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SARDARPATELUNIVERSITY
VALLABH VIDYANAGAR
B. Sc. FOURTH SEMESTER EXAMINATION
2018

WEDNESDAY 11th APRIL

10:00 am to 01:00 pm

US04CBIO02 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. Male sex of bird has _____ chromosome
(a) ZZ (b) XY (c) XX (d) ZW
2. Genic Balance Mechanism of sex determination was first studied in *Drosophila* by _____ in 1921
(a) Goldsmith (b) C.B. Bridges (c) Henking (d) McClung
3. _____ chromosome has little genetic information; therefore they are sometimes referred to as genetically inert or inactive
(a) X (b) Z (c) Y (d) W
4. Dextral coiling in snail is from _____ side
(a) Upper (b) Lower (c) Left (d) Right
5. Darkening of cartilaginous regions is observed in patients suffering from which disease?
(a) Alkaptonuria (b) Phenylketonuria (c) Haemophilia (d) Albinism
6. Several types of colour blindness are known but the most common is _____
(a) Yellow red (b) Red green (c) Green blue (d) Yellow green
7. Transfer of genetic material from one organism to another by direct contact is called _____
(a) Transduction (b) Transformation (c) Conjugation (d) Determination
8. Mutations occurring in gametes are known as _____ mutations
(a) Gametic (b) Somatic (c) Autosomal (d) Sex linked
9. Mutations that result in development of abnormal character from normal character are called _____
(a) Reverse (b) Forward (c) Spontaneous (d) Induced
10. If a detached part of chromosome rotates 180° and is attached back to the original chromosome, it is known as _____
(a) Deletion (b) Duplication (c) Inversion (d) Translocation

[P.T. 0.]

Q2. Answer the following questions. (Any Ten) (20)

1. Discuss in brief the hormonally controlled mechanism of sex determination
2. State the difference between sex chromosome and autosome
3. What are transposable genetic elements?
4. What is maternal inheritance?
5. Discuss in brief the chloroplast inheritance in 4'O clock plant
6. Write a note on Phenyketonuria
7. Write brief note on conjugation
8. In man colour blindness is sex linked and recessive. What will be the phenotype of the children, if a colour blind man marries a normal woman
9. What are sex limited genes?
10. What are mutagens name their types
11. Define mutation.
12. Write about forward and reverse mutations

Q3. Explain the following:

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

Q3.(a) Genic Balance Mechanism (06)

- (b) Environmentally controlled mechanism of sex determination (04)

OR

Q4. Describe shell coiling in Snail (10)

OR

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

Q5. Give a detailed account of sex linked inheritance in man (10)

OR

Q5. Explain the following:

- (a) Griffith's Experiment (06)
- (b) Plasmids and their applications (04)

Q6. (a) Describe any six kinds of mutations (06)

- (b) Chromosomal aberrations due to change in number of chromosome (04)

OR

Q6. Write note on:

- (a) Chromosomal aberrations due to change in structure of chromosome (06)
- (b) Physical mutagens (04)

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