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**DATE: 12-04-2019**

**ST. JOSEPH’S COLLEGE (AUTONOMOUS), BANGALORE – 27**

**B.Sc. ZOOLOGY – VI SEMESTER**

**SEMESTER EXAMINATION, APRIL 2019**

**ZO 6115 – Histology, Genetics and Biotechnology**

**SUPPLEMENTARY CANDIDATES ONLY**

**Time: 2½ hours Max. Marks: 70**

 **This paper contains TWO printed pages and THREE parts. Draw diagrams**

 **wherever is necessary.**

**Answer the following 15 X 1 = 15**

1. The cells lying close to the adrenal medulla secrete
2. Androgens b. Glucocorticoids c. Mineralocorticoids d. Both a & b
3. The keratinized papillae of the tongue is ----------------
4. The podocytes are

 a. Parietal layer of Bowman’s capsule b. Visceral layer of Bowman’s capsule

 c. Glomerular cells d. Cells of afferent arteriole

1. Gastric pits extend deep into the muscularis externa.**True / False**
2. Sex determination in the grasshopper is by the XO method. The somatic cells of a

 ------------------------ grasshopper are analyzed and found to contain 23 chromosomes.

1. Male b. Female c. Intersex d. Super male
2. Which of the following would likely to suffer the greatest genetic damage from radiation exposure?
3. Haploid b. Diploid c. Polyploid d. Aneuploid
4. Defect in β thalassemia is due to
5. Structural defect in Alpha chain b. Structural change in Beta chain
6. Both a & b d. A reduced rate of synthesis of Beta chain
7. Which one of the following is a commonly used plasmid in genetic engineering?
8. pBR 322 b. Eco RI c. Al Ul d. Hind III
9. If both parents are heterozygous Aa, the expected genotype of the offspring may be
10. AA b. Aa c. aa d. All the above
11. Gregor Mendel’s hybridization work did not involve
12. Multiple allelic genes b. Sex linked genes c Linked genes d. All the three
13. The total number of gametes formed in the genotype BbRrTt is
14. 6 b. 4 c. 3 d. 8
15. In a family of four including a normal mother, a normal father, a color blind son and a normal son; who do you think has the defective X gene other than the affected son?
16. The mother b) The father c) The normal son d) The effected son only
17. Mendel did not observe linkage due to
18. Mutation b. Crossing over c. Independent assortment
19. None of these
20. The phenotypic dihybrid ratio is
21. 9:3:2:1 b. 9:3:2:2 c. 1:1 d. 9:3:3:1

1. All of this obeys Mendel’s laws except
2. Linkage b. Independent assortment c. Dominance d. Purity of gametes

 **Answer any FIVE of the following 5 X 5 = 25**

1. Explain the histological details of the functional unit of kidney with a labeled diagram.
2. Explain the histology of the exocrine part of pancreas.
3. Explain in detail the ClB method of mutation detection.
4. What is dosage compensation? How is it achieved?
5. Define Epistasis with an example.
6. Note: In guinea pigs black coat (B) and rough hair (R) are dominant over white coat (b) and smooth hair (r). B & r are independently assorting genes.

A guinea pig with black rough coat was crossed with one having smooth white one. In

the F1, black rough, black smooth, white rough and white smooth were produced in

the ratio of 1:1:1:1. What are the genotypes of the parents?

1. What is Linkage? Explain its types with suitable examples.

 **Answer any THREE of the following 3 X 10 = 30**

1. Explain the histological details of a hepatic lobule with a labeled diagram, emphasizing on hepatic cord.
2. Describe in detail the operon model for regulation of gene activity.
3. Write an essay on the types of autosomal nondisjunction with suitable examples.
4. Skin colour of man is a result of the interaction of many genes – Substantiate the statement.

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