

# Paper Code : 10311

## 51

### M. Sc. (Previous) EXAMINATION, 2020

#### ZOOLOGY

#### Paper Second

#### (Cytogenetics and Biostatistics)

Time : Three Hours ]

[ Maximum Marks : 100

Note : Attempt four questions in all selecting at least one question from Section B. All questions carry equal marks.

#### Section—A

1. What do you mean by mutation ? Describe various types of mutation.
2. Describe Mendelian inheritance with suitable examples. Explain exceptions of Mendelian inheritance.
3. Describe sex determination in various animals. Explain Genetic Balance theory.
4. Describe structural organization of DNA into chromosomes with detail account of Nucleosome Solenoid model.

(A-31) P. T. O.

5. Describe the process of DNA replication in prokaryotic cell. How does prokaryotic DNA replication differ from eukaryotic DNA replication ?
6. Write short notes on any five of the following :
  - (i) Allele
  - (ii) Endoplasmic reticulum.
  - (iii) Crossing over
  - (iv) Gynandromorph
  - (v) Lampbrush chromosomes
  - (vi) Gene map
  - (vii) Characteristics of Genetic code.

#### Section—B

7. Write short notes on the following :
  - (i) Bar graph
  - (ii) Mode
  - (iii) Cumulative frequency
  - (iv) Variance
8. Calculate mean, variance and standard deviation of the following frequency distribution :

Class	Frequency
1—10	11
10—20	29
20—30	18
30—40	4
40—50	5
50—60	3

(A-31)

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9. What do you mean by Standard Error ? Give the mathematical expressions for the same. How does the standard error differ from the relative standard error ? Explain with suitable examples.
10. The result of a random sample of children with pain from Musculo-skeletal injuries treated with acetaminophen, ibuprofen or codeine are shown in the table. At  $\alpha = 0.10$ , is there enough evidence to conclude that the treatment and results are independent :

Item	Acetaminophen	Ibuprofen	Codeine	Total
Significant improvement	58	81	61	200
Slight improvement	42	19	39	100
Total	100	100	100	300