BIOLOGY

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PRINCIPLES OF INHERITANCE AND VARIATION

Textbook Questions Answers

1. 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- chromsome

D. Recessive trait carried by x- chromsome

Answer: d

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2. ABO blood group in man is controlled by

A. Multiple alleles

B. Lethal genes

C. Sex linked genes

D. Y- linked genes

Answer: a

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3. Three children of a family have blood groups A, AB and B. What could be the genotypes of their parents?

A. $I^A I^B$ and II

B. I^A, I° and $I^B I^\circ$

C. $I^B I^B$ and $I^A I^A$

D. $I^A I^A$ and ii

Answer: b

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4. Which of the following is not correct?

A. Three or more alleles of a trait in the population are called multiple alleles.

B. A normal gene undergoes mutations to form many alleles.

C. Multiple alleles map at different loci of a chromosome

D. A diploid organism has only two alleles out of many in the population

Answer: c

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5. Which of the following phenotypes in the progeny are possible from the parental combination AxB?

A. A and B only

B. A,B and AB only

C. AB only

D. A,B,AB and O

Answer: d

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6. Which of the following phenotypes is not possible in the progeny of the parental genotypic combination $I^A I^O X I^A I^B$?

A. AB

B. O

C. A

D. B

Answer: b

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7. Which of the following is true about Rh factor in the offspring of a parental combination DdXDd (both Rh positive)?

A. All will be Rh- positive

B. Half will be Rh - positive

C. About $3/4$ will be Rh negative

D. About one fourth will be Rh negative

Answer: d

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8. What can be the blood group of offspring when both parents have AB blood group?

A. AB only

B. A,B and AB

C. A, B AB and O

D. A and B only

Answer: b

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9. If the childs blood group is 'O' and fathers blood group is 'A' and mother's blood group is 'B' the genetype of the parents will be

A. I^AI^A and I^BI°

B. I^AI° and I^BI°

C. I^AI° and $I^\circ I^\circ$

D. $I^\circ I^\circ$ and I^BI^B

Answer: d

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10. XO type of sex determination and XY type of sex determination are examples of.

A. Male heterogamety

B. Female heterogamety

C. Male homogamety

D. Both b and c

Answer: a

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11. In an accident there is great loss of blood and there is no time to analyse the blood group which blood can be safely transferred?

A. O and Rh negative

B. O and Rh positive

C. B and Rh negative

D. AB and Rh positive

Answer: a

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12. Father of a child is colour blind and mother is carrier for colour blindness, the possibility of the child being colour blind is.....

A. 0.25

B. 0.5

C. 1

D. 0.75

Answer: b

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13. A marriage between a colourblind man and a normal woman produces

A. All carrier daughters and normal sons

B. 50% carrier daughters 50% normal daughters

C. 50% colourblind sons 50% normal sons

D. All carries offspring

Answer: a

14. Mangolism is a genetic disorder which is caused by the presence of an extra chromosome number.

A. 20

B. 21

C. 4

D. 23

Answer: b

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15. Klinefelters' syndrome is characterized by a karyotype of

A. XYY

B. XO

C. XXX

D. XXY

Answer: d

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16. Females with Turners' syndrome have

A. Small uterus

B. Rudimentary ovaries

C. Underdeveloped breasts

D. All of these

Answer: d

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17. Pataus' syndrome is also referred to as

A. 13- Trisomy

B. 18- Trisomy

C. 21- Trisomy

D. None of these

Answer: a

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18. Who is the founder of Modern Eugenics movement?

A. Mendel

B. Darwin

C. Fransis Galton

D. Karl pearson

Answer: c

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19. Improvement of human race by encouraging the healthy persons to marry early and produce large number of childern is called

A. Positive eugenics

B. Negative eugenics

C. Positive euthernics

D. Positive euphenics

Answer: a

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20. The _____ deals with the control of several inherited human diseases especially inborn errors metabolism.

A. Euphenics

B. Eugenics

C. Euthenics

D. All of these

Answer: a

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21. Universal Donor and Universal Recipients blood group are ..... And ..... Respectively .

A. A . AB,O

B. B . O,AB

C. C . A,B

D. D . B,A

Answer: b

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22. ZW-ZZ system of sex determination occurs in

A. Fishes

B. Reptiles

C. Birds

D. All of these

Answer: b

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23. Co-dominant blood group is

A. A

B. AB

C. B

D. O

Answer: d

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24. Which of the following is incorrect regarding ZW-ZZ type of sex determination?

A. It occurs in birds and some reptiles

B. Females are homogametic and males are heterogametic

C. male produce two type of gemetes

D. It occurs in gypsy moth

Answer: b

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25. What is haplodiploidy?

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26. Distinguish between heterogametic and homogametic sex determination systems?

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27. What is Lyonisation?

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28. What is criss-cross inheritance?

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29. Why are sex linked recessive characters more common in the male human beings?

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30. What are holandric genes?

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31. Mention the symptoms of Phenylketonuria.

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32. Mention the symptoms of Downs syndrome.

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33. Differentiate Intersexes from Supersexes.

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34. Explain the genetic basis of ABO blood grouping man.

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35. How is sex determined in human beings?

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36. Explain male heterogamety.

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37. Brief about female heterogamety.

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38. Give an account of genetic control of Rh factor ?

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39. Explain the mode of sex determination in honeybees.

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40. Disccus the genic balance mechanism of sex determination in Drosophila ?

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41. What are the applications of karyotyping ?

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42. Explain the inheritance of sex linked characters in human being .

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43. What are extra chromosomal inheritance ? Explain with an example .

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44. Comment on the methods of Eugenics.

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Other Important Question Answers Choose The Correct Answer

1. Define the unit of heredity.

A. Chromosome

B. Nucleus

C. Gene

D. RNA

Answer: c

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2. The inheritance of different blood groups in human being is determined by :

A. 3 autosomal alleles

B. 3 sex linked alleles

C. 4 autosomal alleles

D. 4 sex linked alleles

Answer: a

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3. What is the causative factor for Erythroblastosis foetails ?

A. Bacteria

B. Virus

C. Rh- factor

D. Phenylalanine

Answer: c

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4. Explain the mode of sex determination in honeybees.

A. XX-XY type

B. Haplodiploidy

C. ZW- ZZ type

D. Heterochromatic

Answer: b

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5. Y- chromosome linked character in human being includes :

A. Phenylketonuria

B. Colour blindness

C. Albinism

D. Hypertichosis

Answer: d

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6. Choose the odd one out (sex determination)

A. Honey bee

B. Drosophila

C. Human being

D. Monkey

Answer: a

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7. find out the odd one :

A. A . thalassemia

B. B . Phenylketonuria

C. C . Hypertrichosis

D. D . Albinism

Answer: c

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8. Indicate the odd one :

A. blood group A

B. blood group B

C. Rh - positive

D. Blood group AB

Answer: c

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9. Choose the odd one out :

A. Chromosome mapping

B. Recombination frequency

C. Linkage of genes

D. karyotyping

Answer: d

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10. Indicate the correct pair :

Column - I	Column - II
(a) Haemophilia	X linked gene
(b) Colour blindness	Y linked gene
(c) Kin selection	*Drosophila*
(d) Albinism	Sex linked gene

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11. Choose the correct pair :

Column - I	Column - II
(a) Idiogram	Chromosome mapping
(b) Phenylketonuria	Autosomal recessive gene
(c) Huntington's chorea	Sex linked gene
(d) Down's syndrome	Sterile males

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12. Assertion : Blood group O is called universal donor:

Reason : Beeause no agglutinatin antigen is present in O blood group .

A. Assertion and reason are correct reason is the correct explanation of assertion .

B. Assertion and Reason are correct reason is not the correct explanation of assertion .

C. Assertion is incorrect Reason is correct .

D. both assertion and Reason are not correct.

Answer: a

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13. Assertion : An individual having D antigen are Rh positived $\left(Rh^{+}\right)$

Reason : Rhesus factor in the blood is inherited as a dominant trait .

A. Assertion and Reason are correct reason is the correct explanation of assertion .

B. Assertion and Reason are correct reason is not the correct explanation of assertion.

C. Assertion is incorrect , Reason is correct.

D. Both assertion and Reason are not correct .

Answer: b

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14. Explain XX-XO type of sex determination.

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15. Assertion : Thalassemia is an autosomal recessive gene disorder.

Reason . Thalassemia is controlled by two closely linked genes on chromosome 16.

A. Assertion and Reason are correct reason is the correct explanation of asspertion.

B. Assertion and Reason are correct Reason is not the correct explanation of assertion.

C. Assertion is incorrect Reason is correct.

D. Both Assertion and Reason is correct.

Answer: b

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16. Assertion : Trisomic condition of chromosome 13 result in Down's syndrome

Reason : It is characterized by sever mental retardation.

A. Assertion and Reason are correct reason is the correct explanation of assertion .

B. Assertion and Reason are correct reason is not the correct explanation of assertion

C. Assertion is incorrect Reason is correct.

D. Both Assertion and Reason is correct.

Answer: c

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17. Which of the following statement is correct

A. A gene can mutate several times producing several alternative forms.

B. A gene can mutate only once and alter the character once.

C. A gene can mutate reversely once in lifetime

D. A gene can mutate thrice in lifetime .

Answer: a

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18. Choose the incorrect statement :

A. In homogametic female system of sex determination the males produce two types gemetes.

B. In homogametic female system of sex determination females produce only one type of gamete.

C. In female heterogametic type the females produce only one type of gameters.

D. None of theh above:

Answer: c

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19. Indicate the correct statement:

A. Kin selection is normally seen in moth

B. Kin selection is normally seen in honey bees

C. Kin selection is normally seen in butterflies.

D. None of the above

Answer: b

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20. Which of the following statement is correct ?

A. Haemophilia is commonly known as bleeder's disease.

B. This disease was first discovered by John cotton in 1803

C. this disease is more common in female than male human

D. this is caused by a sex - linked gene.

Answer: c

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21. Choose the correct statement .

A. Turner's syndrome is caused by trisomic condition .

B. Turner's syndrome is due to loss of a X chromosome in female

C. Turner s syndrome is due to the pressence of addition copy of X chromosome .

D. None of the above

Answer: b

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Other Important Question Answers Answer The Following

1. Define heredity.

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2. What are multiple alleles?

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3. What is Fischer and Race hypothesis?

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4. Heterogametic males- Explain.

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5. What are holandric genes?

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6. What is karyotyping?

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7. Define ideogram.

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8. What is meant by pedigree?

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9. What is genetic disorder?

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10. Write a note on Huntington's chorea .

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11. Write about Wiener hypothesis?

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12. Explain the prevention method of Erythroblastosis foetalis.

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13. What is colour blindness?

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14. Give the diagrammatic representation human karyotype.

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15. How do the disorder phenylketonuria occur?

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16. What are symptoms of Patau's syndrome?

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17. Write a note an ABO blood grouping .

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18. Explain Erythroblastosis foetalis

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19. Describe the Lygaeus type of sex determination in Drosophila.

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20. Explain the inheritance of colour blindness in a marriage of colour blind woman with normal man.

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21. Differenciate Down's syndrome from Turner's syndrome.

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