



BIOLOGY

BOOKS - NCERT BIOLOGY (ENGLISH)

HEREDITY AND EVOLUTION

Multiple Choice Questions

1. Exchange of genetic material takes place in

A. vegetative reproduction

B. sexual reproduction

C. asexual reproduction

D. budding

Answer: B



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2. Two pink coloured flower on crossing resulted in 1 red, 2 pink and 1 white flower progeny. The nature of the cross will be

A. double fertilisation

B. self pollination

C. cross fertilisation

D. no fertilisation

Answer: B



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3. A cross between a tall plant (TT) and short pea plant (tt) resulted in progeny that were all tall plants because

A. tallness is the dominant trait

B. shortness is the dominant trait

C. tallness is the recessive trait

D. height of pea plant is not governed by
gene 'T' or 't'

Answer: A



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4. Which of the following statement is incorrect ?

A. For every hormone there is a gene

B. For every protein there is a gene

C. For production of every enzyme there is
a gene

D. For every molecule of fat there is a gene

Answer: D



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5. If a round, green seeded pea plant (RR yy) is crossed with wrinkled, yellow seeded pea plant, (rr YY) the seeds production in F_1 generation are

- A. round and yellow
- B. round and green
- C. wrinkled and green
- D. wrinkled and yellow

Answer: A



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6. In human males all the chromosomes are paired perfectly except one. This/these unpaired chromosomes is/are :

(i) large chromosome (ii) small chromosome
(iii) Y chromosome (iv) X chromosome

A. (i) and (ii)

B. (iii) only

C. (ii) and (iv)

D. (iii) and (iv)

Answer: C



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7. The maleness of a child is determined by

A. the X-chromosome in the zygote

B. the Y-chromosome in zygote

C. the cytoplasm of germ cell which
determines the sex

D. sex is determined by chance

Answer: B



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8. A zygote which has an X-chromosome inherited from the father will develop into a

A. boy

B. girl

C. X-chromosome does not determine the sex of a child

D. either boy

Answer: B



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9. Select the incorret statemet.

A. Frequency of certain genes in a population change over several generations resulting in evolution .

- B. Reduction in weight of the organism due to starvation is generically controlled
- C. Low weight parents can have heavy weight progeny
- D. Traits which are not inherited over generations do not cause evolution

Answer: B



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10. New speices may be fromed if

A. (i) and (ii)

B. (i) and (iii)

C. (ii), (iii) and (iv)

D. (i),(ii) and (iii)

Answer: A



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11. Two pea plants one with round green seeds (RRyy) and another with wrinkled yellow (YY) seeds produce F_1 , progeny that have round, yellow (RrYy) seeds. When F_1 , plants are selfed, the F_2 , progeny will have new combination of characters. Choose the new combination from the following.

- (i) Round, yellow
- (ii) Round, green
- (iii) Winkled, yellow
- (iv) Wrinkled, green

A. (i) and (ii)

B. (iv) Only

C. (ii) and (iii)

D. (i) and (iii)

Answer: B



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12. A basket of vegetables contains carrot, potato, radish and tomato. Which of them represent the correct homologous structures?

A. Carrot and potato

B. Carrot and tomato

C. Radish and carrot

D. Radish and potato

Answer: C



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13. Select the corret statemet.

- A. Tendril of a pea plant and phylloclade of Opuntia are homologous
- B. Tendril of a pea plant and phylloclade of Opuntia are analogous
- C. Wings of birds and limbs of lizards are analogous.
- D. Wings of bird and wings of bat are homologous

Answer: D



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14. If the fossil of an organism is found in the deeper layer of earth, then we can predict that.

A. the extinction of organism has occurred recently

B. the extinction of organism has occurred thousands of years ago

C. the fossil position in the layers of earth is not related to its time of extinction

D. time of extinction cannot be determined

Answer: B



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15. Which of the following statement is not true with respect to variation ?

A. All variations in a species have equal chance of survival

B. Change in genetic composition results in variation

C. Selection of variants by environmental factors forms the basis of evolutionary processes

D. Variation is minimum in asexual reproduction

Answer: A



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16. A trait in an organism is influenced by

A. paternal DNA only

B. maternal DNA only

C. both maternal and paternal DNA

D. neither by paternal nor by maternal DNA

Answer: C



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17. Select the group which shares maximum number of common characters

A. two individuals of a species

B. two genera of a family

C. two species of a genus

D. two genera of two families

Answer: A



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18. According to the evolutionary theory, formation of a new species is generally due to.

A. sudden creation by nature

B. accumulation of variations over several generations

C. clones formed during asexual reproduction

D. movement of individuals from one habitat to another

Answer: B



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19. From the list given below, select the character which can be acquired but not inherited

A. colour of eye

B. colour of skin

C. size of body

D. nature of hair

Answer: C



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20. The two versions of a trait (character) which are brought in by the male and female gametes are situated on :

- A. copies of the same chromosome
- B. two different chromosomes
- C. sex chromosomes
- D. any chromosome

Answer: A



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21. Select the statements that describe characteristics of genes :

(i) genes are specific sequence of bases in a DNA molecule

(ii) a gene does not code for proteins

(iii) in individuals of a given species, a specific gene is located on a particular chromosome

(iv) each chromosome has only one gene

A. (i) and (ii)

B. (i) and (iii)

C. (i) and (iv)

D. (iii) and (iv)

Answer: B



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22. In peas, a pure tall plant (TT) is crossed with a short plant (tt). The ratio of pure tall plants to short plants in F_2 is

A. 1:3

B. 3:1

C. 1:1

D. 2:1

Answer: B



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23. The number of pair(s) of sex chromosomes in the zygote of humans is

A. One

B. Two

C. Three

D. Four

Answer: A



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24. The theory of evolution of species by natural selection was given by

A. Mendel

B. Darwin

C. Morgan

D. Lamarck

Answer: B



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25. Some dinosaurs had feathers although they could not fly but birds have feathers that

help them to fly. In the context of evolution this means that

A. reptiles have evolved from birds

B. there is no evolutionary connection between reptiles and birds

C. feathers are homologous structures in both the organisms

D. birds have evolved from reptiles

Answer: D



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Short Answer Type Questions

1. How is the sex of the child determined in human beings?



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2. Does genetic combination of mother play a significant role in determining the of a new born baby ?



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3. Mention three important features of fossils which help in the study of evolutions



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4. Why do all the gametes formed in human females have an X - chromosome?



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5. In human being, the statistical probability of getting either a male or female child is 50:50 .

Give a suitable explanation.



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6. A very small population of a species faces a greater threat of extinction than a large population. Provide a suitable genetic explanation.



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7. What are homologous structure ? Given an example. Is it necessary that homologous structures always have a common ancestor ?



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8. Does the occurrence of diversity of animals on earth suggest their diverse ancestry also? Discuss this point in the light of evolution.



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9. Given the pair of contrasting traits of the following characters in pea plants and mention which is dominant and recessive .

(i) yellow seed (ii) round seed.



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10. Why did Mendel choose pea plants for his experiments?



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11. A woman has only daughters. Analyse the situation genetically and provide a suitable explanation.



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Long Answer Type Questions

1. Does geographical isolation of individuals of a species lead to formation of a new species?

Provide a suitable explanation.



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2. Bacteria have a simpler body plan when compared with human beings. Does it mean that human beings are more evolved than bacteria?



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3. All the human races like Africans, Asians, Europeans, Americans and others might have evolved from a common ancestor. Provide a few evidences in support of this view.



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4. Differentiate between inherited and acquired characters. Given one example for each type.



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5. Given reason why acquired characters are not inherited.



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6. Evolution has exhibited a greater stability of molecular structure when compared with morphological structures. Comment on the statement and justify your opinion.



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7. In the following crosses write the characteristics of the progeny



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8. Study the following cross showing self pollination in F_1 . Fill in the blank.

Parents	RRYY	X	<u>rryy</u>
	Round, yellow		Wrinkled, green
F_1 –	Rr Yy	X	<u>?</u>
	Round, yellow		



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9. What are the combination of characters in the F_2 progeny? What are their ratios?



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10. Given the basic features of the mechanism of inheritance.



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11. Give reasons for the appearance of new combination of characters in the F_2 progeny.



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