred Strutevent used the frequency of linkage between gene pairs on the same chromosome and fine genetic map.

Select how many are incorrect statement(s).

A. 3

B. 1

C. 4

D. 2

Answer: A

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7. Drosophila melanogaster is found to be very suitable for genetic studies because

(i) They could be grown in simple synthetic medium in the laboratory

(ii) They complete their life-cycle in about 14 days

(iii) A single mating could produce a large number of progeny

(iv) Male and females are clearly distinguishable

(v) It has few hereditary variations that can be seen with high power microscopes

Select how many are correct statements.

A. 5

B. 4

C. 2

D. 3

Answer: B

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8. If a pea plant produces 2560 seeds during a dihybrid cross between round-yellow and wrinkled-green plant. Then how many seed are wrinkled-yellow, round-yellow and wrinkled-green respectively.

A. 640, 480, 1280

B. 480, 1440, 160

C. 640, 1280, 320

D. 160, 1440, 480

Answer: B

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9. In Drosophila melanogaster, the genes white and yellow shows.....a..... recombination and genes white and miniature wing shows.....b.....linkage

A. $a \rightarrow 98.7\,\%$, $b \rightarrow 37.2\,\%$

B. $a \rightarrow 98.7\,\%$, $b \rightarrow 62.8\,\%$

C. $a \to 1.3\,\%\,, b \to 37.2\,\%$

D. $a \to 1.3\,\%\,, b \to 62.8\,\%$

Answer: D

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10. Carl Correns, a rediscoverer of Mendel's work, was from

A. Austria

B. Germany

C. Holland

D. Denmark

Answer: B

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11. Who used frequency of recombination between genepairs on the same on the same chromosome as a measure of distance between genes and mapped their position on chromosome?

A. Alfred Sturtevant

B. Gregor Mendel

C. Correns

D. Tschermak

Answer: A

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12. Walter sutton is famous for his contribution to :

A. Chromosomal theory of inheritance

B. Genetic engineering

C. Totipotency

D. Quantitative genetics

Answer: A

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13. Experimental verification of chromosomal theroy of inheritance was gtiven by

A. Thomas Hunt Morgan

B. Gregor Johann Mendel

C. Hugo de Vries

D. Langdon Down

Answer: A

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14. In Morgan 's experiments on linkage , the percentage of white eyed miniature winged recompbinants in F_2 generation is

A. 1.3

B. 62.8

C. 37.2

D. 37.5

Answer: C

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15. The offspring of AA bb $\times$ aa BB is crossed with , aabb. The genotypic ratio of progeny will be

A. $9:3:3:1$

B. $1:2:1$

C. $1:1:1:1$

D. $3:1$

Answer: C

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16. In a hybrid cross, the maximum number of phenotypes would be

A. 8

B. 4

C. 2

D. 16

Answer: B

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17. Mendel did not propose:

A. Dominance

B. Incomplete Dominance

C. Segregation

D. Independent assortment

Answer: B

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18. Distance between the genes a,b,c and d in map units is a-d =3.5 , b-c=1,a-b=6, c-d=1.5 and a-c=5 .Find out the sequecne of the genes

A. a d c b

B. a c d b

C. a b c d

D. a c b d

Answer: A

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19. A tall pea plant with round seeds (TTRR) is crossed with a dwarf wrinkle seeded plant (ttrr). F_1 has tall plants with rounded seeds. What is the proportion of dwarf plants with wrinkled seeds in F_2 generation

A. $3/16$

B. $9/16$

C. $1/4$

D. $1/16$

Answer: D

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20. Dihybrid test cross ratio is

A. $9:3:3:1$

B. $1:1:1:1$

C. $3:1$

D. $1:1$

Answer: B

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21. In Mendel's experiments with Garden Pea, round seed shape (RR) was dominant over wrinkled seeds (rr), yellow cotyledons (YY) was dominant over green cotyledons(yy). What are expected phenotypes in F_2 generation RRYY $\times$ rryy ?

A. Only wrinkled seeds with green cotyledons

B. Only wrinkled seeds with yellow cotyledons

C. Only round seeds with green cotyledons

D. Round seeds with yellow cotyledons and wrinkled seeds with green cotyledons

Answer: D

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22. Which of the following is correct for dihybrid cross ?

A. 1 YYRR, 2 YyRR, 2 yy Rr, 4 YyRr

B. 1YYRR, 3 YyRR, 2 yy Rr, 3 YyRr

C. 3 YYRR, 3 YyRR, 2 yy Rr, 4 YyRr

D. 1 YYRR, 2 YrRR, 2 yy Rr, 3 YyRr

Answer: A

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23. Which of the following is the most suitavble medium for culture of most suitable medium for culture of Drosophila melanogaster?

A. Cow dung

B. Moist bread

C. Agar agar

D. Ripe Banana

Answer: D

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24. genetic maps of chromosomes are based on the frequency of

A. Non-disjunction

B. Translocation

C. Linkage

D. Genetic recombination

Answer: D

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25. For finding the different types of gametes produced by genotype AaBb, it should be crossed with genotype

A. AABB

B. aabb

C. AaBb

D. aaBB

Answer: B

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26. Mendel's law of segregation is applicable to:

A. Dihybrid cross only

B. Both dihybrid and monohybrid crosses

C. Monohybrid cross only

D. Dihybrid but not monohybrid cross

Answer: B

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27. Number of genotypes produced when individuals of genotype 'YyRrTt' are crossed with each other

A. 16

B. 9

C. 8

D. 27

Answer: D

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28. Independent assortment can be deduced from

A. Monohybrid cross

B. Test cross

C. Back cross

D. Dihybrid cross

Answer: D

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29. Lack of independent assortment between two genes A and B would be due to

A. Crossing over

B. Linkage

C. Repulsion

D. Recombination

Answer: B

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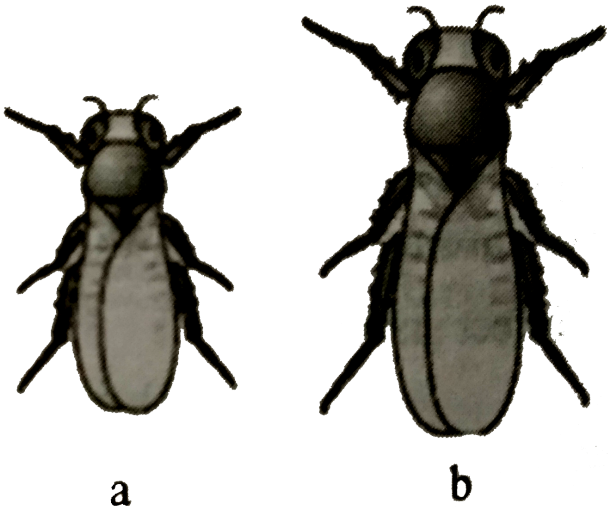
30. Recognise the figure and find out the correct matching.



A. a-male Drosophila, b-female Drosophila

B. a-female Drosophila, b-male Drosophila

C. a-male butterfly, b-female butterfly

D. a-female butterfly, b-male butterfly

Answer: A

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31. Percentage of recombination between A and B is 9% and C is 17%. B and C is 26%, then the arrangement of genes is

A. A-B-C

B. A-C-B

C. B-C-A

D. B-A-C

Answer: D

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32. Self fertilising tri-hybrid plants form

A. Eight different gametes and 64 zygotes

B. Four different gametes and sixteen different zygotes

C. Eight different gametes and sixteen different zygotes

D. Eight different gametes and thirty two different zygotes

Answer: A

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33. Genetic map is one that :

A. Establishes sites of the gene on a chromosome

B. Establishes the various stages in gene evolution

C. Shows the stages during cell division

D. Shows distribution of various species in region

Answer: A

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34. Phenotypic ratio of dihybrid test cross is:

A. $9:3:3:1$

B. $15:1$

C. $9:6:1$

D. $1:2:1$

Answer: A

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35. In quantitative inheritance F_2 ratio obtained

A. $1:4:6:4:1$

B. $15:1$

C. $12:3:1$

D. $9:7$

Answer: A

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36. Out of a population of 800 individuals in F_2 generation of a cross between yellow round and green wrinkled Pea Plants, what would be number of yellow and wrinkled seeds

A. 800

B. 400

C. 200

D. 150

Answer: D

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37. What is true of law of independent assortment ?

A. Applicable to all the dominant alleles

B. Applicable to all genes on the same chromosome

C. Not applicable to genes present on the same chromosome

D. Applicable to all recessive alleles

Answer: C

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38. Linkage was discovered by

A. Blakeslee

B. Sutton

C. Muller

D. Bateson and Punnet

Answer: D

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39. Sex linked genes were discovered by

A. Johanssen

B. Mendel

C. Morgan

D. Mulle.

Answer: C

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40. Independent assortment is absent in case of

A. Genes located on the same chromosome

B. Genes located on homologous chromosomes

C. Genes located on non-homologous chromosomes

D. All of the above

Answer: A

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41. Mendelian recombinations are due to

A. Linkage

B. Independent assortment

C. Mutations

D. Dominant traits

Answer: B

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42. Number of genotype found in F_2 progeny of a dihybrid cross is

A. 9

B. 6

C. 3

D. 1

Answer: A

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43. Linkage in plants was first shown in

A. Zea mays

B. Lathyrus odoratus

C. Oenothera lamarckiana

D. Pisum sativam

Answer: B

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44. If there is complete linkage in F_2 generation

A. Parental types and recombinants appear in equal ratio

B. Recombinants are less than parental types

C. Recombinants are more than parental types

D. There will be only parental types

Answer: D

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45. Mendel did not observe linkage due to

A. Mutation

B. Synapsis

C. Segregation

D. Independent assortment

Answer: D

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46. In a dihybrid cross AABB $\times$ aabb, F_2 progeny of AABB, AABb, AaBB and AaBb occurs is the ratio of:

A. $1:1:1:1$

B. $9:3:3:1$

C. $1:2:2:1$

D. $1:2:2:4$

Answer: D

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47. Crossing over in diploid organisms is responsible for

A. Dominance of genes

B. Linkage between genes

C. Recombination of linked genes

D. Segregation of alleles

Answer: C

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48. Mendel's law of heredity can be explained with the help of

A. Mitosis

B. Meiosis

C. Cloning

D. Both A and B

Answer: B

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49. Number of phenotypes possible from AaBbCc $\times$ AaBbCc is

A. 16

B. 9

C. 8

D. 27

Answer: C

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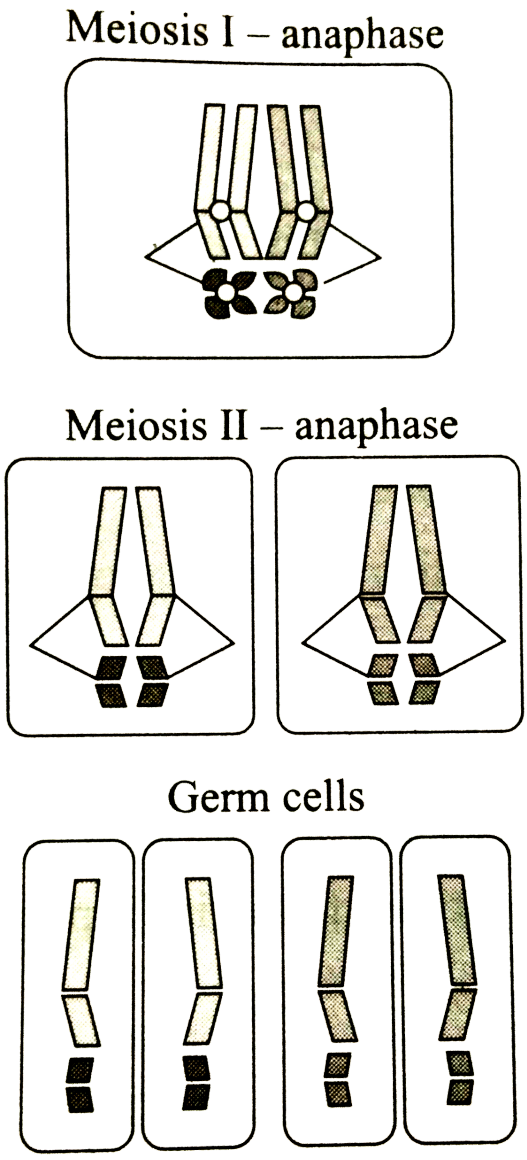
50. The following figure shows



A. Independent assortment of genes

B. Linkage

C. Chromosomal theory of sex determination

D. Independent segregation of genes

Answer: A

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51. Genotypic ratio of a dihybrid cross is

A. $1:4:6:4:1$

B. $9:3:3:1$

C. $1:2:1$

D. $1:2:2:4:1:2:1:2:1$

Answer: D

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52. Mendel's law of independent assortment is based on F_2 ratio of

A. $1:2:1$

B. $9:3:3:1$

C. $2:1$

D. $3:1$

Answer: B

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53. Mendel's work was rediscovered by three scientists in the year

A. 1756

B. 1865

C. 1900

D. 1910

Answer: C

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54. Mendel enunciated principles of inheritance

A. Two

B. Three

C. Four

D. Five

Answer: B

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55. Cross AABb $\times$ aaBb yields AaBB:AaBb:Aabb:aabb offspring in the ratio of

A. $0:3:1:1$

B. $1:2:1:0$

C. $1:1:1:1$

D. $1:2:1:1$

Answer: B

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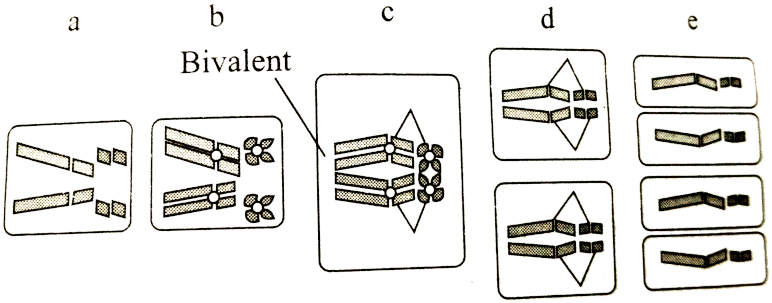
Section A Topic 3 Inheritance Of Two Genes

1. Recognise the figure and find out the correct matching.



A. $a - G_1, b - S, c - G_2, d - M, e -$ germ cells

B.

$a - G_1, b - G_2, c -$ meiosis I metaphase, d-meiosis II metaphase, e-

C.

$a - G_1, b - G_2$, c-meiosis I prophase, d-meiosis II prophase, e-meios

D.

$a - G_1, b - G_2$, c-meiosis I anaphase, d-meiosis II anaphase, e-germ

Answer: D

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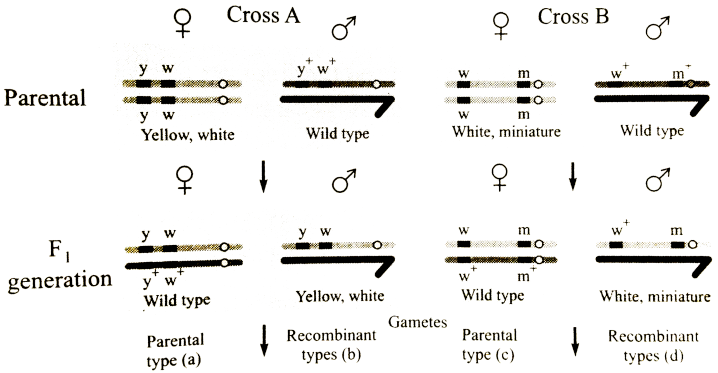
2. Recognise the figure and find out the correct matching.



A. a-37.2%, b-62.8%, c-1.3%, d-98.7%

B. b-37.2%, a - 62.8%, d-1.3%, c-98.7%

C. c-37.2%, d-62.8%, a-1.3%, b-98.7%

D. d-37.2%, c-62.8%, b-1.3%, a-98.7%

Answer: D

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3. Match the genetic phenomena with their respective ratios.

a.	Inhibitory gene ratio	1.	9 : 3 : 4
b.	Complementary gene ratio	2.	1 : 1 : 1 : 1
c.	Recessive epistasis ratio	3.	12 : 3 : 1
d.	Dihybrid test cross ratio	4.	13 : 3
e.	Dominant epistasis ratio	5.	9 : 7

A. a-5, b-4, c-3, d-2, e-1

B. a-4, b-5, c-1, d-2, e-3

C. a-1, b-2, c-4, d-3, e-5

D. a-2, b-1, c-4, d-5, e-3

Answer: B

View Text Solution

Section A Topicwise Questions Topic 4 Sex Determination Sex Determination In Humans

1. Read the following statements.

(i) In haplo-diploid sex-determination system, the males do not have father and thus cannot have sons, but have a grandfather and can have grandsons

(ii) In honey bee, workers are developed by the unfertilized eggs by means of parthenogenesis

In human skin colour, the effect of each allele is additive

In XO type of sex-determination, male have half number of chromosome than the female

Select the incorrect statements.

A. i, iii

B. ii, iii

C. ii, iv

D. i, iv

Answer: C

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2. In a certain taxon of insects some have 32 chromosomes and the others have 31 chromosomes. The 32 and 31 chromosome-bearing organisms are

A. Male and females, respectively

B. Females and males, respectively

C. Drones and males, respectively

D. Females and Drones, respectively

Answer: B

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3. Identify the wrong statement.

A. Human males have one sex chromosome much shorter than others.

B. In domesticated Fowl, sex of progeny depends upon type of sperm that fertilizes the egg.

C. In Male Grasshopper, 50% of sperms have no sex chromosome.

D. Female birds produce two types of gametes based on sex chromosome.

Answer: B

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4. Read the following statements and find out the correct statements.

The sex determination in honey bee is based on the number of sets of chromosomes an individual receives.

An offspring formed from the union of a sperm and an egg develops as a female (queen or worker), and an unfertilized egg develops as a male (drone) by means of parthenogenesis.

The females are diploid having 32 chromosomes and males are haploid, i.e., having 16 chromosomes.

This is called as haplo-diploid sex-determination system and has special characteristic features such as the males produce sperms by mitosis they do not have father and thus cannot have sons, but have a grandfather and can have grandsons.

A. a and b

B. b, c and d

C. a, c and d

D. a, b, c and d

Answer: D

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5. Match the columns I and II, and choose the correct combination from the options given.

	Column I		Column II
a.	XO type	1.	Male heterogamety
b.	XY type	2.	Female heterogamety
c.	ZW type		

A. a-1, b-2, c-2

B. a-2, b-1, c-1

C. a-1, b-1, c-2

D. a-2, b-2, c-1

Answer: C

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6. The initial clue about the genetic/chromosomal mechanism of sex determination can be traced back to some of the experiments carried out in

A. Human

B. Birds

C. Plants

D. Insects

Answer: D

Watch Video Solution

7. Choose the wrong statement.

A. In grasshopper, besides autosomes, males have only one -X-chromosome whereas females have a pair of X-chromosomes.

B. In Drosophila, males have one X-and one Y-chromosome whereas females have a pair of X-chromosomes besides autosomes.

C. In birds, females have one Z-and one W-chromosome, whereas males have a pair of Z- chromosome besides autosomes.

D. In insects with XO type of sex determination, all sperms have X-chromosomes besides autosomes.

Answer: D

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8. ZW, XO, XY and haplo-diploid type of sex determination is seen in respectively

A. Parrot, cockroach, Melandrium and honey bee

B. Aptenodytes, grasshopper, Drosophila and Apis

C. Pavo, grasshopper, man and honey bee

D. All of the above

Answer: D

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9. Sex of a child is due to

A. Size of ovum

B. Health of father

C. Sex chromosome of father/sperm

D. Sex chromosome of mother/ovum

Answer: C

Watch Video Solution

10. Sex is determined in human beings

A. By ovum

B. At time of fertilization

C. 40 days after fertilization

D. Seventh to eight week when genitals differentiate in foetus

Answer: B

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11. When a certain character is inherited only through female parent it probably represents

A. Multiple plastid inheritance

B. Cytoplasmic inheritance

C. Incomplete dominance

D. Mendelian nuclear inheritance

Answer: B

Watch Video Solution

12. XY sex chromosomes were discovered by :

A. Gregor Johann Mendel

B. M.J.D. White

C. Nettie Stevens

D. Robert Brown.

Answer: C

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13. Genes located on Y-chromosome are

A. Mutant genes

B. Sex-linked genes

C. Autosomal genes

D. Holandric genes

Answer: D

Watch Video Solution

14. A strong mutagen is

A. Cold

B. Heat

C. Water

D. X-ray

Answer: D

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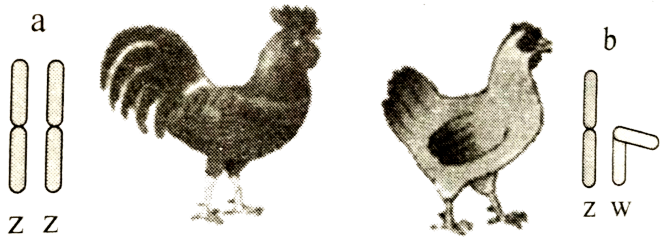
15. Recognise the figure and find out the correct matching.



A. a-male, b-female

B. a-female, b-male

C. Can't be predicted

D. Both A and B are possible

Answer: A

Watch Video Solution

16. What is true in case of Honey Bee?

A. Male diploid, female haploid

B. Male diploid, female diploid

C. Male haploid, female haploid

D. Male haploid, female diploid

Answer: D

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17. In human zygote,male sex is determined by :

A. Strength of father

B. Nutrition of mother

C. Composition of required chromosome pair

D. None of the above

Answer: C

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18. Which pteridophye has the maximum chromosome unmber?

A. Ophioglossum reticulatum

B. Azolla pinnata

C. Lycopodium cernuum

D. Selaginella apus

Answer: A

Watch Video Solution

19. Chromosomal basis of sex determination was discovered in the plant :

A. Rumex

B. Melandrium

C. Coccinia

D. Sphaerocarpos

Answer: B

Watch Video Solution

20. Drosophila melanogaster possesses

A. 3 pairs autosomes + 1 pair sex chromosomes

B. 2 pairs autosomes + 2 pair sex chromosomes

C. 1 pair autosomes + 3 pair sex chromosomes

D. 2 pairs autosomes + 1 pair sex chromosomes

Answer: A

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21. Foetal sex can be determined by examining cells from the amniotic fluid by looking for

A. Kinetochores

B. Chiasmata

C. Barr bodies and sex chromosomes

D. Autosomes

Answer: C

Watch Video Solution

22. Genetic identity of human male is known by

A. Nucleolus

B. Cell organelles

C. Autosomes

D. Sex chromosomes

Answer: D

Watch Video Solution

Section A Topicwise Questions Topic 5 Mutation And Pedigree Analysis

1. Broadly genetic disorder may be grouped into two categories as

A. Mendelian disorders and chromosomal disorders

B. Autosomal disorders and sex linked disorders

C. Recessive disorders and dominant disorders

D. Aneuploidy and polyploidy

Answer: A

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2. Sickle cell anemia is an example of

(i) Menedelian disorder

(ii) Genetic disorder

(iii) Chromosomal disorder

(iv) Inborn error of metabolism

(v) Point mutation

(vi) Frame-Shift mutation

(vii) Sex-linked disease

(viii) Recessive disorder

(ix) Qualitative disorder

(x) Quantitative disorder

(xi) Autosomal disorder

A. i, ii, iv, v, viii, x, xi

B. i, v, viii, ix, xi

C. i, ii, v, viii, ix, xi

D. ii, iii, v, vii, ix

Answer: C

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3. The inheritance pattern of a gene over generations amoung human is studied by the pedigree analysis. Character studied in the pedigree analysis is equivalent to

A. Qualitative trait

B. Quantitative trait

C. Pleiotropic trait

D. Mendelian trait

Answer: D

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4. In sickle cell anaemia, the sequence of amino acid from first to seventh position of β-chain of haemoglobin S (HbS) is

A. His, Leu, Thr, Pro, Glu, Val, Val

B. Val, His, Leu, Thr, Pro, Glu, Glu

C. Glu, His, Leu, Pro, Val, Glu, Glu

D. Val, His, Leu, Thr, Pro, Val, Glu

Answer: D

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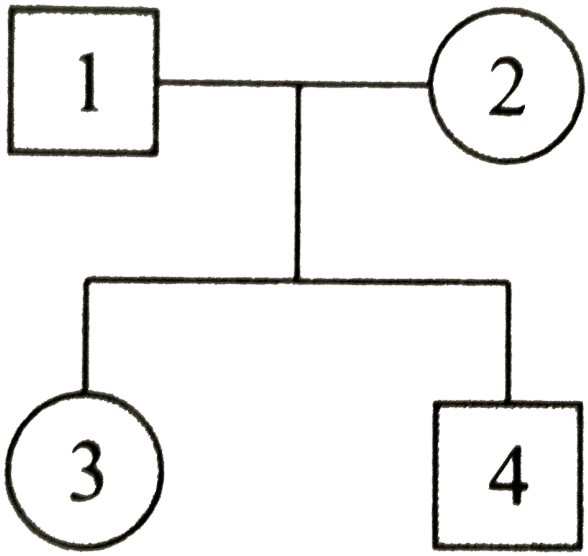
5. In this pedigree, which of the progeny is younger?



A. 3

B. 4

C. 2

D. 1

Answer: C

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6. Which of the following is not a Mendelian disorder

A. Turners syndrome

B. Thalassemia

C. Haemophilia

D. Cystic fibrosis

Answer: A

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7. Which is incorrect regarding pedigree analysis?

A. It helps to understand whether the trait in question is dominant or recessive.

B. It confirms that the trait is linked to one of the autosome.

C. It helps to trace the inheritance of a specific trait.

D. It confirms that DNA is the carrier of genetic information.

Answer: D

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8. Read the following statement s and choose the correct option

In p[henylketonuria the affected person does not secrete the enzyme to con vert pheylalnine to typrosine

(II)Possibility of male becoming haemophiliac is extremely rare

(III) Sickle cell anaemia is caused by the substitution of glutamic acid by

valine at fifth position of beta chain of haemoglobin

(IV) Myotonic dystrophy is an autosomla dominant trait

A. I and II alone are wrong

B. II and III alone are wrong

C. II alone are wrong

D. III alone is wrong

Answer: B

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9. A person affected with phenylketonuria lacks an enzyme that converts the amino acid phenylalanine into :

A. Valine

B. Proline

C. Histidine

D. Tyrosine

Answer: D

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10. Which mutation/ variation is not heredity

A. Genetic

B. Gametic

C. Somatic

D. Germinal

Answer: C

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11. Point mutation may occur due to

A. Gain of a segment of DNA

B. Deletion of segment of DNA

C. Alteration in DNA sequence

D. Change in a single base pair of DNA

Answer: D

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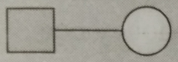
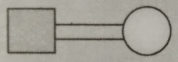
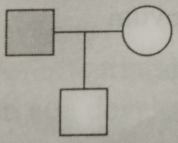
12. Match the columns and choose the correct option.

	Column I		Column II
a.		1.	Consanguineous mating
b.		2.	Affected female
c.		3.	Mating
d.		4.	Unaffected female
e.		5.	Parents with male child unaffected
		6.	Sex unspecified

A. a-3, b-1, c-2, d-5, e-4

B. a-2, b-1, c-6, d-3, e-4

C. a-3, b-4, c-1, d-5, e-2

D. a-3, b-1, c-6, d-5, e-4

Answer: D

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13. Mutations are induced mostly by :

A. Visible radiations

B. Beta rays

C. Alpha rays

D. Gamma rays

Answer: D

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14. Which one of the following techniques is employed in human genetic counselling

A. Serological technique

B. Polyploidy

C. Pedigree analysis

D. Amniocentesis.

Answer: C

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15. Which is not a mutagen?

A. Acetic acid

B. Gamma rays

C. Nitrous acid

D. Hydroxylamine

Answer: A

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16. Pattern baldness, moustaches and beard in human males are examples of :

A. Sex-linked traits

B. Sex differentiating traits

C. Sex limited traits

D. Sex determining traits

Answer: C

Watch Video Solution

17. The symbol of empty circles used in pedigree analysis represents

A. Normal females

B. Normal males

C. Affected females

D. Affected males

Answer: A

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18. Muller was awarded Nobel prize in 1946 for his work on

A. Protein synthesis

B. Chemistry of nucleic acids

C. Cancer

D. X-ray induced mutations

Answer: D

Watch Video Solution

Section A Topicwise Questions Topic 6 Mendelian Disorders

1. If a genetic disease is transferred from a phenotypically normal but carrier female to only some of the male progeny, the disease is

A. Autosomal recessive

B. Autosomal dominant

C. Sex-linked recessive

D. Sex-linked dominant.

Answer: C

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2. Which is incorrect about colour blindness?

A. This due to defect in either red or green cone of eye resulting in failure to discriminate between red and green colour.

B. A daughter will not normally be colour blind, unless her mother is a carrier and her father is colour blind.

C. If female X^c X then it is called carrier but when male has then X^cY then it will be colour blind.

D. The son of a woman who carries the gene has 25 per cent chance of being colour blind.

Answer: D

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3. Which is incorrect about thalassemia?

A. This blood disease is transmitted from parents to the offspring when both the partners are unaffected carrier for the gene (or heterozygous).

B. The defect is due to either mutation or deletion which utimately results in reduced rate of synthesis of one of the globin chains that make up haemoglobin.

C. This causes the formation of abnormal haemoglobin molecule resulting into anaemia which is characteristic of the disease.

D. Thalassemia differs from sickle cell anaemia in that the former is qualitative problem of synthesising an incorrectly functioning globin while the latter is a quantitative problem of synthesising too few globin molecules.

Answer: D

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4. Read of following statements and find out the incorrect statement.

A. Alpha thalassemia is controlled by two closely linked genes HBA_1 and HBA_2 on chromosome 16 of each parent and it is observed due to mutation or deletion of one or more of the four genes.

B. Beta thalassemia is controlled by a single gene HBB on chromosome of one or both the genes.

C. Beta thalassemia is also called Cooley's anemia or thalassemia major

D. None of the above.

Answer: D

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5. How many types of genotypes are possible in the inheritance pattern of sickle cell anaemia?

A. 1

B. 2

C. 3

D. 4

Answer: C

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6. Which of the following genotype will show the diseased condition in sickle cell anaemia?

A. $\mathrm{Hb}^{A}\mathrm{Hb}^{A}$

B. $\mathrm{Hb}^{A}\mathrm{Hb}^{S}$

C. $\mathrm{Hb}^{S}\mathrm{Hb}^{S}$

D. Both B and C

Answer: C

Watch Video Solution

7. Sickle cell anaemia is controlled by

A. Single allele

B. Single pair of allele

C. Multiple allele

D. Polygenes

Answer: B

Watch Video Solution

8. Heterozygous $\left(\mathrm{Hb}^{A}\mathrm{Hb}^{S}\right)$ individuals have how much per cent of probability of transmission of the mutant gene to progeny?

A. $25\ \%$

B. $50\ \%$

C. $75\ \%$

D. $100\ \%$

Answer: B

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9. Down's syndrome and Turner's syndrome are due to respectively

A. Monosomic and nullisomic conditions

B. Trisomic and monosomic conditions

C. Monosomic and trisomic conditions

D. Trisomic and tetrasomic conditions

Answer: B

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10. Match column I with column II and find the correct answer :

	column I		Column II
A	Monoploidy	1	$2n-1$
B	Monosomy	2	$2n+1$
C	Nullisomy	3	$2n+2$
D	Trisomy	4	$2n-2$
E	Tetrasomy	5	n
		6	$3n$

A. a-6, b-5, c-3, d-4, e-2

B. a-5, b-2, c-4, d-1, e-3

C. a-5, b-1, c-4, d-2, e-3

D. a-1, b-5, c-3, d-2, e-4

Answer: C

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11. Read the following statemenets and choose the correct option

I. Failure of segregation of chromatids duringt cell division results in aneuploidy

(II) Chromposomal disorders are maninly determined buy alteration or mutation in a single gene

(III) Thalassemia and cystic fibrosis are Mendelian disorders

(IV) Sickle cell anameia is an X- linked trait ltbvrgt (V) Haemophilia is an autosome linked recessive disease

A. I and III alone are correct

B. I, III, and IV alone are correct

C. III and IV alone are correct

D. II and IV alone are correct.

Answer: A

Watch Video Solution

12. Choose the wrong statement.

A. Failure of segregation of chromatids during cell division results in aneuploidy.

B. Additional copy of 'X' chromosome in males results in Klinefelter's syndrome.

C. Closely located genes in a chromosome always assort independently resulting in recombinations.

D. Failure of cytokinesis after DNA replication results in polyploidy.

Answer: C

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13. Select the autosomal dominant, autosomal recessive, X-sex linked recessive and Y-sex linked recessive disorders respectively.

A. Myotonic dystrophy, SCA Haemophilia and hyper trichosis

B. Huntington's chorea, PKU (phenylketonuria), colour-blindness and webbed toes

C. Polydactyly, Thalassemia G-6-P dehydrogenase deficiency and long hais on pinna

D. All of the above

Answer: D

View Text Solution

14. Numerical change in chromosome number which is not the exact multiple of haploid genome is

A. Triploid

B. Allopolyploid

C. Autopolyploid

D. Aneuploid

Answer: D

Watch Video Solution

15. A colour blind man $\left(X^{C}Y\right)$ has a colour blind sister $\left(X^{C}X^{C}\right)$ and a normal brother (XY). What is the genotype of father and mother?

A. $X^{C}Y, X^{C}X^{C}$

B. $X^{C}Y, X^{C}X$

C. $XY, X^{C}X^{C}$

D. $XY, X^{C}X$

Answer: B

Watch Video Solution

16. Which genotype will indicate colour blindness in male ?

A. $X^C Y$

B. $X^C Y^C$

C. $X^C X^C$

D. $A^C A^C$

Answer: A

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17. A woman with two genes for haemophilic and a gene for colour blindness on one of the X-chromosome marries a normal man.How will the progeny be ?

A. All sons haemophilic and colour blind

B. 50% haemophilic and colour blind sons and 50% normal sons

C. All daughters haemophilic and colour blind

D. 50% haemophilic daughters and 50% colour blind daughters

Answer: B

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18. Match the columns I and II, and choose the correct combination from the options given.

	Column II		Column II
$a.$	Pleiotropy	1.	Baldness
b	Polygenic inheritance	2.	Pattern baldness
$c.$	Autosomal recessive disorder	3.	Thalassemia
$d.$	Y-sex linked disorder	4.	Phenylketonuria
$e.$	Sex-influenced character	5.	Hypertrichosis
$f.$	Sex-limited character	6.	Human skin colour

A. a-5, b-3, c-2, d-1, e-6, f-4

B. a-4, b-6, c-3, d-5, e-1, f-2

C. a-4, b-6, c-3, d-5, e-2, f-1

D. a-6, b-4, c-5, d-3, e-1, f-2

Answer: B

View Text Solution

19. Down's syndrome is due to trisomy of 21st chromosome caused by

A. Nondisjunction during egg formation

B. Nondisjunction during sperm formation

C. Addition of extra chromosome during mitosis of zygote

D. Either A or B

Answer: D

Watch Video Solution

20. Mental retardation in man, associated with sex chromosomal abnormality is usually due to

A. Increase in X-complement

B. Decrease in X-complement

C. Large increase in Y-complement

D. Moderate increase in Y-complement

Answer: A

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21. How many genomes are present in a mammalian skin cell?

A. Ten

B. Two

C. Five

D. Three

Answer: B

Watch Video Solution

22. Monosomics are:

A. n

B. 2n + 1

C. 2n-2

D. 2n - 1

Answer: D

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23. First child of a normal pigmented couple is albino. The possibility of a second child being an albino is

A. $25\ \%$

B. $50\ \%$

C. $75\ \%$

D. $100\ \%$

Answer: A

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24. Albinism is due to nonsythesis of melanin on account of absence of

A. Melanase

B. Luciferase

C. Tyrosinase

D. Lysine

Answer: C

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25. In albinism the absence of the following pigment makes the skin and hair very light coloured :

A. Melanin

B. Carotene

C. Haemoglobin

D. Chlorophyll

Answer: A

Watch Video Solution

26. Queen Victoria of England was

A. Haemophilic carrier

B. Colour blind

C. AIDS patient

D. Deaf

Answer: A

Watch Video Solution

27. If haploid chromosome number is 10, the monosomic number shall be

A. 9

B. 18

C. 10

D. 19

Answer: D

Watch Video Solution

28. Genes for colour blindness in humans are carried by

A. Mother

B. Father

C. Both A and B

D. Abnormal sex

Answer: C

Watch Video Solution

29. Which amino acid is substituted in sickle cell anamia ?

A. Glutamic acid by valine in α-chain

B. Glutamic acid by valine in β-chain

C. Valine by glutamic acid in α-chain

D. Valine by glutamic acid in β-chain

Answer: B

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30. In humans , Philadelhia chromosomee is formed by reciprocal translocation between chromosomes

A. 9 and 21

B. 9 and 22

C. 9 and 20

D. 20 and 10

Answer: B

Watch Video Solution

31. A diseased man marries a normal woman.They get three daughters and five sons were normal . The gene of this disease is :

A. Sex-linked recessive

B. Sex-linked dominant

C. Autosomal character

D. Sex-limited character

Answer: C

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32. Sex-linked characters are usually:

A. Lethal

B. Recessive

C. Dominant

D. Pleiotropic

Answer: B

Watch Video Solution

33. Tay sach s disease is due to

A. Sex linked recessive gene

B. Sex linked dominant gene

C. Autosomal dominant gene

D. Autosomal recessive gene

Answer: D

Watch Video Solution

34. Wilson detected colour blindness in

A. 1921

B. 1911

C. 1920

D. 1914

Answer: C

Watch Video Solution

35. The 'christmas disease patient lacks antihaemophilic:

A. Homogentisic acid oxidase

B. Factor VIII

C. Factor XI

D. Factor IX

Answer: D

Watch Video Solution

36. Ishiara charts are used by ophthalamologist for detecting

A. Eye infection

B. Night blindness

C. Colour blindness

D. Finger prints

Answer: C

Watch Video Solution

37. Which one of the following conditions though harmful in itself ,is also a potential saviour from a mosqutio borne infectious disease?

A. Thalassemia

B. Sickle cell anaemia

C. Leukemia

D. Pernicious anaemia

Answer: B

Watch Video Solution

38. Christmas disease' is another name for :

A. Sleeping sickness

B. Down's syndrome

C. Hepatitis

D. Haemophila B

Answer: D

Watch Video Solution

39. A colour blind person cannot distinguish

A. Red and Green

B. Green and blue

C. Yellow and white

D. Black and yellow

Answer: A

Watch Video Solution

40. Albinism is a result of inability of the system to convert amino acid

A. Alanine

B. Tryptophan

C. Lysine

D. Phenylalanine

Answer: D

Watch Video Solution

41. Gene for colour blindness in man is located on

A. X-chromosome

B. Y-chromosome

C. X or Y-chromosomes

D. Both X and Y-chromosomes

Answer: A

Watch Video Solution

42. Phenylketonuria is genetic disorder caused by a defect in metabolism of

A. Fatty acids

B. Polysaccharides

C. Amino acids

D. Vitamins

Answer: C

Watch Video Solution

43. Philadelphia chromosome ocurs in patients suffering from

A. Leukemia

B. Rickets

C. Hepatitis

D. Albinism

Answer: A

Watch Video Solution

44. A male human is heterozygous for autosomal genes A and B. He is also hemizygous for haemophilic gene h. What proportion of sperms will carry abh?

A. $1/8$

B. $1/32$

C. $1/4$

D. $1/16$

Answer: A

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45. Recessive gene present on one X- chromosome of humans will be

A. Lethal

B. Sub-lethal

C. Expressed in males

D. Expressed in females

Answer: C

Watch Video Solution

46. Haemophilia is a genetic disorder in which

A. Blood clots in blood vessels

B. There is delayed coagulation of blood

C. Blood fails to coagulate

D. Blood cell count falls

Answer: B

Watch Video Solution

47. Wilson disease is asoicated with abnormal matabolism of

A. Iron

B. Potassium

C. Copper

D. Iodine

Answer: C

Watch Video Solution

48. Melenurea (black urine) is caused by abnormal catabolism of

A. Alanine

B. Tyrosine

C. Proline

D. Tryptophan

Answer: B

Watch Video Solution

49. Which is not an X- linked recessive disease?

A. β-thalassemia

B. Haemophilia

C. Colour blindness

D. Glucose-6-Phosphate dehydrogenase deficiency

Answer: A

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50. Haemophilia is more common in males because it is a

A. Recessive character carried by Y chromosome

B. Dominant character carried by Y chromosome

C. Dominant trait carried by X-chromosome

D. Recessive trait carried by X-chromosome

Answer: D

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51. Trisomy has chromosome complement of

A. 2 n - 1

B. 2 n - 1 -1

C. 2 n + 1 +1

D. 2n + 1

Answer: D

Watch Video Solution

52. Cri-du-chat syndrome in humans is caused by the :

A. Trisomy of 21st chromosome

B. Loss of half of short arm of chromosome 5

C. Loss of half of long arm of chromosome 5

D. Fertilization of an XX egg by a normal Y-bearing sperm.

Answer: B

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53. A colourblind mother and normal father would have

A. Colour blind sons and normal/carrier daughters

B. Colour blind sons and daughters

C. All colour blind

D. All normal

Answer: A

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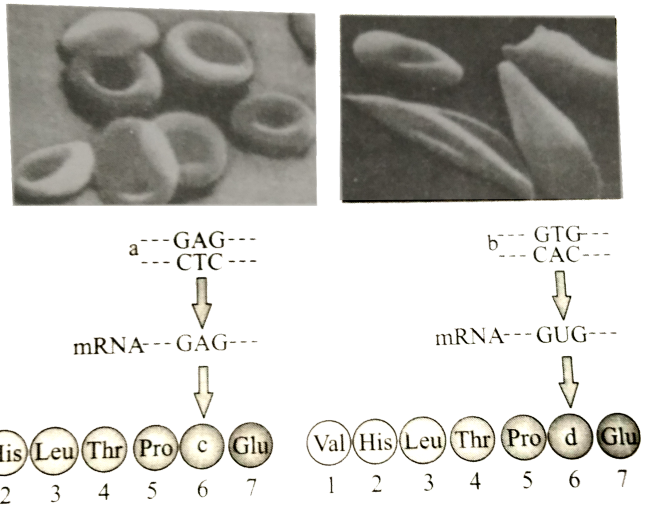
Section A Topic 6 Mendelian Disorders

1. Recognise the figure and find out the correct matching.



A. c-Glu, d-Val, a-normal Hb (A) gene, b-sickle cell Hb (S) gene

B. c-Glue, d-Val, b-normal Hb (A) gene, a-sickle cell Hb (S) gene

C. d-Glu, c-Val, a-normal Hb (A) gene, b-sickle cell Hb (S) gene

D. c-Glu, d-Val, b-normal Hb (A) gene, a-sickle cell Hb (S) gene

Answer: A

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Section A Topicwise Questions Topic 7 Chromosomal Disorders

1. Chromosomal disorders are caused due to

A. Absence of one of more chromosomes

B. Excess of one or more chromosomes

C. Abnormal arrangement of one or more chromosomes

D. All of the above

Answer: D

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2. Polyploidy condition is often seen in

A. Animals

B. Humans

C. Plants

D. Birds

Answer: C

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3. Chromosomal condition of Down 's syndrome is

A. Allosomal hypoaneuploidy

B. Autosomal aneuploidy

C. Allosomal aneuploidy

D. Partial autosomal deletion

Answer: B

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4. Which chromosome condition is Jacob's syndrome

A. 44 + XO

B. 44 + XXY

C. 44 + XYY

D. 45 + XYY

Answer: C

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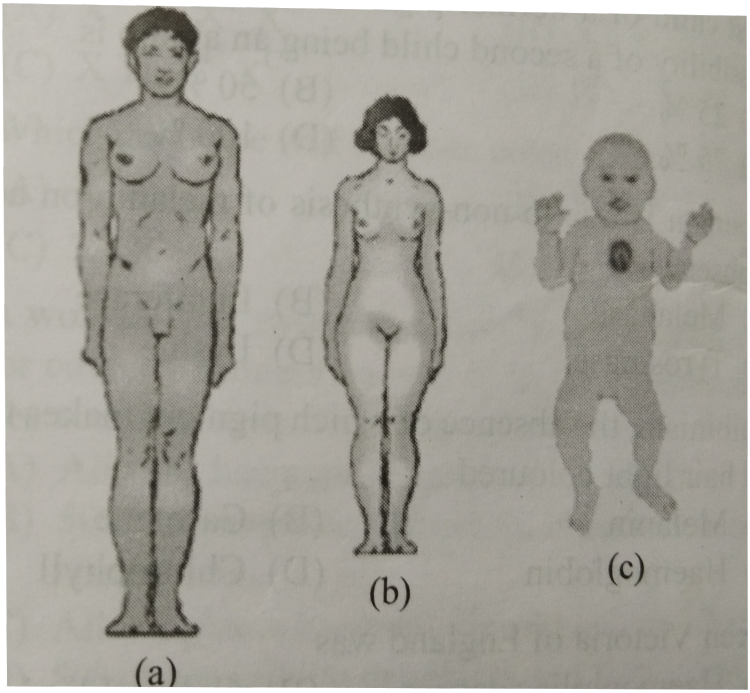
5. Recognise the figure and find out the correct matching.



A. a-Down's syndrome, c-Klinfelter's syndrome, b-Turner's syndrome

B. c-Down's syndrome, a-Klinfelter's syndrome, b-Turner's syndrome

C. b-Down's syndrome, c-Klinfelter's syndrome, a-Turner's sysndrome

D. c-Down's syndrome, b-Klinfelter's syndrome, a-Turner's syndrome

Answer: B

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6. Chromosome number of Down syndrome is :

A. 46

B. 47

C. 45

D. 23

Answer: B

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7. Gynaecomastia is a symptom of

A. Turners syndrome

B. Klinefelters syndrome

C. Downs syndrome

D. SARS

Answer: B

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8. Phenotypically females having rudimentary ovaries, underdeveloped breasts, short stture webbing neck , often subnormal intelligence suggests

A. Down's syndrome

B. Klinefelter's syndrome

C. Turner's syndrome

D. Haemophilic syndrome

Answer: C

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9. Pick out the correct statements

(A) Haemophilia is a sex-linked recessive disease

(B) Down's syndrome is due to aneuploidy

(C) Phenylketonuria is an autosomal recessive gene disorder

(D) Sickle cell anaemia is a x-linked recessive gene disorder

A. a, b, d correct

B. a, c, e correct

C. a, c correct

D. b, e correct

Answer: A

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10. Epicanthus skin fold above the eyes and transverser plamer crase are typical symptoms of

A. Cri-du-chat syndrome

B. Klinefelter's syndrome

C. Down's syndrome

D. Turner's syndrome

Answer: C

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11. A monosomic (2N-1) abnormality in human is

A. Klinefelter's syndrome

B. Turner's syndrome

C. Edward's syndrome

D. Down's syndrome

Answer: B

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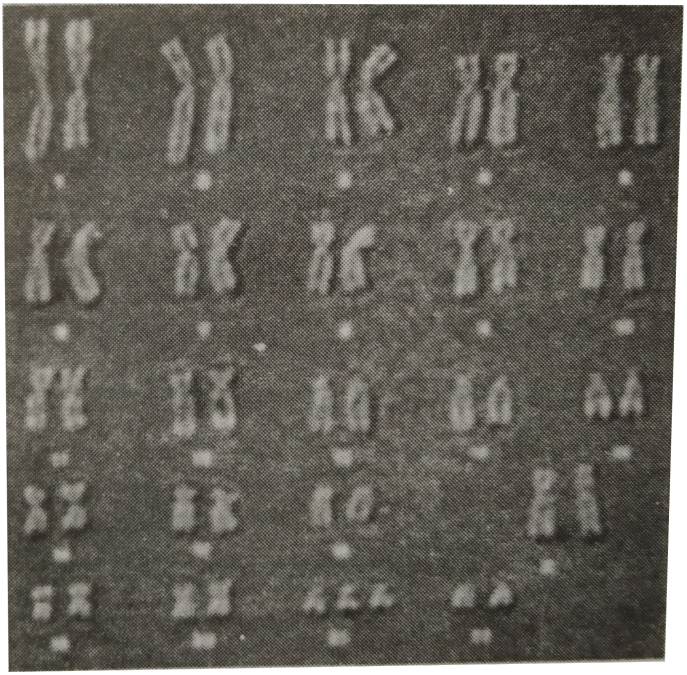
12. The chromosomal pattern of individual is shown here.

This individual is suffering from



A. Down's syndrome

B. Turner's syndrome

C. Klinefelter's syndrome

D. Edward's syndrome

Answer: A

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13. Frequency of Down syndrome increases when the maternal age is :

A. Below 35 years

B. Above 35 years

C. At the time of first pregnancy

D. After bearing three children

Answer: B

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14. Down's syndrome is caused by an extra copy of chromosome number 21. What percentage of offspring produced by an affected mother and a normal father would be affected by this disorder

A. $100\ \%$

B. $75\ \%$

C. $50\ \%$

D. $25\ \%$

Answer: C

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Section B Assertion Reasoning Questions

1. Assertion: During Mendel's investigations into inheritance patterns it was for the first time that statistical analysis and mathematical logic were applied to problems in biology.

Reason: Mendel investigated characters in the garden pea plant that were manifested as two opposing traits. e.g, tall or dwarf plants.

A. If both assertion and reasons are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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2. Assertion : Mendel conducted artificial pollination experiments for his genetic studies using true-breeding pea lines

Reason : A true-breeding line shows the stable trait inheritance and expression for several generations

A. If both assertion and reasons are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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3. Assertion : Starch synthesis in pea seeds is controlled by one gene.

Reason: This gene has two alleles (B and b)

A. If both assertion and reasons are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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4. Assertion: Dominance is not an autonomous feature of a gene or the product that is has information for.

Reason : Dominance depends much on the gene product and the production of a particular phenotype from this product.

A. If both assertion and reasons are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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5. Assertion: Morgan carried out several dihybrid crosses in Drosophila to study genes that were sex linked.

Reason : Morgan hybridised yellow bodied, white-eyed males to brown bodied, red eyed females and intercrossed their F_1 progeny.

A. If both assertion and reasons are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

View Text Solution

6. Assertion: When 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.

Reason: This is due to the physical association or linkage of the two genes.

A. If both assertion and reasons are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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7. Assertion: In each pregnancy there is always 50 per cent probability of either a male or a female child.

Reason: The genetic makeup of the sperm determines the sex of child.

A. If both assertion and reasons are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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8. Assertion: Alteration in chromosomes results in abnormalities or aberrations

Reason : Genes are known to be located on chromosomes.

A. If both assertion and reasons are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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9. Assertion: Study of the family history about inheritance of a particular trait provides an alternative of control crosses.

Reason: Control crosses that can br performed in pea plant are not possible in case of human beings.

A. If both assertion and reasons are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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10. Assertion: The individuals affected by Klinefelter's or Turner's syndrome are sterile.

Reason: Klinefelter's and Turner's syndrome are due to the aneuploidy.

A. If both assertion and reasons are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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11. Assertion :Mendelian disorders may be dominant or recessive.

Reason : By pedigree analysis it can be easily interpreted that trait is dominant or recessive.

A. If both assertion and reasons are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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12. Assertion: Mendelian disorders are transmitted to offspring on the same lines as in the principles of inheritance.

Reason: The pattern of inheritance of Mendelian disorders cannot be traced in a family by the pedigree analysis.

A. If both assertion and reasons are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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13. Assertion: Colour blindness occurs in about 8 per cent of male and only about 0.4 percent of females.

Reason: The genes that lead to read green colour blindness are on the X-chromosomes

A. If both assertion and reasons are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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Section D Chapter End Test

1. A ten year patient is found to have slanting eyes with epicanthic fold, hypertelorism dysplastic ears, mongoloid face and pro=truding tongue. The patient is suffering from

A. Down's syndrome

B. Klinefelter's syndrome

C. Turner's syndrome

D. Cri-du-chat syndrome

Answer: A

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2. Phenomenon of an allele of one gene suppressing the activity of alleles of another gene is called

A. Dominance

B. Epistasis

C. Suppression

D. Inactivation

Answer: B

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3. Where are barr bodies found ?

A. Ova

B. Sperms

C. Somatic cells of man

D. Somatic cells of woman

Answer: D

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4. In which one of the following, complementary gene interaction ratio of 9 : 7 is observed?

A. Four o' clock plant

B. Feather colour in Fowl

C. Flower colour in Sweet Pea

D. Fruit shape in Shepherd's purse

Answer: C

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5. Longest chromosomes occur in

A. Lilium

B. Zea mays

C. Allium

D. Trillium

Answer: D

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6. Diagrammatic representation of chromosomes I s

A. Karyotype

B. Idiogram

C. Chromosome map

D. Phenogram

Answer: B

Watch Video Solution

7. The accumulation of proten called amyloid β peptide in human brain causes

A. Addison's disease

B. Huntington's disease

C. Alzheimer's disease

D. Parkinson's disease

Answer: C

Watch Video Solution

8. Barr body occurs in

A. Interphase cell of female mammal

B. Interphase cell of male mammal

C. Prophase cell of male mammal

D. Prophase cell of female mammal

Answer: A

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9. Barr body is observed in

A. Basophils of male

B. Neutrophils of female

C. Basophils of female

D. Eosinophils

Answer: B

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10. Genes for cytoplasmic male sterility in plants are located in

A. Chloroplast genome

B. Mitochondrial genome

C. Nuclear genome

D. Cytosol

Answer: B

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11. Genic balance of sex determination was proposed by

A. Bridges

B. Mendel

C. Balbiani

D. Morgan

Answer: C

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12. The two eucaryotic organelles responsible for cytoplasmic inheritance are

A. Lysosomes and mitochondris

B. Chloroplasts and lysosomes

C. Mitochondria and chloroplasts

D. Mitrochondria and Golgi complex

Answer: C

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13. The most likely reason for the development of resistence against pesticides in insects damaging a crop is

A. Genetic recombination

B. Acquired heritable changes

C. Random mutations

D. Directed mutations

Answer: C

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14. Which of the following discoveries resulted in a Nobel Prize

A. Recombination of linked genes

B. X-rays induce sex-linked recessive lethal mutations

C. Genetic Engineering

D. Cytoplasmic inheritance

Answer: B

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15. Colchicine was discovered by

A. Flemming

B. Blackeslee

C. Dumas

D. Muller

Answer: B

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16. Number of linkage groups in pisum sativum is

A. 4

B. 5

C. 7

D. 10

Answer: C

Watch Video Solution

17. Human chromosomes have been grouped on the basis of size and centromere into types

A. 5

B. 6

C. 7

D. 10

Answer: C

Watch Video Solution

18. Genic balance theroy holds good in case of

A. Humans

B. Drosophila

C. Grasshopper

D. Allium cepa

Answer: B

Watch Video Solution

19. Number of Barr bodies in XXXX female would be

A. 4

B. 3

C. 2

D. 1

Answer: B

Watch Video Solution

20. Inheritance would be extranuclear in case of

A. Killer Amoeba

B. Killer Paramecium

C. Killer Euglena

D. Killer Hydra

Answer: B

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21. Genes located on differential region of Y-chromosome are called

A. XY linked genes

B. Holandric gense

C. Autosomal genes

D. Mutant genes

Answer: B

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22. Exchange of segments between non -sister chromatids of homologous chromosomes is

A. Translocation

B. Inversion

C. Crossing over

D. Tetrasomy

Answer: A

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23. A fruitfly exhibiting both male and female traits is

A. Heterozygou

B. Gynandromorph

C. Hemizygous

D. Gynander

Answer: B

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24. Out of A-T,G-C pairing bases of DNA may exist in alternate valencyt state owing to arrangement calld

A. Analogue substitution

B. Tautomerisational mutation

C. Frame-shift mutation

D. Point mutation

Answer: B

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25. The term eugenics was coined by :

A. Urey

B. Lederberg

C. Galton

D. Morgan

Answer: C

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26. Which corp varietuy is not due to induced mutations?

A. Reimei of Rice

B. Prabhat of Arhar

C. Sharbati Sonora of Wheat

D. Aruna of Castor

Answer: B

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27. Recessive lethal genes are:

A. Causative for appearance of ancestral traits

B. Always recessive

C. Genes present on different chromosomes

D. Killer in homozygous state

Answer: D

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28. Pure line is connected with development of

A. homozygosity

B. heterozygosity

C. Homozygosity and self - assortment

D. Heterozygosity and linkage.

Answer: C

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29. If BB represent barr body and Y_0Y-body XXY or Klinefelters syndrome has

A. BB-1, Y_0,-0

B. $\mathrm{BB}-1, Y_0-1$

C. $\mathrm{BB}-0, Y_0-1$

D. $\mathrm{BB}-2, Y_0-1$

Answer: B

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30. Down's syndrome is due to

A. Crossing over

B. Linkage

C. Sex-linked inheritance

D. Nondisjunction of chromosomes

Answer: D

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31. In Down 's syndrome of a male child , the sex complement is

A. XO

B. XY

C. XX

D. XXY

Answer: B

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32. In a cross between AABB $\times$ aabb, the ratio of F_2 genotype between AABB, AaBB,Aabb and aabb would be

A. $9:3:3:1$

B. $2:1:1:2$

C. $1:2:2:1$

D. $7:5:3:1$

Answer: C

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33. Mendel's principles are related to

A. Evolution

B. Reproduction

C. Variations

D. Heredity

Answer: D

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34. If F_1 generation has all tall plants and ratio of F_2 generation is 3 tall : 1 dwarf, it proves

A. Law of independent assortment

B. Law of Segregation

C. Law of dominance

D. Incomplete dominance

Answer: C

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35. Who studied sex linked inheritacne for first time?

A. Morgan

B. Khorana

C. Pasteur

D. Von Helmont

Answer: A

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36. Sex chromosomes of birds are

A. ZZ-ZW

B. ZZ-WW

C. XX-XY

D. XO-XX

Answer: A

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37. Sex chromosomes of a female bird are

A. XO

B. ZZ

C. ZW

D. XX

Answer: C

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38. Which is correct?

A. Birds have ZZ (female) -ZW (male) sex determination

B. Drosophila has XX-XY sex determination

C. Henking discovered Y-chromosome

D. Grasshoper show XX-XY sex determination

Answer: B

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39. The substance which causes a defineite change in genes is called

A. Mutagen

B. Toxin

C. Cytotoxin

D. Alkaloid

Answer: A

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40. Mutations are responsible for

A. Extinction of organism

B. Variations in population

C. Increase in population

D. Maintaining genetic continuity

Answer: B

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41. Smallest segment of genetic material affected by mutation is

A. Recon

B. Cistron

C. Muton

D. Exon

Answer: C

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42. Sickle cell anamia has not been eleiminated from African polulation as

A. It is controlled by dominant genes

B. It is controlled by recessive genes

C. It is not a fatal disease

D. It provides immunity against malaria

Answer: D

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43. Probability of male child of haemophilic father and normal mother becoming haemophilic is

A. $0\ \%$

B. $25\ \%$

C. $50\ \%$

D. $100\ \%$

Answer: A

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44. Deficenecy of VIII factor leads to

A. Haemophilia A

B. Haemophilia B

C. Haemophilia C

D. Haemophilia D

Answer: A

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45. Math the columns

	Column I		Column II
1.	Sickle cell anaemia	a.	7^{th} chromosome
2.	Phenylketonuria	b.	4^{th} chromosome
3.	Cystic fibrosis	c.	11^{th} chromosome
4.	Huntington's disease	d.	X-chromosome
5.	Colour blindness	e.	12^{th} chromosome

A. 1-a, 2-c, 3-d, 4-b, 5-e

B. 1-c, 2-e, 3-a, 4-b, 5-d

C. 1-b, 2-c, 3-d, 4-e, 5-a

D. 1-b, 2-a, 3-c, 4-e, 5-d

Answer: B

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46. Select the correct bases of DNA, RNA and amino acid of beta chain causing sickle cell anaemia.

	DNA	RNA	Amino acid
(A)	CAC—GUG	GAG	Glutamic acid
(B)	CAC—GTG	GUG	Valine
(C)	CTC—GAG	GUG	Valine
(D)	CTC—GAG	GUG	Glutamic acid

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47. Sickle cell anaemia is due to mutation of

A. CTC to CAC

B. CTG to CAG

C. CAG to CTC

D. CGC to CAC

Answer: A

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48. The hereditary disease in which the urine of a person turns black on exposure to air due to the presence of homogentisic acid is known as:

A. Ketonuria

B. Phenylketonuria

C. Haematuria

D. Alkaptonuria

Answer: D

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49. In XO type of sex determination

A. Females produce two types of gametes

B. Males produce two types of gametes

C. Females produce gametes with Y-chromosome

D. Males produce gametes with Y-chromosome

Answer: B

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50. Mendel's law of independent assortment can be demonstrated by

A. Test cross

B. Back cross

C. Monohybrid cross

D. Dihybrid cross

Answer: D

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Others

1. Read of following statements and find out the incorrect statement(s).

a. Genetics deals with the inheritance, as well as variation of characters from parents to offspring.

b. Variation is the process by which characters are passed on from parent to progeny.

c. Inheritance is the basis of heredity.

d. Inheritance is the degree by which progeny differ from their parents.

e. Human knew from as early as 8000-10000 B.C. that one of the causes of variation was hidden in sexual reproduction

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2. Read of following statements and find out the incorrect statement(s).

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e. Human knew from as early as 8000-10000 B.C. that one of the causes of variation was hidden in sexual reproduction

A. b, d and e

B. a, c and e

C. b and d only

D. e only

Answer: A

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3. Gregor Mendel conducted hybridisation experiments

A. Seven years (1865-1872)

B. Seven years (1856 - 1863)

C. Seven years (1853 - 1860)

D. Fourteen years (1853 - 1867)

Answer: B

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4. Sahival cow in... a ..... was developed by .... b....

A. a-Punjab, b-Natural Selection and Domestication

B. a-Haryana, b-Natural Selection and Artificial Selection.

C. a-Haryana, b-Artificial Selection and Domestication

D. a-Punjab, b-Artificial Selection and Domestication

Answer: D

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5. Occasionally, a single gene may express more than one effect. The phenomenon is called

A. Polygenic inheritance

B. Pleiotropy

C. Multiple allelism

D. Co-dominance

Answer: B

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6. Read of following statements regarding Mendelian inheritance and choose the correct option.

1. Mendel's experiments had small sample size which gave greater credibility to the data.

2. A true breeding line shows a stable trait inheritance and expression for several generations.

3. In a dissimilar pair of factors, one member of the pair dominates over the other.

4. A recessive parental trait is expressed only in its heterozygous condition.

5. Two alleles of a gene are located on homologous sites on homologous chromosomes.

A. 2 alone is correct

B. 2, 3 and 5 are correct

C. 1 and 4 are correct

D. 1, 3 and 5 are correct

Answer: B

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7. Mendel conduced hybridization experiments on garden pea for:

A. 4 years

B. 5 years

C. 6 years

D. 7 years

Answer: D

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8. Which of the following is not a correct dominant-recessive trait pairs of Pisum sativum?

A. Axial-terminal flower position, Tall - dwarf stem height

B. Yellow-green pod colour, round - wrinkled seed shape

C. Full-constricted pod shape, Yellow- green seed colour

D. Violet -white flower colour, Inflated - constricted

Answer: B

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9. The ultimate biological unit which controls heredity, is called :

A. Genome

B. Chromosome

C. Genotype

D. Gene

Answer: D

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10. Variation found in offspring are important component of

A. Genetics

B. Speciation

C. Species fixation

D. Heredity

Answer: A

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11. Test cross is a cross between

A. $\text{Hybrid} \times \text{Dominant parent} \quad (\text{Tt} \times \text{TT})$

B. $\text{Hybrid} \times \text{Recessive parent} (\text{Tt} \times \text{TT})$

C. $\text{Hybrid} \times \text{Hybrid} (\text{Tt} \times \text{Tt})$

D. All of the above

Answer: B

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12. The term 'genetics' was proposed by:

A. Johannsen

B. Morgen

C. Mendel

D. Bateson

Answer: D

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13. A gamete contains

A. Many alleles of a gene

B. All alleles of a gene

C. Two alleles of a gene

D. One allele of a gene

Answer: D

Watch Video Solution

14. Branch of biology dealing with heredity and variation is

A. Ecology

B. Evolution

C. Paleontology

D. Genetics

Answer: D

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15. Phenotype of an organism is result of

A. Mutations and linkages

B. Genotype and environmental interactions

C. Cytoplasmic effects and nutrition

D. Environment changes and sexual dimorphism

Answer: B

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16. Word genetics comes from

A. Gene

B. Genesis

C. Genome

D. Genomics

Answer: A

Watch Video Solution

17. Genes controlling seven traits in Pea studied by Mendel were actually located on

A. Seven chromosomes

B. Six chromosomes

C. Four chromosomes

D. Five chromosomes

Answer: C

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18. In pea, wrinkling of seeds is due to nonformation of starch because of the absence of:

A. Amylase

B. Invertase

C. Branching enzyme

D. Diastase

Answer: C

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19. Father of human genetics is

A. Curvier

B. Bateson

C. Mendel

D. Garrod

Answer: D

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20. Which is wrong about Mendel ?

A. He was born in 1822.

B. Mendel presented his work in the form of a paper at Heinzendorf in 1856.

C. Mendel carried out his experiments for 7 years.

D. Mendel died in 1884.

Answer: B

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21. For a given character, a gamete is always

A. Homozygous

B. Pure

C. Hybrid

D. Heterozygous

Answer: B

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22. Gregor Johann Mendel, the father of genetics was

A. Austrian monk

B. British monk

C. Italian monk

D. German scientist

Answer: A

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23. R and y genes of Maize lie very close to each other . When RRYY and rryy gneotypes are hybridised , F_2 genertion will show

A. Segregation in $9.3:3:1$

B. Segregation in $3:1$ ratio

C. Higher number of parental types

D. Higher number of recombinant types

Answer: C

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24. Assertion : Phenylketonuria is a recessive hereditary disease caused by the body 's failure to oxidize an amino acid phenylalanine to tyrosine , because of a defective enzyme.

Reason : It results in the presence of phenylalanine acid in the urine .

Watch Video Solution

25. Sickle-cell anaemia is :

A. Characterised by elongated sickle-like RBCs with with a nucleus

B. Caused by substitution of valine by glutamic acid in beta globin chain of haemoglobin

C. Caused by a change in a single base pair of DNA

D. An autosomal linked dominant trait.

Answer: C

Watch Video Solution

26. 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

C. Galactosemia is an inborn error of metabolism

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

Answer: A

Watch Video Solution

27. Alzhimer disease in humans is associated with the deficiency of

A. Gluetamic acid

B. Dopamine

C. Gamma amino butyric acid

D. Acetylcholine

Answer: D

Watch Video Solution

28. Point mutation is

A. Loss of gene

B. Change in a base of gene

C. Addition of a gene

D. Deletion of a segment of gene

Answer: B

Watch Video Solution

29. Human blood grouping is ABO instead of ABC because O in it refers to

A. No antigen A or B on RBCs

B. Other antigens besides A and B

C. Over dominance of its gene over A and B.

D. One antibody only either anti-A or anit-B

Answer: A

Watch Video Solution

30. Out of seven characters in Pea plant studied by Mendel, the number of flower based character was 1

A. 1

B. 3

C. 4

D. 2

Answer: D

Watch Video Solution

31. What type of sex determination is found in Grasshopper

A. $XX - YY$

B. $ZW - \mathbb{Z}$

C. $\mathbb{Z} - ZY$

D. $XX - XO$

Answer: D

Watch Video Solution

32. Select the correct statements from the ones given below with respect to dihybrid cross

A. Genes far apart on the same chromosome show very few recombinations.

B. Genes loosely linked in the same chromosome show similar recombinations as the tightly linked ones.

C. Tightly linked genes on the same chromosome

D. Tighly linked gens on the same chromosome show higher recombinations.

Answer: C

Watch Video Solution

33. Which one of the following symbols and its representation, used in human pedigree analysis is correct

A. (A) ◯ = unaffected male

B. (B) □ = unaffected female

C. (C) ◆ = male affected

D. (D) ■—○ = mating beetween relatives

Answer: D

Watch Video Solution

34. Which one of the following cannot be explained on the basis of Mendel's Law of dominance

A. Out of one pair of factors, one is dominant and the other recessive

B. Alleles do not show any blending and both the characters recover as such in F_2 generation

C. Factors occurs in pairs

D. Discrete unit controlling a particular characters is called a factor

Answer: B

Watch Video Solution

35. In Antirrhinium two plants with pink flowers were hybridized. The F_1 plants producedred, pink and white flowers in the proportion of 1 red, 2 pink and1 white. What could be the genotype of the two plants used for hybridization. Red flower colour is determined by RR, and white rr genes

A. rr

B. Rr

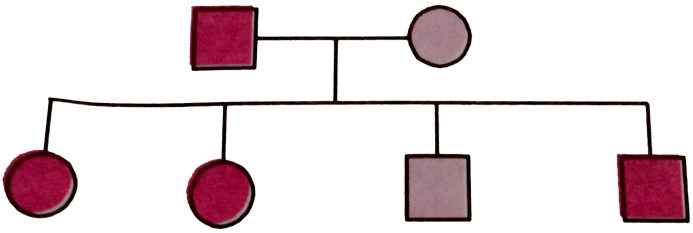
C. RR

D. RRrr

Answer: B

Watch Video Solution

36. Study the pedigree chart of certain family given here and select the correct conclusion



A. The female parent is heterozyous.

B. The parents could not have had a normal daughter for this character.

C. The trait under study could not be colour blindness

D. The male parent is homozygous dominant.

Answer: A

Watch Video Solution

37. The fruit fly Drosophila melanogaster was found to be very suitable for expermiental verification of chromosomal theory on inheritanc by Morgan and his coleagues because

A. It reproduce parthenogenetically

B. Smaller female is easily distinguishable from large male

C. A single mating produces two young flies

D. It completes life cycle in about two weeks

Answer: D

Watch Video Solution

38. Which one correctly determines the sex

A. XO condition in Turner's syndrome determines female sex

B. Homozygous XX produce male in Drosophila

C. Homozygous ZZ determine female sex in birds

D. XO determines male sex in Grasshoper

Answer: D

Watch Video Solution

39. Which external trait determines sex correctly

A. Female Cockroach-Anal cerci

B. Male shark-Claspers on pelvic fins

C. Female Ascaris- Curved posterior end

D. Male Frog-Copulatory pad on first digit of hind limb.

Answer: B

Watch Video Solution

40. If the first seven childern born to a particular pair of parents are all males ,what is the probability that the eighth child will also be a male ?

A. $1/2$

B. $1/4$

C. $1/8$

D. $1/16$

Answer: A

Watch Video Solution

41. Asssertion: A geneticist crossed two plants. He got 50% tall and 50% dwarf plants in the progeny.

Reason: One parent was heterozygous tall while the other was dwarf.

View Text Solution

42. Assertion: $Hb^S Hb^S$ is homozygous condition of sickle cell anaemia.

Reason: It occurs due to substitution of glutamic acid by valine at sixth position in β-chain of haemoglobin.

Watch Video Solution

43. Both husband and wife have normal vision though their father were colour blind and mother did not have any gene for colour blindness .The probability of their daughter becoming colour blind is :

A. $0\ \%$

B. $25\ \%$

C. $50\ \%$

D. $75\ \%$

Answer: A

Watch Video Solution

44. Which one is a sex linked disorder?

A. Phenyketonuria

B. Sickle cell anaemia

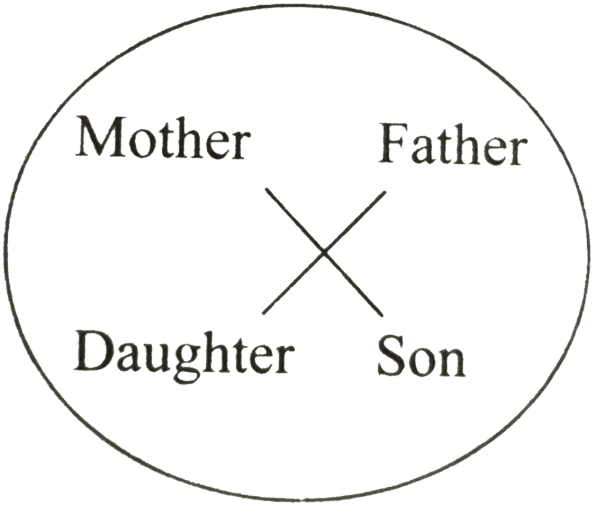
C. Haemophilia

D. Thalassemia

Answer: C

Watch Video Solution

45. What is the example of inheritance pattern shown?



A. Phenyketonuria

B. Sickle cell anaemia

C. Haemophilia

D. Thalassemia

Answer: C

Watch Video Solution

46. Turner's syndrome is

A. Case of monosomy

B. Cause of sterility in females

C. Absence of Barr body

D. All of the above

Answer: D

Watch Video Solution

47. A test cross is performed to know

A. Genotype of F_2 dominants

B. Linkage between two traits

C. Number of alleles of a gene

D. Success of intervarietal and interspecific cross.

Answer: A

Watch Video Solution

48. If haemoglobin (Hb) of a normal individual and a sickle-cell anaemia patient are run in electrophoretic field, they will show

A. Same mobility

B. Different mobility

C. No mobility

D. Haemoglobin of patient does not move.

Answer: B

Watch Video Solution

49. Both alleles express in heterozygote when they are

A. Recessive

B. Lethal

C. Semidominant

D. Codominant

Answer: D

Watch Video Solution

50. Among the seven pairs of contrasting traits in pea plant as studied by Mendel, the number of traits related to flower, pod and seed respectively were

A. 2, 2, 2

B. 2, 2, 1

C. 1, 2, 2

D. 1, 1, 2

Answer: A

Watch Video Solution

51. All are dominant traits studied by Mendel

A. Axial flower, green pod, green seed

B. Green pod, inflated pod, axial flower

C. Yellow seed, violet flower, yellow pod

D. Round seed, constricted pod, axial flower

Answer: B

Watch Video Solution

52. In the cross YYRR x yyrr, the number of green coloured seeds in F_2 generation is

A. $9/16$

B. $6/16$

C. $4/16$

D. $1/16$

Answer: C

Watch Video Solution

53. F_2 generation has genotypic and phenotypic ratio of 1:2:1. It is

A. Codominance

B. Monohybrid cross with complete dominance

C. Monohybrid cross with incomplete dominance

D. Monohybrid cross with incomplete dominance

Answer: D

Watch Video Solution

54. If both the parents are carriers for thalassemia which is an autosomal recessive disorder what are fthe chances of pregnancy resulting in an affected child

A. $25\ \%$

B. $100\ \%$

C. No chance

D. $50\ \%$

Answer: A

Watch Video Solution

55. Which Mendelian idea is depricted by a cross in which the F_1 generations resembles both the parents?

A. Inheritance of one gene

B. Codominance

C. Incomplete dominance

D. Law of dominance

Answer: B

Watch Video Solution

56. Which of the following cannot be detected in a developing foetus baby amniocentesis

A. Down syndrome

B. Jaundice

C. Klinefelter syndrome

D. Sex of the foetus

Answer: B

Watch Video Solution

57. The incorrect statement with regard to haemophilia is

A. It is a dominant disease

B. A single protein involved in the clotting of blood is affected

C. It is a sex-linked disease

D. It is a recessive disease

Answer: A

Watch Video Solution

58. If two persons with 'AB' blood group marry and have sufficiently large number of children, these children could be classified as 'A' blood group: 'AB' blood group 'B' blood group in 1:2:1 ratio. This is an example of

A. Parital dominance

B. Complete dominance

C. Codominance

D. Incomplete dominance

Answer: C

Watch Video Solution

59. which of the following statements is not true of two genes that show 50 % recombination frequency ?

A. The genes show independent assortment

B. If the genes are present on the same chromosome., they undergo more than one crossovers in every meiosis.

C. The genes may be on different chromosomes.

D. The genes are tightly linked

Answer: D

Watch Video Solution

60. Assertion: Only a boy child chould be born with a subtitution of glutamic acid by valine on 6th codon of β-chain of haemoglobin.

Reason: The gene for above mutation occurs on Y-chromosome.

Watch Video Solution

61. Fruit colour in squash is an example of

A. Inhibitory genes

B. Recessive epistasis

C. Dominant epistasis

D. Complementary genes

Answer: C

Watch Video Solution

62. A man whose father was colour blind marries a woman who has a colour blind mother and normal father .What percentage of male childern of this couple will be colour blind ?

A. $75\ \%$

B. $25\ \%$

C. $0\ \%$

D. $50\ \%$

Answer: B

Watch Video Solution

63. In a population of 1000 individuals 360 belong to genototype AA ,480 to Aa and the remaining 160 to aa Based on this data ,the frequency of allele A in the population is

A. 0.7

B. 0.4

C. 0.5

D. 0.6

Answer: D

Watch Video Solution

64. A human female with turner's syndrome

A. Is able to produce children with normal husband

B. Has 45 chromosomes with XO.

C. Has one additional X chromosome

D. Exhibits male characters

Answer: B

Watch Video Solution

65. Linkage refers to

A. Co-inheritance of two alleles of the same gene

B. Attached X-chromosomes in Drosophila

C. Co-inheritance of two different genes

D. Role of sex-chromosomes in sex-determination.

Answer: C

Watch Video Solution

66. Pleiotropy refers to a situation where

A. A gene affects one specific trait only

B. A gene affects more than one seemingly unrelated traits

C. Many small genes affect a single trait

D. A single gene masks the effect of another trait

Answer: B

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67. Klinefelter's syndrome is caused due to the

A. Presence of an additional copy of the chromosome nubmer 21

B. Absence of one of the X-chromosome, i.e., 45 with XO

C. Presence of an additional copy of X-chromosome resulting into a karyotype of 47,XXY

D. Presence of an additional copy of chromosome number 17

Answer: C

Watch Video Solution

68. ABO blood grouping in human beings cites the example of

A. Co-dominance

B. Incomplete Dominance

C. Multiple alleles

D. Law of dominance

Answer: C

Watch Video Solution

69. A colour blind man marries a normal woman (without and history of colour blindness in her family). What proportion of their sons will be colour blind?

A. $50\ \%$

B. $25\ \%$

C. $12.5\ \%$

D. $0\ \%$

Answer: D

Watch Video Solution

70. Haemophilia is more common in males than females, because it is

A. Dominant autosomal

B. Dominant X-linked

C. Recessive X-linked

D. X-linked.

Answer: C

Watch Video Solution

71. A person with Klinefelter's syndrome has chromosomes

A. XX

B. XY

C. XYY

D. XXY

Answer: D

Watch Video Solution

72. Gregor Mendel selected Pea plant for his genetic experiments, because

A. Many pure varieties of pea are available

B. The reproductive organs of pea plant are enclosed by petals and generally self-pollination and fertilization takes place & accidentally of two there is no possibility of hybridization

C. The hybrids obtained by reproduction of two different varieties are fertile.

D. All of the above statement are correct.

Answer: D

Watch Video Solution

73. "Sickle cell anaemia is a molecular disease". This statement was proposed by

A. Daniel Branton

B. Svedburg

C. Linus Pauling

D. Donal Voet

Answer: C

Watch Video Solution

74. In his classic experiment on Pea plants, Mendel did not use

A. Pod length

B. Seed shape

C. Flower position

D. Seed colour

Answer: A

Watch Video Solution

75. Which of the following biomolecules does have phosphodiester bond

A. Monosaccharides in a polysaccharide

B. Amino acids in a polypeptide

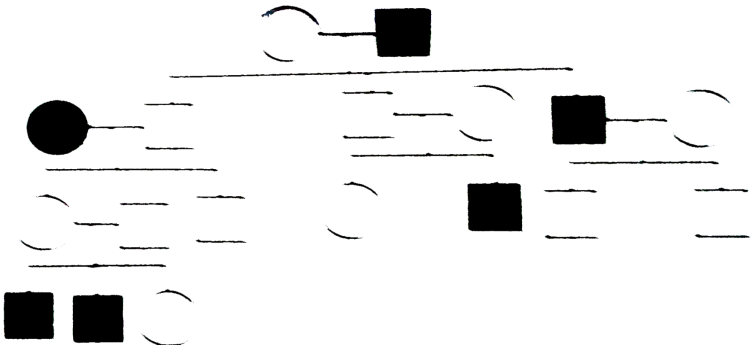
C. Nucleic acids in a nucleotide

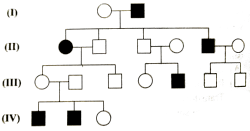
D. Fatty acids in a diglyceride

Answer: C

Watch Video Solution

76. In the following human pedigree, the filled symbols represent the affected individuals. Identify the type of given pedigree



A. 

B.

C.

D.

Answer: B

Watch Video Solution

77. A gene showing codominance has:

A. Alleles tightly linked on the same chromosome

B. Alleles that are recessive to each other

C. Both alleles independently expressed in the heterozygote

D. One allele dominant on the other

Answer: C

Watch Video Solution

78. the term 'linkage' was coined by :

A. T. Boveri

B. G. Mendel

C. W. Suttong

D. T.H. Morgon

Answer: D

Watch Video Solution

79. A population will not exist in Hardly-Weinberg equilbrium if

A. There is no migration

B. The population is large

C. Individuals mate selectively

D. There are no mutations

Answer: C

Watch Video Solution

80. An abnormal human baby with XXX sex chromosomes was born due to

A. Fusion of two ova and one sperm

B. Fusion of two sperms and one ovum

C. Formation of abnormal sperms in the father

D. Formation of abnormal ova in the mother

Answer: D

Watch Video Solution

81. Multiple alleles are present:

A. At the same locus of the chormosome

B. On non-sister chromatids

C. On different chromosomes

D. At different loci on the same chromosome.

Answer: A

Watch Video Solution

82. How many pairs of contrasting characters in pea plants were studied by Mendel in his experiments?

A. Eight

B. Seven

C. Five

D. Six

Answer: B

Watch Video Solution

83. In sea urchin DNA, which is double stranded, 17% of the bases were show to be cytosine. The percentages of the other three bases expected

to be present in this DNA are

A. $G-17\,\%\,,A-33\,\%\,,T-33\,\%$

B. $G-8.5\,\%\,,A-50\,\%\,,T-24.5\,\%$

C. $G-34\,\%\,,A-24.5\,\%\,,T-24.5\,\%$

D. $G-17\,\%\,,A-16.5\,\%\,,T-32.5\,\%$

Answer: A

Watch Video Solution

84. A man with blood group 'A' marries a women with blood group 'B'. What are al the posssible blood groups of their offsprings?

A. A, B, AB and O

B. O only

C. A and B only

D. A, B and AB only

Answer: A

Watch Video Solution

85. Which is the most common mechanism of genetic varisation in the poplulation of a sexually-reproducing organism

A. Genetic drift

B. Recombination

C. Transduction

D. Chromosomal aberrations

Answer: B

Watch Video Solution

86. Alleles are:

A. Different molecular forms of a gene

B. Heterozygotes

C. Different phenotype

D. True breeding homozygotes

Answer: A

Watch Video Solution

87. Pick out the correct statements

(A) Haemophilia is a sex-linked recessive disease

(B) Down's syndrome is due to aneuploidy

(C) Phenylketonuria is an autosmal recessive gene disorder

(D) Sickle cell anaemia is a x-linked recessive gene disorder

A. a, c and d are correct

B. a, b and c are corrrect

C. a and d are correct

D. b and d are correct

Answer: B

Watch Video Solution

88. A tall true breeding garden pea plant is crossed with a dwarf true breeding garden pea plant. When the F_1 plant were selfed the resulting genotypeswere in the ratio of

A. 3 : 1 : : Tall : Dwarf

B. 3 : 1 : : Dwarf : Tall

C. 1 : 2 : 1 :: Tall homozygous : Tall heterozygous : Dwarf

D. 1 : 2: 1 :: Tall heterozygous : Tall homozygous : Dwarf

Answer: C

Watch Video Solution

89. Match the terms in Column-I with their description in Column-II, and choose the correct option.

	Column I		Column II
(a)	Dominance	(i)	Many genes govern a single character
(b)	Codomi-nance	(ii)	In a heterozygous organism only one allele expresses itself
(c)	Pleiotropy	(iii)	In a heterozygous organism both alleles express them-selves fully
(d)	Polygenic inheritance	(iv)	A single gene influences many characters

A. a-iv, b-i, c-ii, d-iii

B. a-iv, b-iii, c-i, d-ii

C. a-ii, b-I, c-iv, d-iii

D. a-ii, b-iii, c-iv, d-i

Answer: D

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90. In a testcross involving F_1 dihybrid flies, more parental-type offspring were produced than the recombinant-type offspring. This indicates:

A. The two genes are linked are present on the same chromosome

B. Both of the characters are controlled by more than one gene

C. The two genes are located on two different chromosomes

D. Chromosomes failed to separate during meiosis

Answer: A

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91. Which of the following most appropriately describes haemophilia ?

A. Chromosomal disorder

B. Dominant gene disorder

C. Recessive gene disorder

D. X-linked recessive gene disorder

Answer: D

Watch Video Solution

92. The genes for ABO blood group is located on

A. Chromosome 4

B. Chromosome 7

C. Chromosome 9

D. Chromosome 11

Answer: C

Watch Video Solution

93. Down syndrome is one of the most common chromosome abnormalities in humans. It occurs

A. When there is an extra copy of chromosomes 21

B. When there is an extra copy of chromosomes 22

C. When there is an extra copy of chromosomes 11

D. When there is an extra copy of chromosomes 09

Answer: A

Watch Video Solution

94. The mechanism that causes a gene to move from one linkage group to another is called :

A. Translocation

B. Crossing-over

C. Inversion

D. Duplication

Answer: A

Watch Video Solution

95. A true breeding plant is:

A. Near homozygous and produces offspring of its own kind

B. Always homozygous recessive in its genetic constitution

C. One that is able to breed on its own

D. Produced due to cross-pollination among unrelated plants

Answer: A

Watch Video Solution

96. If a colour blind man marries a woman who is homozygous for normal colour vision,the probability of their son being colour blind is :

A. 0.75

B. 1

C. 0

D. 0.3

Answer: C

Watch Video Solution

97. Thalassemia and sickle cell anemia are caused due to a problem in globin molecule synthesis. Select the correct statement

A. Both are due to a quantitative defect in globin chain synthesis.

B. Thalassemia is due to less synthesis of globin molecules.

C. Sickle cell anaemia is due to a quantitative problem of globin molecules.

D. Both are due to a qualitative defect in globin chain synthesis.

Answer: B

Watch Video Solution

98. The genotypes of husband and wife are I^AI^B and I^Ai. Among the blood groups of their children how many different genotypes and phenotypes are possible

A. 3 genotypes , 4 phenotypes

B. 4 genotypes , 3 phenotypes

C. 4 genotypes , 4 phenotypes

D. 3 genotypes , 3 phenotypes

Answer: B

Watch Video Solution

99. A disease caused by an autosomal primary non-disjunction is

A. Klinefelter's Syndrome

B. Turner's Syndrome

C. Sickel Cell Anemia

D. Down's Syndrome

Answer: D

Watch Video Solution

100. Among the following characters, which one was not considered by Mendel in his experiment on pea

A. Trichomes - Glandular or non-glandular

B. Seed - Green or Yellow

C. Pod- Inflated or Constricted

D. Stem- Tall or Dwarf

Answer: A

Watch Video Solution

101. Which one form those given below is the periods for Mendel's hybridization experiments

A. 1840-1850

B. 1857-1869

C. 1870-1877

D. 1856-1863

Answer: D

Watch Video Solution

102. Select the correct statement.

A. Franklin Stahl coined the term linkage".

B. Punnett square was developed by a British scientist.

C. Spliceosomes take part in translation.

D. Transduction was discovered by S. Altman.

Answer: B

Watch Video Solution

103. Which of the following pairs is wrongly matched?

A. Starch synthesis in pea : Multiple alleles

B. ABO blood grouping : Co-domiance

C. XO type sex determination : Grasshoper

D. T.H. Morgon : Linkage

Answer: A

Watch Video Solution

104. Select the correct match.

A. Ribozyme-Nucleic acid

B. $F_2 \times$ Recessive parent -Dihybrid cross

C. T.H Morgan - Transduction

D. G. Mendel-Transformation

Answer: A

Watch Video Solution

105. Which of the following characteristics represent 'Inheritance of blood groups' in humans?

a. Dominance

b. Co-dominance

c. Multiple allele

d. Incomplete dominance

e. Polygenic inheritance

A. b, c and e

B. a, b and c

C. b, d and e

D. a, c and e

Answer: B

Watch Video Solution

106. A woman has an X-linked condition on one of her X chromosomes. This chromosomes can be inherited by

A. Only daughters

B. Only sons

C. Only grandchildren

D. Both sons and daughters

Answer: D

Watch Video Solution

107. Discontinuous variations are

A. essential features

B. acquired characters

C. non-essential changes

D. mutations

Answer: D

Watch Video Solution

108. Mirabilis jalapa shows

A. Codominance

B. Incomplete Dominance

C. dominance

D. Complementary genes

Answer: B

Watch Video Solution

109. Frameshift mutation occurs when :

A. base is added

B. base is deleted

C. base is added or deleted

D. none of the above

Answer: C

Watch Video Solution

110. Pure line breed refers to

A. homozygosity

B. heterozygosity

C. Linkage

D. both (B) and (C)

Answer: A

Watch Video Solution

111. If a homozygous red flowered plant is crossed with a homozygous white flowered plant, the offspring would be

A. all red flowered

B. half red flowered

C. half white flowered

D. all white flowered

Answer: A

Watch Video Solution

112. One of the genes present exclusive on the X- chromosome in humans is concerned with :

A. Baldness

B. Red-green colour blindness

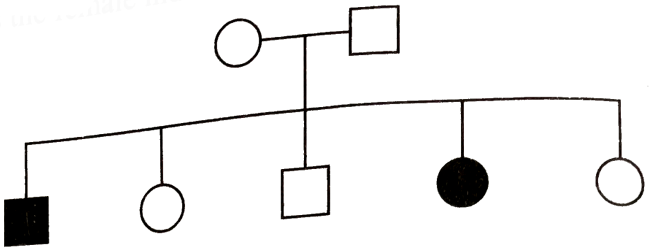
C. Facial hair/moustaches in males

D. Night blindness

Answer: B

Watch Video Solution

113. Given ahead 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 and circles the female individuals.



FREE
EAR-LOBE

ATTACHED
EAR-LOBE

Which one of the following conclusion drawn is correct ?

A. The parents are homozygous recessive

B. The trait is Y-linked.

C. The parents are homozygous dominant

D. The parents are heterozygous

Answer: D

Watch Video Solution

114. How many different types of gametes can be formed by F_1 progeny, resulting from the following cross $\mathrm{Tt} \times \mathrm{Rr}$?

A. 4

B. 8

C. 27

D. 64

Answer: A

Watch Video Solution

115. grain clour in wheat isdetermined by three pairs if polygenes. Following the cross AABBCC (dark colour) $\times$ aabbcc (light colour), in F_2 generation what proportion of the progeny likely to resemble either parent

A. Half

B. Less than 5%

C. One third

D. None of these

Answer: B

Watch Video Solution

116. The "cri-du-chat" syndrome is caused by change in chromosome structure involving

A. deletion

B. duplication

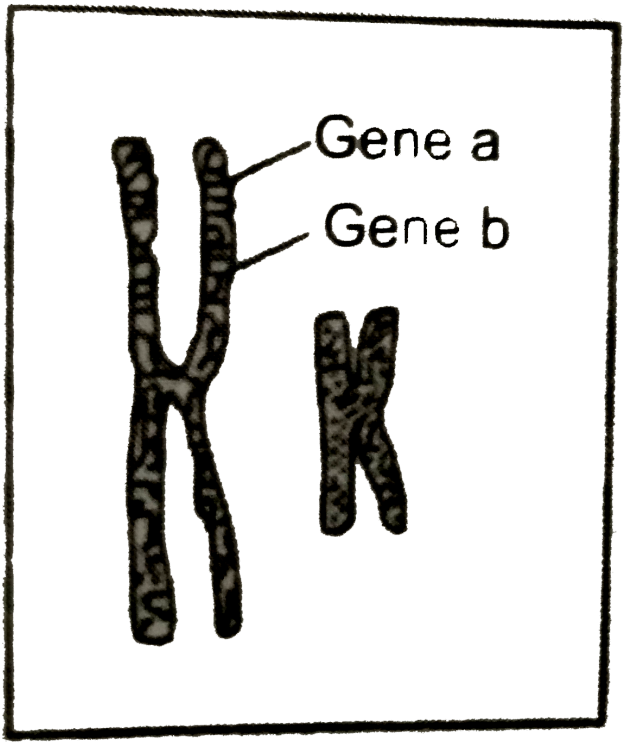
C. Inversion

D. translocation

Answer: A

Watch Video Solution

117. Given below is a highly simplified representation of the human sex chromosomes from a karyotype.



The gentos a anb b could be of

A. colour blindness and body height

B. attached ear lobe and Rhesus blood group

C. haemophilia and red-green colour blindness

D. phenylkatonuria and haemophilia

Answer: A

Watch Video Solution

118. XO-chromosomal abnormally in human beings causes

A. Turner's syndrome

B. Down's syndrome

C. Klinefelter syndrome

D. none of the above

Answer: A

Watch Video Solution

119. A normal woman whose father was colour blind, is married to a normal man. The sons would be

A. 75% colour blind

B. 50% colour blind

C. all normal

D. all colour blind

Answer: B

Watch Video Solution

120. Mother and father both have blood group 'A'. They have two children one with blood groyp 'O' and second one with blood group 'A'. They have

A. mother has homozygotic gene father has heterozygotic (IAIA)

B. both are homozygotic (IAIA).

C. mother is heterozygotic (IAi) and father is homozygotic (IAIA).

D. both are heterozygotic (IAi).

Answer: D

Watch Video Solution

121. Three children in a family have blood types O,AB and B respectively. What are the genotypes of their parents?

A. I^AI and I^Bi

B. I^AI^B and iI

C. I^BI^B and I^AI^A

D. I^AI^A and I^B i

Answer: A

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122. What occurs in point mutation?

A. Change in single base pair in DNA

B. Change in single base pair in RNA

C. Change in double base pair in DNA

D. Change in double base pair in RNA

Answer: A

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123. A female with underdeveloped feminine character possess

A. 47 chromosomes

B. 45 + XO

C. 49 chromosomes

D. Trisomy of 21^{st} chromosome

Answer: B

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124. A parent having autosomal dominant disease then what will be the probability of diseased offspring irrespective of sex of the child?

A. $90\ \%$

B. $10\ \%$

C. $50\ \%$

D. $100\ \%$

Answer: C

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125. 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. autosomal dominant

B. sex-linked dominant

C. sex-limited recessive

D. sex-linked recessive.

Answer: D

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126. Linkage is broken by

A. Meiosis

B. Mitosis

C. Control formation

D. DNA duplication

Answer: A

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127. Assertion : The honey bee queen copulates only once in her life time.

Reason : The honey bee queen can lay fertilized as well as unfertilized eggs.

A. If both assertion and reasons are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If the assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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128. Assertion : Persons sufffering from haemophilia fail to produce blood cloting factor . VIII.

Reason : Prothrombin producing plateles in such persons are found in very low concentration

A. If both assertion and reasons are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If the assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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129. Assertion : In humans, the gamete contributed by the male determines whether the child produced will be male or female

Reason : Sex in human is a polygenic trait depending upon a cumulative efffect of some genes on X-chromosome and some on Y-chromosome .

A. If both assertion and reasons are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If the assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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130. Assertion : In fabaceae family monocarpellary, unilocular ovary is present .

Reason : In fabaceae, placentation is parietal.

A. If both assertion and reasons are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If the assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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131. Assertion: XX-XY type of sex determination mechanism is an example of male heterogamety.

Reason: In birds, male heterogamety is seen as males produce two different types of gametes.

A. If both assertion and reasons are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If the assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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132. Assertion: Number of chromosomes in one genome is equal to the number of linkage groups.

Reason : Linkage groups give important information about the location of genes in the chromosomes.

A. If both assertion and reasons are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If the assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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133. Assertion : In humans, the gamete contributed by the male determines whether the child produced will be male or female

Reason : Sex in human is a polygenic trait depending upon a cumulative efffect of some genes on X-chromosome and some on Y-chromosome .

A. If both assertion and reasons are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If the assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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