

[24]

SEAT No. _____

No. of Printed Pages: 2

(24)

SARDAR PATEL UNIVERSITY

B.Sc. (Genetics) – Fourth Semester Examination (CBCS)

Monday, 8th April 2019

10:00 a.m. to 1:00 p.m.

US04CGEN02: Principles of Genetics-II

Total Marks: 70

- Note: (1) Figures to the right indicate marks.
(2) Draw a neat and labeled diagram; wherever necessary.

- Q. 1** Choose the most appropriate answer from the four alternatives given: [10]
- i. **Drosophila** males there is complete linkage. What is the reason behind this?
(a) The genes are very closely located (b) Coupling theory
(c) No synapsis (d) Unknown reason
- ii. **The chromosomal theory of inheritance violates which of the following laws?**
(a) Law of dominance (b) Law of segregation
(c) Law of independent assortment (d) None of them
- iii. **Unit of genetic chromosomal map is _____.**
(a) bp (b) cM (c) Both (a) and (b) (d) None of them
- iv. **Male sterility occurs in nature due to _____ that occurs sporadically.**
(a) Mutation (b) Pollination (c) Crossing (d) All of these
- v. **Kappa particle indicate _____.**
(a) Nuclear inheritance (b) Cytoplasmic inheritance (c) Mutation (d) None of them
- vi. **The coiling phenotype in the offspring is controlled by the _____.**
(a) Genotype of the mother (b) Phenotype of the mother
(c) Recombination of genes (d) None of them
- vii. **The wobble hypothesis was devised by _____.**
(a) Arthur Kornberg (b) Francis Crick (c) James Watson (d) William Asbury
- viii. **Which of the following acts as the inducer of lac operon is ?**
(a) Lactose (b) Allolactose (c) Glucose (d) Galactose
- ix. **Within translocation happens when a fragmented chromosome tends to join with a _____ chromosome.**
(a) Non homologous (b) Homologous
(c) Nondisjunction (d) None of them
- x. _____ coined term mutation.
(a) Mendel (b) Morgan
(c) Hugo De Vries (d) None of them

- Q.2** Answer any TEN from the following: [20]
- i. Define synapsis.
 - ii. What is mitotic crossing over?
 - iii. Write the significance of linkage.
 - iv. What do you mean by maternal inheritance?
 - v. Write a short note on Petite mutant in Yeast.
 - vi. Write about iojap inheritance.
 - vii. What do you mean by classical recombination test?
 - viii. Define cistron, recon and muton.
 - ix. Write a short note on lozenge locus.
 - x. Differentiated between spontaneous Vs induced mutation.
 - xi. What do you mean by mutagens? Write about mutagens types.
 - xii. Write a short note on translocation of chromosome.

- Q.3** (a) Write a note on kinds of linkage. [06]
(b) Give an account on chromosome map. [04]

OR

- Q.3** (a) Write a detail note with diagram on cytological basis of crossing over (Stern's experiment). [06]
(b) Briefly discuss about meiotic crossing over. [04]

- Q.4** (a) Discuss in detail about cytoplasmic inheritance with suitable examples. [06]
(b) Write a note on kappa particle in paramecium. [04]

OR

- Q.4** (a) Give an account of coiling of shell in snail. [06]
(b) Write a note on plastid inheritance in *Mirabilis jalapa*. [04]

- Q.5** (a) Discuss in detail about complementation and recombination test (classical). [10]

OR

- Q.5** (a) Discuss in brief about lac operon concept. [06]
(b) Write a note on Bar eye in *Dorsophila* (positional effect). [04]

- Q.6** (a) What do you mean by chromosome aberrations? Discuss numerical and structural aberration. [10]

OR

- Q.6** (a) Write a detail note on types of mutagens. [06]
(b) What is gene mutation? Discuss it with suitable examples. [04]