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SEAT No. _____

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SARDAR PATEL UNIVERSITY
SECOND YEAR B.Sc. (THIRD SEMESTER) EXAMINATION

2018

MONDAY 26th NOVEMBER

2:00 TO 5:00 pm

USO3CBIO 02

(FUNDAMENTALS OF GENETICS AND EVOLUTION)

Marks: 70

Note: 1. Answers of all the questions (including multiple choice questions) should be written in the provided answer book only

2. Draw neat and labeled diagrams wherever necessary

Q.1. Select the correct answer and write it in the answer sheet.

[10]

1. Cross of F1 hybrid with recessive parent is called _____

- (a) Test Cross (b) Back Cross (c) Epistasis (d) Segregation

2. _____ is the father of genetics

- (a) Gregor Johan Mendel (b) Morgan (c) Darwin (d) Miller

3. Ratio of recessive epistasis is _____

- (a) 12:3:1 (b) 9:3:4 (c) 9:7 (d) 9:6:1

4. When two chiasma are formed along the length of chromosome pair, it is called _____ cross over

- (a) Single (b) Double (c) Triple (d) Multiple

5. Total number of linkage groups in man are _____

- (a) 3 (b) 7 (c) 8 (d) 23

6. Who gave the theory of natural selection _____

- (a) Lamarck (b) Darwin (c) Miller (d) Oparin

7. Secondary aquatic animals respire through _____

- (a) Gills (b) Fins (c) Lungs (d) Skin

8. _____ is a vestigial organ

- (a) Nose (b) Eyes (c) Tongue (d) Wisdom tooth

9. Appendix is a _____ organ

- (a) Homologous (b) Analogous (c) Vestigial (d) None of these

10. Study of plant fossils is called _____

- (a) Micropalaeontology (b) Palaeoecology
(c) Palaeobotany (d) Palaeozoology

①

(P.T.O.)

Q.2. Answer the following questions in brief (Any 10)

[20]

1. Define genotype and phenotype
2. State Mendel's law of dominance
3. What will be the phenotypic and genotypic ratio of F₂ generation when a homozygous tall plant is crossed with homozygous dwarf plant
4. Define linkage and linked genes
5. Enlist the different stages of mechanism of crossing over
6. What is crossing over? Give its significance
7. Discuss in brief the theory of spontaneous generation
8. Explain Darwinism
9. State two features of aquatic adaptations
10. What is micropaleontology?
11. Define the term Palaeobotany and Micropalaeontology
12. Which animals are considered as connecting links?

Q.3. (a) Explain dominant epistasis

[06]

(b) Describe incomplete dominance

[04]

OR

Q.3. (a) State and explain Mendel's law of independent assortment

[06]

(b) Write note on back cross and test cross

[04]

Q.4. Describe complete linkage and incomplete linkage

[10]

OR

Q.4. (a) Explain the Bateson and Punnett's Hypothesis

[06]

(b) Write note on types of crossing over

[04]

Q.5. Give a detailed note on Lamarckism

[10]

OR

Q.5. (a) Discuss Miller's Experiment

[05]

(b) Describe desert adaptations

[05]

Q.6. Write note on:

(a) Nature of fossils

[05]

(b) Formation of fossils and conditions of fossilization

[05]

OR

Q.6. Write note on:

(a) Types of fossils

[05]

(b) Indirect evidence of evolution from comparative cytology and genetics

[05]