

Date:15.10.2019

Time: (3 Hours)

Total Marks: 100

- N.B.** (1) All questions are compulsory.
 (2) Figures to the right indicate marks for respective sub questions.
 (3) Attempt the questions in sequence.
 (4) Draw **neat labeled diagrams** wherever **necessary**.

Q.1) Multiple Choice Questions (20)

A] Fill in the blanks by choosing correct alternative... 05

- (i) The genotype ratio for single recessive epistasis is
 (a) 9:3:4 (b) 9:4:3
 (c) 9:2:5 (d) 9:5:2
- (ii) Curly wings in drosophila is the example of lethals.
 (a) Recessive (b) dominant
 (c) intermediate (d) Double dominant
- (iii) Inheritance of skin colour in man is an example of
 (a) Multiple alleles
 (b) Dominant gene on X chromosome
 (c) Autosomal recessive epistasis
 (d) Polygenes
- (iv) Experiment of infection of bactreioophages was performed by
 a) Watson and Crick b) Meselson-Stahl
 c) Griffith d) Hershey-Chase
- (v) Pyrimidines are Structures.
 a) Single ring b) Double ring
 c) Linear d) Double helical

B] Match the followings... 05

- | A | B |
|---------------------|----------------------------|
| i) 3X/2A | X chromosome inactivation |
| ii) Lyon hypothesis | Hormones |
| iii) Free martin | Inborn error of metabolism |
| iv) Phenylketonuria | Metafemale |
| v) Promotor | RNA Polymerase |

C] Say whether true or false... 05

- i) Turner syndrome individuals are Barr body positive.
 ii) Autosomal dominant gene is found to skip the generations during pedigree analysis.
 iii) Genetic code shows degeneracy.
 iv) Law of independent deals with the separation of gene on the same chromosomes.
 v) Lac Z gene secrets enzyme β -galactosidase.

D] Answer in one sentence each.... 05

- i) Define: 'Pleiotropy'
 ii) Define: 'Recon'
 iii) Define: 'Polycistronic mRNA'

- iv) State the difference between leading strand and lagging strand.
v) Define: 'Co-dominance'
- Q.2** a) **Describe** briefly properties of multiple alleles. Give an account of genetics of blood group inheritance in man. **10**
- OR**
- a) **Define Epistasis. Explain** recessive and double recessive epistasis with suitable examples.
- b) Explain any TWO of the following.** **10**
- (i) Mechanism of Crossing over
(ii) Back cross and test cross with suitable examples
(iii) Pedigree analysis of X-linked dominant gene
(iv) Polygenic inheritance with reference to skin colour in man
- Q.3** a) **Describe** role of Hormones in sex determination **10**
- OR**
- a) **Explain** the concept of Barr body. Add a note on Lyon hypothesis.
- b) Explain any TWO of the following.** **10**
- (i) Sex influenced genes
(ii) Sex determination in Bonelia
(iii) Haemophilia
(iv) Types of chromosomes on the basis of function.
- Q.4** a) **Describe** structure and function of Lac operon with a suitable diagram **10**
- OR**
- a) **Explain** Avery-McCleod-McCarty experiment.
- b) Explain any TWO of the following.** **10**
- (i) B-DNA
(ii) Types of RNA
(iii) Steps in Transcription
(iv) Properties of DNA
- Q.5** **Write Short notes on any four of the following...** **20**
- | | |
|-----------------------------------|-----------------------------|
| a) Concept of Linkage | b) Co-dominance |
| c) Sex determination in Crocodile | d) Hypertrichosis |
| e) Wobble hypothesis | f) Singer-Conrat experiment |
