

B.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022.

## Fifth Semester

## Zoology — Core

## GENETICS

(For those who joined in July 2020 onwards)

Time : Three hours

Maximum : 75 marks

## PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The principle of dominance states that
  - (a) all alleles are dominant
  - (b) all alleles are recessive
  - (c) some alleles are dominant and others are recessive
  - (d) alleles are neither dominant nor recessive

2. Erythroblastosis fetalis is a haemolytic diseases occurred due to
  - (a) Rh incompatibility between the mother and fetus
  - (b) Rh compatibility between the mother and fetus
  - (c) Rh compatibility between the father and fetus
  - (d) Rh incompatibility between the father and fetus
3. Sex-linked characters are usually
  - (a) dominant
  - (b) recessive
  - (c) lethal
  - (d) not inherited
4. A bleeder's disease is otherwise called as
  - (a) Hemophilia
  - (b) Haemocytopenia
  - (c) Hemorrhage
  - (d) Haemoglobulinemia
5. Choose the Karyotype of Turner's syndrome
  - (a) 45,XY
  - (b) 45,XX
  - (c) 45,XO
  - (d) 45,XXY

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6. Sixth amino acid of the  $\alpha$ -chain of sickle-cell haemoglobin was
  - (a) Glutamic acid
  - (b) Valine
  - (c) Glycine
  - (d) Alanine
7. Twins having no variability in their traits are called
  - (a) Fraternal Twins
  - (b) Non-identical twins
  - (c) Dizygotic Twins
  - (d) Identical twins
8. By encouraging the marriages between desirable persons is known as
  - (a) euphenics
  - (b) positive eugenics
  - (c) restrictive method
  - (d) negative eugenics
9. During conjugation gene transfer from a male bacterial cell (F<sup>+</sup>) to a female bacterial called as
  - (a) conjugation
  - (b) Transduction
  - (c) Sexduction
  - (d) Transformation

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10. During the first 10 minutes after infection of the phage DNA, no phage could be recovered from the infected bacterium. This time interval is called as
  - (a) relax period
  - (b) eclipse period
  - (c) latent period
  - (d) dormant period

## PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Explain the basic laws of heredity.  
Or  
(b) Analyze the importance of Rh factor in human beings.
12. (a) Explain the mechanism of Crossing over of genes with an illustration.  
Or  
(b) Give an account on haemophilia.
13. (a) Discuss the procedure to detect sex-linked lethal mutations by CIB method.  
Or  
(b) Comment on the term Klinefelter's syndrome.

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[P.T.O.]

14. (a) Critically analyze the defect sickle cell anemia.

Or

- (b) Bring out possible measures of positive eugenics.
15. (a) State the term bacterial recombination by transformation.

Or

- (b) Elucidate the life cycle of  $T_4$  phage with neat diagram.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Discuss the inheritance of skin colour human beings.

Or

- (b) Analyze the inheritance of ABO blood group in man.

17. (a) Explain the inheritance of colour blindness in human beings.

Or

- (b) Illustrate the genetic effects of inbreeding.

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18. (a) Summarize the types of mutation.

Or

- (b) Trace out the term Down and Turner's syndrome.

19. (a) Write an account on the inborn errors of metabolism.

Or

- (b) Write an essay on negative Eugenics.

20. (a) Discuss the role of sex factor in bacterial conjugation with reference to  $F^+$  strains.

Or

- (b) Elucidate the structure of  $T_4$  phage.
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