BIOLOGY

BOOKS - TARGET PUBLICATION

HEREDITY AND VARIATION

Exercise

1. Choose the correct option and rewrite the complete statement:

Informatoin about protein synthesis is stored in the _____

A. mRNA

B. rRNA

C. DNA

D. tRNA

Answer: C

 Watch Video Solution

2. Choose the correct alternative

If the chromosome pair is not similar they are called _____

A. homologous chromosomes

B. allosomes

C. autosomes

D. heterologous chromosomes

Answer: D

Watch Video Solution

3. Choose the correct alternative

Chromosomes are mainly made up of

A. RNA

B. proteins

C. DNA

D. Carbohydrates

Answer: C

 Watch Video Solution

4. Choose the correct alternative

The centromere in _____chromosome is a the midpoint, so that arms are equal.

A. metacentric

B. sub-metacentric

C. acrocentric

D. telocentric

Answer: A

 Watch Video Solution

5. Choose the correct alternative

DNA was discovered by

A. Watson and Crick

B. Gregor Mendel

C. Frederick Miescher

D. Tumer

Answer: C

Watch Video Solution

6. Choose the correct alternative

Which of the following technique is used for the identification of criminals?

A. RNA fingerprinting

B. Protein fingerprinting

C. DNA fingerprinting

D. mRNA fingerprinting

Answer: C

Watch Video Solution

7. Choose the correct alternative

Which of the following nitrogenous base is absent in RNA?

A. Adenine

B. Cytosine

C. Uracil

D. Thymine

Answer: D

Watch Video Solution

8. Choose the correct alternative

All of Mendel's experiments were based up on visible characteristics of _____plant.

A. Funaria

B. papaya

C. Pisum sativum

D. peepal

Answer: C

Watch Video Solution

9. Choose the correct alternative

Identify the recessive character of pea plant among the following.

A. Round shape of seeds

B. White colour of flowers

C. Green colour of pods

D. Inflated shape of pods

Answer: B

Watch Video Solution

10. Choose the correct alternative

Which of the following genotype represents the pea plants with round yellow seeds?

A. rrYY

B. RRyy

C. rryy

D. RrYy

Answer: D

Watch Video Solution

11. Choose the correct alternative

How many genotypes and Phenotypes are seen in F_2 generation of a dihybrid cross?

A. 9 genotypes and 16 phenotypes

B. 4 genotypes and 9 phenotypes

C. 9 genotypes and 4 phenotypes

D. 16 genotypes and 9 phenotypes

Answer: C

Watch Video Solution

12. Choose the correct alternative

Single horizontal crease on palm is a symptom of _____

A. Turner syndrome

B. Klinefelter syndrome

C. Down syndrome

D. Leber Hereditary Optic Neuropathy

Answer: C

 Watch Video Solution

13. Choose the correct alternative

_____arises due to monosomy of X chromosome.

A. Klinefelter syndrome

B. Down syndrome

C. Albinism

D. Tumer syndrome

Answer: D

Watch Video Solution

14. Choose the correct alternative

Which of the following is a monogenic disorder?

A. Sickle-cell anemia

B. Leber Hereditary Optic Neuropathy

C. Diabetes

D. Blood pressure

Answer: A

Watch Video Solution

15. Choose the correct alternative

Which of the following test is done te diagnosis of sickle cell anaemia?

A. Positron emission tomography

B. WIDAL test and electrophoresis

C. Etectrocardiography

D. Solubility test and electrophoresis

Answer: D

Watch Video Solution

16. Choose the correct alternative

Which among the following is a mitochondrial disorder?

A. Down syndrome

B. Leber Hereditary Optic Neuropathy

C. Cleft lip

D. Spina bifida

Answer: B

Watch Video Solution

17. Choose the correct alternative

Harmful effects of smoking are due to ___Present in tobacco,

A. calamine

B. bicarbonate

C. nicotine

D. calcium oxychloride

Answer: C

Watch Video Solution

18. Complete the paragraph

Fill in the blanks by selecting the correct word from the bracket and complete the given paragraph.

(adenine, phosphoric acid, centromeres, cytosine, nucleotides, ribonucleic acid, guanine, thymine)

In 1953, Watson and Crick produced a model of the DNA molecule. As per this model, each strand in the molecule of DNA is made up of many small molecules known as _____. There are four types of nitrogenous bases adenine,

guanine, cytosine and thymine_____and _____are called as ‘purines’ while _____and_____ are called ‘pyrimidines’. In the structure of the nucleotide, a molecule of a nitrogenous base and _____are each joined to a molecule of sugar.

Watch Video Solution

19. Name the following

The process by which the new progeny is produced

Watch Video Solution

20. Name the following

Primary constriction on each chromosome.

Watch Video Solution

21. Name the following

Pair of chromosomes similar in shape and organization.

Watch Video Solution

22. Name the following

The basic unit of DNA

Watch Video Solution

23. Name the following

Model of DNA proposed by Watson and Crick.

Watch Video Solution

24. Name the following

Purines present in RNA

Watch Video Solution

25. Name the following

The molecule of RNA which is a component of the ribosome organelle.

Watch Video Solution

26. Name the following

Diseases or disorders occurring due to abnormalities in chromosomes and mutations in genes

Watch Video Solution

27. Name the following

Genetic disorder in which skin becomes pale, hairs are white and eyes are usually pink.

Watch Video Solution

28. Name the following

Brown pigment that gives colour to our eyes, skin and hair.

Watch Video Solution

29. Name the following

Polygenic disorders

Watch Video Solution

30. True or False.

If false, write the correct sentence

The branch of biology which studies the transfer of characteristics of organisms from one generation to the next, and genes in particular, is called genetics.

Watch Video Solution

31. True or False.

If false, write the correct sentence

Hereditary characters are transferred from

parents to offsprings by genes hence they are said to be structural and functional units of heredity.

Watch Video Solution

32. State whether the following statements are true or false. Correct the false statement:

Offsprings produced through asexual reproduction show greater variations as compared to those produced through sexual reproduction.

Watch Video Solution

33. True or False.

If false, write the correct sentence

Transfer of characteristics from parents to offspring is called heredity.

Watch Video Solution

34. True or False.

If false, write the correct sentence

The component which is in the nuclei of cells

and carries the hereditary characteristics is called chromosome.

Watch Video Solution

35. True or False.

If false, write the correct sentence

Centromere divides the chromosome into two parts and each part is known as arm.

Watch Video Solution

36. True or False.

If false, write the correct sentence

Efficient enzymes produce a greater quantity of the hormone due to which the height of the plant increases.

Watch Video Solution

37. True or False.

If false, write the correct sentence

Autosomes are chromosomes other than sex chromosomes.

Watch Video Solution

38. True or False.

If false, write the correct sentence

Sex chromosomes are also called as allosomes.

Watch Video Solution

39. True or False.

If false, write the correct sentence

Molecules of DNA are also called 'Master molecules

Watch Video Solution

40. True or False.

If false, write the correct sentence

Nitrogen bases in opposite stands of DNA helix are joined by ionic bonds.

Watch Video Solution

41. True or False.

If false, write the correct sentence

DNA is made up of ribose sugar, phosphate molecule and nitrogenous bases.

Watch Video Solution

42. True or False.

If false, write the correct sentence

Free earlobe is a recessive character in human beings.

Watch Video Solution

43. State whether the following statements are true or false. Correct the false statement:

Phenotype means the pairs of genes responsible for the visible characteristics of organisms.

Watch Video Solution

44. True or False.

If false, write the correct sentence

During gamete formation, the pair of genes Separate independently.

Watch Video Solution

45. State whether the following statements are true or false. Correct the false statement:

In humans there are 23 pairs of autosomes and one pair of allosomes.

Watch Video Solution

46. True or False.

If false, write the correct sentence

Chromosomes in women are represented as 44A + XX and in men as 44A + XY.

Watch Video Solution

47. True or False.

If false, write the correct sentence

Women suffering from Turner syndrome are fertile.

Watch Video Solution

48. True or False.

If false, write the correct sentence

Normal haemoglobin has valine as the 6" amino acid in its molecular structure.

Watch Video Solution

49. True or False.

If false, write the correct sentence

A person suffering from sickle cell anaemia should take a tablet of folic acid.

Watch Video Solution

50. Find the odd man out:

Adenine, thymine, cytosine, uracil

Watch Video Solution

51. Odd one out

Constricted pod, Green pods, Axillary flower. Purple flower.

Watch Video Solution

52. Find the odd man out:

Attached ear lobes, brown and straight hair, non-rolling tongue, presence of hair on arms.

Watch Video Solution

53. Find the odd man out:

Cystic fibrosis, albinism, spina bifida, sickle cell anaemia.

Watch Video Solution

54. Complete the analogy

Metacentric chromosome : V-shaped ::_____: L-shaped

Watch Video Solution

55. Complete the analogy

Adenine : Thymine :: Guanine :_____

Watch Video Solution

56. Complete the analogy

Absence of hairs on arms : Recessive character

:: Black and curly hair :_____

Watch Video Solution

57. Complete the analogy

TT : Homozygous :_____ : Heterozygous

Watch Video Solution

58. Complete the analogy:

3:1 : Monohybrid : : 9:3:3:1 :.....

Watch Video Solution

59. Complete the analogy:

44 + X: Turner syndrome : : 44 + XXY :.....

Watch Video Solution

60. Complete the analogy:

Women : Turner syndrome : : Men :.....

Watch Video Solution

61. Match the following

	Group 'A'		Group 'B'
i.	Acrocentric chromosome	a.	Centromere is exactly at the mid-point in the chromosome
ii.	Telocentric chromosome	b.	Centromere is near one end in the chromosome
		c.	Centromere is somewhere near the mid point in the chromosome
		d.	Centromere is right at the end in the chromosome

Watch Video Solution

62. Match the following

Match the Group A (Organism) with Group B

(Number of chromosomes)

	Group 'A'		Group 'B'
i.	Crab	a.	20
ii.	Round worm	b.	200
iii.	Maize	c.	26
iv.	Frog	d.	04

Watch Video Solution

63. Match the following

	Group 'A'		Group 'B'
i.	mRNA	a.	RNA which is the component of the ribosome organelle
ii.	tRNA	b.	RNA molecule that carries information of protein synthesis from nucleus to cytoplasm
		c.	RNA molecule which carries amino acids up to the ribosomes

Watch Video Solution

64. Match the following

	Group 'A'		Group 'B'
i.	RrYY	a.	Round yellow seeds
ii.	rrYy	b.	Wrinkled yellow seeds
		c.	Round green seeds
		d.	Wrinkled green seeds

Watch Video Solution

65. Match the following

How are the items in groups A, B and C

interrelated?

A	B	C
Leber hereditary optic neuropathy	44 + XXY	Pale skin, white hairs
Diabetes	45 + X	Men are sterile
Albinism	Mitochondrial disorder	Women are sterile
Turner syndrome	Polygenic disorder	This disorder arises during development of zygote.
Klinefelter syndrome	Monogenic disorder	Effect on blood-glucose level.

Watch Video Solution

66. What is genetics?

Watch Video Solution

67. Define heredity

Watch Video Solution

68. How do specific traits or characteristics appear in organisms?

Watch Video Solution

69. What is meant by chromosome? Explain its types.

Watch Video Solution

70. What is primary constriction?

Watch Video Solution

71. What are allosomes?

Watch Video Solution

72. Describe the structure of DNA molecule.

Watch Video Solution

73. What is a gene?

Watch Video Solution

74. Express your opinion about the use of DNA fingerprinting.

Watch Video Solution

75. Explain the structure, function and types of RNA.

Watch Video Solution

76. Write the basic of the principles of heredity.

Watch Video Solution

77. Enlist seven traits of pea plant selected/studied by Mendel.

Watch Video Solution

78. Show the monohybrid cross between (RR) and (rr) and write the phenotypic and genotypic ratio of F_2 generation.

Watch Video Solution

79. Why did the characteristic of the Rounded-Yellow seeds alone appear in the F_1 generation but not the characteristic of the wrinkled-green seeds?

Watch Video Solution

80. What is Punnett Square? What information does it give?

Watch Video Solution

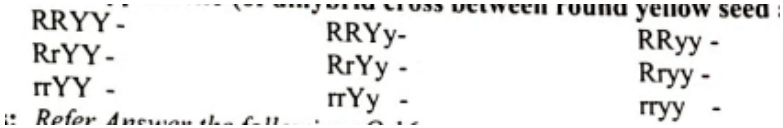
81. Explain Mendel's monohybrid progeny with the help of any one cross.

82. Explain Mendel's dihybrid ratio with the help of any one cross.

83. Phenotypic ratio (of dihybrid cross between round yellow seed and wrinkled green seed):

Round - Yellow:

Genotypic ratio (of dihybrid cross between round yellow seed and wrinkled green seed)



Watch Video Solution

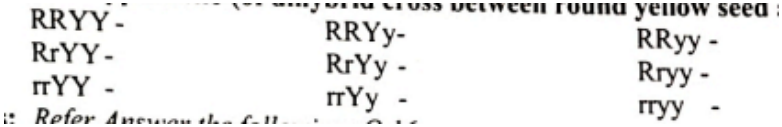
84. Phenotypic ratio (of dihybrid cross between round yellow seed and wrinkled

green seed)::

Round - Yellow:

Genotypic ratio (of dihybrid cross between round yellow seed and wrinkled green seed)

Wrinkled - Yellow:



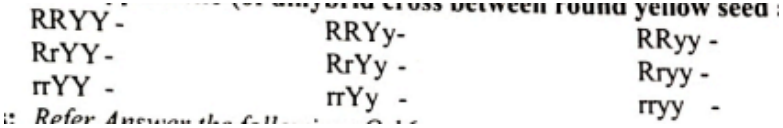
Watch Video Solution

85. Phenotypic ratio (of dihybrid cross between round yellow seed and wrinkled green seed)::

Round - Yellow:

Genotypic ratio (of dihybrid cross between round yellow seed and wrinkled green seed)

Round-Green:



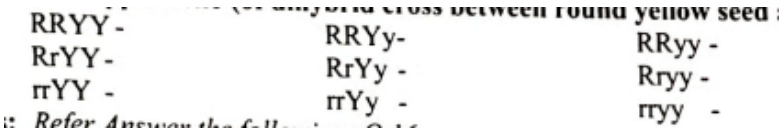
Watch Video Solution

86. Phenotypic ratio (of dihybrid cross between round yellow seed and wrinkled green seed): :

Round - Yellow:

Genotypic ratio (of dihybrid cross between round yellow seed and wrinkled green seed)

Wrinkled -Green:



Watch Video Solution

87. What are genetic disorders?

Watch Video Solution

88. Is it right to avoid living with a person suffering from genetic disorder?

Watch Video Solution

89. What are the main objectives of National Health Mission?

Watch Video Solution

90. Why is it necessary for people to have their blood examined before marriage?

Watch Video Solution

91. What are chromosomal abnormalities?

Watch Video Solution

92. Write a brief note on Down syndrome:

Watch Video Solution

93. Write short notes on:

Monogenic disorders

Watch Video Solution

94. Write short notes on: Sickle-cell anaemia: Symptoms and treatment.

Watch Video Solution

95. Write short notes on: Polygenic disorders.

Watch Video Solution

96. What are the effects of tobacco consumption?

Watch Video Solution

97. Give scientific reasons:

DNA molecules are called as 'Master

molecules'.

Watch Video Solution

98. Is there similarity between parents and oospring?

Watch Video Solution

99. Give reasons

Though dominant characteristic appear in

some individuals of a progeny, recessive characteristics may also be seen in others.

Watch Video Solution

100. Give reasons

Tall pea ptants of F, and P, generation show same phenotype but different genotype.

Watch Video Solution

101. Give reasons

Marriages between the persons who are carriers off or suffering from sickle-cell anaemia should be avoided.

Watch Video Solution

102. Give reasons

Leber Heredity Optic Neuropathy is inherited from the mother only.

Watch Video Solution

103. Give scientific reasons:

Tobacco smoking causes cancer.

Watch Video Solution

104. Distinguish between DNA and RNA.

Watch Video Solution

105. Explain the following :

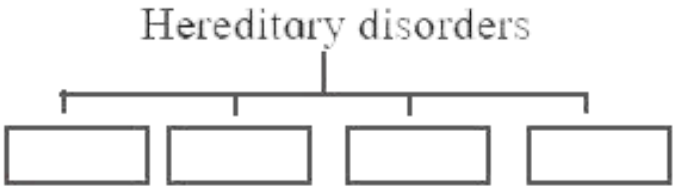
Distinguish between monohybrid and dihybrid cross.

Watch Video Solution

106. Differentiate between Turner's syndrome and Klinefelter's syndrome.

Watch Video Solution

107. Complete the tree diagram below based on types of hereditary disorders.

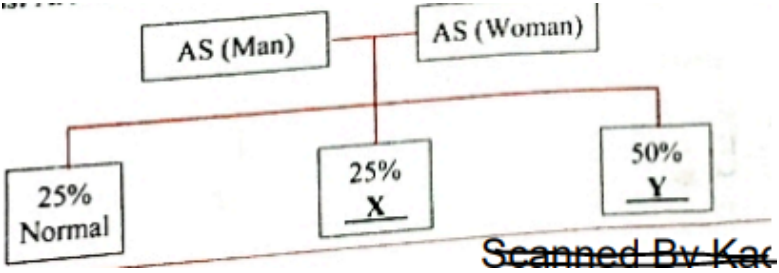


Watch Video Solution

108. Complete the given chart/table

Identify X and Y in the given charts with reference to sickle cell anaemia.

Symbols: AA= Normal , AS=carrier,, SS= sufferer

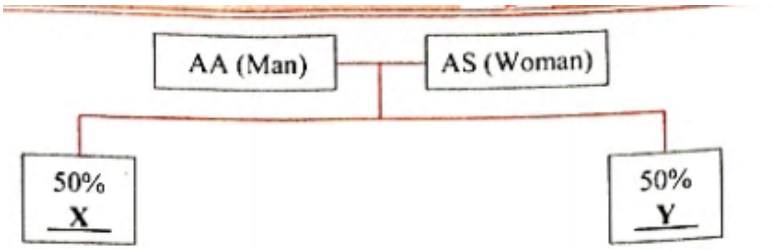


Watch Video Solution

109. Complete the given chart/table

Identify X and Y in the given charts with reference to sickle cell anaemia.

Symbols: AA= Normal , AS=carrier,, SS= sufferer

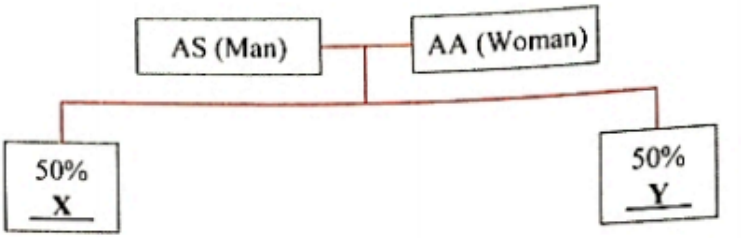


Watch Video Solution

110. Complete the given chart/table

Identify X and Y in the given charts with reference to sickle cell anaemia.

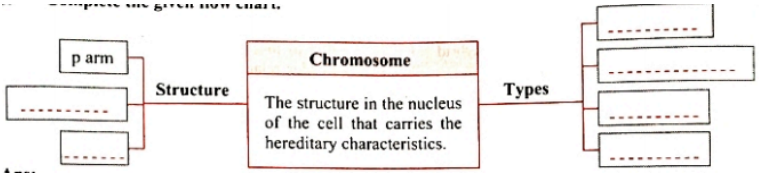
Symbols: AA= Normal , AS=carrier,, SS= sufferer



Watch Video Solution

111. Complete the given chart/table

Complete the given flow chart.



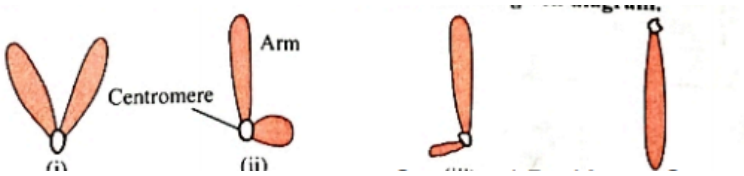
Watch Video Solution

112. Draw neat and labelled diagrams of the following: Structure of chromosome

Watch Video Solution

113. Questions based on diagram.

Identify the different types of chromosomes based on the given diagram.



Watch Video Solution

114. Questions based on diagram.

Draw a neat and labelled diagram showing the different types of chromosomes.

Watch Video Solution

115. Questions based on diagram.

Identify X, Y and Z in the given diagram and write the function of each of these types of

RNA, based on which they are classified.

Watch Video Solution

116. Questions based on paragraph

A geneticist made a cross between two pea plants having axillary flowers (AA) and round shaped seeds (RR) with plants having terminal flowers (aa) and wrinkled seeds (rr). In F_1 generation, he obtained plants with axillary

flowers and round shaped seeds. But in F generation, he obtained new combinations along with parental combinations.

Mention the genotype of plants in F_2 generation obtained by geneticist.

Watch Video Solution

117. Questions based on paragraph

A geneticist made a cross between two pea plants having axillary flowers (AA) and round shaped seeds (RR) with plants having terminal

flowers (aa) and wrinkled seeds (rr). In F_1 generation, he obtained plants with axillary flowers and round shaped seeds. But in F_2 generation, he obtained new combinations along with parental combinations.

Write the gametes formed by the individual in F_1 generation.

Watch Video Solution

118. Questions based on paragraph

A geneticist made a cross between two pea

plants having axillary flowers (AA) and round shaped seeds (RR) with plants having terminal flowers (aa) and wrinkled seeds (rr). In F_1 generation, he obtained plants with axillary flowers and round shaped seeds. But in F_2 generation, he obtained new combinations along with parental combinations.

Which new combinations would be formed in F_2 apart from the parental combination?

Watch Video Solution

119. Questions based on paragraph

A geneticist made a cross between two pea plants having axillary flowers (AA) and round shaped seeds (RR) with plants having terminal flowers (aa) and wrinkled seeds (rr). In F_1 generation, he obtained plants with axillary flowers and round shaped seeds. But in F generation, he obtained new combinations along with parental combinations.

Write the phenotypic ratio of F_2 generation?

Watch Video Solution

120. Questions based on paragraph

A geneticist made a cross between two pea plants having axillary flowers (AA) and round shaped seeds (RR) with plants having terminal flowers (aa) and wrinkled seeds (rr). In F_1 generation, he obtained plants with axillary flowers and round shaped seeds. But in F generation, he obtained new combinations along with parental combinations.

Write the genotypic ratio of F_2 generation?

Watch Video Solution

121. Do all boys and girls of your class look alike?

Watch Video Solution

122. Why phenotypic and genotypic ratios are not same.

Watch Video Solution

123. Carefully observe your classmate's earlobes.

Watch Video Solution

124. Irrespective of all of us being humans, what difference do you notice in our skin colour?

Watch Video Solution

125. All of you are in std. IX. Why then are some students tall and some short?

Watch Video Solution

126. Find of chromosomes in different organisms.

Watch Video Solution

127. Choose the correct alternative.

Cytosine always pairs with ._____

A. adenine

B. guanine

C. thymine

D. uracil

Answer:

Watch Video Solution

128. Choose the correct alternative.

Which of the following is a recessive character in human beings?

A. Presence of hairs on arms

B. Free earlobe

C. Brown and straight hairs

D. Rolling tongue

Answer:

Watch Video Solution

129. Choose the correct alternative.

_____ is the chromosome number in potato.

A. 46

B. 04

C. 26

D. 48

Answer:

Watch Video Solution

130. Choose the correct alternative

Which among the following is a mitochondrial disorder?

A. Down syndrome

B. Leber Hereditary Optic Neuropathy

C. Cleft lip

D. Spina bifida

Answer:

 Watch Video Solution

131. Answer the following:

Find the odd man out and explain.

Round shape of seed, terminal position of flowers, purple colour of flowers, inflated shape of pod

Watch Video Solution

132. Answer the following:

Match the following.

	Group 'A'		Group 'B'
a.	Ribosomal RNA	1.	Carries the amino acid
b.	Messenger RNA	2.	Pyrimidines
		3.	Carries information of protein synthesis
		4.	Performs the function of protein synthesis

Watch Video Solution

133. Answer the following:

Disease in which the skin becomes pale, hairs are while and eyes are usually pink due to absence of melanin pigment in the retina and sclera.

Watch Video Solution

134. Answer the following:

True or false. If false, write the correct sentence.

Tay-Sachs disease is a chromosomal disorder.

Watch Video Solution

135. Give reasons

Laber Heredity Optic Neuropathy is inherited from the mother only.

Watch Video Solution

136. Give scientific reasons:

DNA molecules are called as 'Master molecules'.

Watch Video Solution

137. Answer the following

Write the causes and symptoms of Down syndrome.

Watch Video Solution

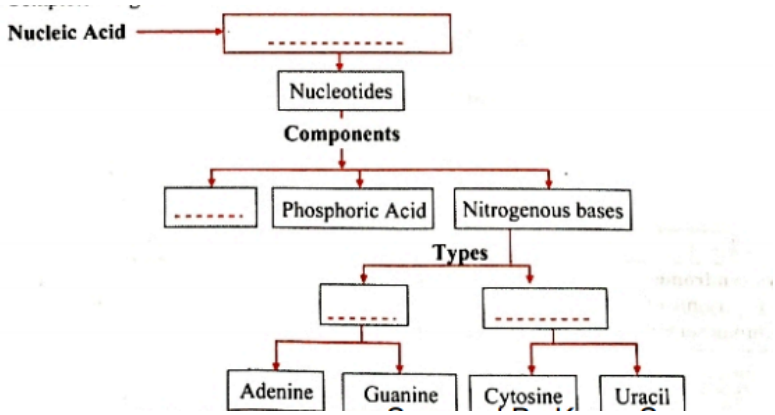
138. Answer the following

Define chromosome and mention its types on the basis of position of centromere.

Watch Video Solution

139. Answer the following

Complete the given flow chart.



Watch Video Solution

140. Answer the following

Give the schematic representation of a cross between plants with yellow round seeds and plants with green wrinkled seed (the F_2 generation).

Watch Video Solution

141. Give reasons

Marriages between the persons who are carriers off or suffering from sickle-cell anaemia should be avoided.

Watch Video Solution

142. Answer the following

Complete the following table.

Characteristics	Dominant	Recessive
Shape of the seed	(A)	Wrinkled
Seed colour	Yellow	(B)
Flower colour	(C)	White
Pod shape	Inflated	(D)
Pod colour	(E)	Yellow
Flower position	(F)	Terminal

Watch Video Solution

143. Answer the following

With a suitable example explain in detail Mendel's experiment of monohybrid cross.

Watch Video Solution

144. Describe the Watson & crick model of DNA.

Watch Video Solution