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SARDAR PATEL UNIVERSITY
SECOND YEAR B.Sc. (THIRD SEMESTER) EXAMINATION
2013
THURSDAY, 21st NOVEMBER
2:30 TO 5:30 pm
US03CBIO 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. The term _____ designates the genetic makeup of an organism
(a) Genotype (b) Phenotype (c) Nanotype (d) All of these

2. Cross between pea plants differing in a single pair of contrasting character is known as _____ cross
(a) Monohybrid (b) Dihybrid (c) Trihybrid (d) Polyhybrid

3. Complimentary genes modify the classical dihybrid ratio of 9:3:3:1 into _____
(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. Genes located in the same chromosome and being inherited together are known as _____ genes
(a) Linked (b) Jumping (c) Mutant (d) Lethal

6. Who gave the theory of natural selection _____
(a) Lamarck (b) Darwin (c) Miller (d) Oparin

7. Primary 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. _____ organs are non homologous but perform similar functions
(a) Homologous (b) Analogous (c) Vestigial (d) None of these

10. Study of animal fossils is called _____
(a) Micropalaeontology (b) Palaeoecology
(c) Palaeobotany (d) Palaeozoology

Conti...

Q.2. Answer the following questions in brief (Any 10) **[20]**

1. What will be the phenotypic and genotypic ratio of F2 generation when a homozygous tall plant is crossed with homozygous dwarf plant

2. State Mendel's law of segregation

3. Define the term dominant and recessive allele

4. Define linkage and give its significance

5. What is incomplete linkage?

6. Define crossing over

7. Discuss in brief the theory of spontaneous generation

8. Explain Miller's Experiment

9. Write in brief about aquatic adaptations

10. What are fossils? State its significance

11. Define the term Palaeobotany and Micropalaeontology

12. State the indirect evidence of evolution from comparative genetics

Q.3. (a) State and explain Mendel's law of independent assortment with the help of dihybrid ratio **[06]**

(b) Write note on back cross and test cross **[04]**

OR

Q.3. Write note on:

(a) Dominant epistasis **[06]**

(b) Incomplete dominance **[04]**

Q.4. (a) Explain Batesson and Punnet's coupling and repulsion hypothesis **[06]**

(b) Describe complete linkage **[04]**

OR

Q.4. (a) Explain the mechanism of crossing over **[06]**

(b) Write note on types of crossing over **[04]**

Q.5. Write detailed note on Lamarkism **[10]**

OR

Q.5. Discuss different volant and desert adaptations in animals **[10]**

Q.6. Write note on:

(a) Types of fossils **[05]**

(b) Formation of rocks **[05]**

OR

Q.6. Write note on:

(a) Indirect evidence of evolution from comparative physiology and biochemisry **[07]**

(b) Homologous organs **[03]**

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