

SARDAR PATEL UNIVERSITY  
VALLABH VIDYANAGAR  
B. Sc. FOURTH SEMESTER EXAMINATION  
2016  
MONDAY 11<sup>th</sup> APRIL  
10:30 am to 01:30 pm  
US04 CBIO 02 BIOLOGY  
GENETICS AND MOLECULAR BIOLOGY

**TOTAL MARKS 70**

- Note:** 1. Answers of all the questions (including multiple choice questions) should be written in the provided answer sheet  
2. Draw neat and labeled diagram wherever necessary

**Q1. Answer the following multiple choice questions (10)**

1. Genic Balance Mechanism of sex determination was first studied in *Drosophila* by \_\_\_\_\_ in 1921  
(a) C.B.Bridges                      (b) Henking                      (c) Goldsmith                      (d) McClung
2. Female sex of bird has \_\_\_\_\_ chromosome  
(a) ZZ                                      (b) ZW                                      (c) XX                                      (d) XY
3. \_\_\_\_\_ chromosome has little genetic information; therefore they are sometimes referred to as genetically inert or inactive  
(a) Z                                      (b) W                                      (c) Y                                      (d) X
4. Dextral coiling in snail is from \_\_\_\_\_ side  
(a) Upper                                      (b) Lower                                      (c) Left                                      (d) Right
5. Patients suffering from \_\_\_\_\_ have light body pigmentation and are mentally retarded  
(a) Phenylketonuria                      (b) Albinism                      (c) Alkaptonuria                      (d) Haemophilia
6. Killer strain of *Paramecium* destroy other races of *Paramecia* by secreting \_\_\_\_\_ into the water in which they live in  
(a) Penicillin                      (b) Paramecin                      (c) Streptomycin                      (d) Tetracycline
7. Bleeder's disease is known as \_\_\_\_\_  
(a) Phenylketonuria                      (b) Albinism                      (c) Haemophilia                      (d) Alkaptonuria
8. \_\_\_\_\_ plasmids have fertility factor required for conjugation  
(a) R                                      (b) F                                      (c) Col                                      (d) All of these
9. Mutations that result in development of abnormal character from normal character are called \_\_\_\_\_  
(a) Reverse                      (b) Forward                      (c) Spontaneous                      (d) Induced
10. Mutations occurring in gametes are called \_\_\_\_\_ mutation  
(a) Gametic                      (b) Somatic                      (c) Sex linked                      (d) Autosomal

**Q2. Answer the following questions. (Any ten)**

**(20)**

1. Define autosomes and sex chromosomes
  2. What are Transposable genetic elements?
  3. Discuss in brief the genic balance mechanism
  4. What is maternal inheritance?
  5. Write about alkaptonuria
  6. Write note on Albinism
  7. What are sex influenced genes?
  8. In man haemophilia is sex linked and recessive. What will be the phenotype of the children, if a haemophilic man marries a normal woman
  9. Explain Transduction in lower organisms
  10. Define mutation
  11. Write about spontaneous and induced mutation
  12. What are mutagens?
- Q3. Give an account of:**

- (a) Hormonally controlled mechanism of sex determination **(05)**
- (b) Environmentally controlled mechanism of sex determination **(05)**

**OR**

**Q3. Explain the following:**

- (a) Chromosomal mechanism of Sex Determination in humans **(05)**
- (b) Chromosomal mechanism of Sex Determination in Birds **(05)**

**Q4. Discuss in detail shell coiling in Snail **(10)****

**OR**

**Q4. Explain the extra nuclear inheritance by Kappa particle **(10)****

**Q5. Explain the following:**

- (a) Griffith's Experiment to explain the process of Transformation **(06)**
- (b) Conjugation **(04)**

**OR**

**Q5. Describe sex linked inheritance in man with reference to:**

- (a) Colour blindness **(05)**
- (b) Haemophilia **(05)**

**Q6. (a) Describe the kinds of mutations **(06)****

- (b) Write note on Physical mutagens **(04)**

**OR**

**Q6. (a) Explain the chromosomal aberrations due to change in structure of chromosome **(06)****

- (b) Write note on: Chromosomal aberrations due to change in number of chromosome **(04)**

**ALL THE BEST**