REV-01
MSZ/04/10

2024/06

SET A

M.Sc. ZOOLOGY
SECOND SEMESTER (REPEAT)
GENETICS
MSZ-203

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 1hr. 30 mins. **Full Marks: 35**

(Objective)

Time: 15 mins. **Marks: 10**

Choose the correct answer from the following: ***1×10=10***

1. The expected genotypic ratio obtained by crossing the F1 generation in dihybrid cross would be:
   a. 1:2:1
   b. 1:2:1:2:4:2:1:2:1
   c. 1:2:4:2:1:2:1:2:1
   d. 9:3:3:1

2. Choose the incorrect option about penetrance.
   a. If percentage is 100%, all recessive genotype shows one phenotype
   b. If penetrance is 100%, the expressivity is 100%
   c. If penetrance is 100% all the heterozygotes have similar phenotype
   d. If penetrance is 100% all the dominant genotype have a different phenotype from recessive

3. If a chromosome loses its XIC due to deletion, it will.....
   a. Always be activated
   b. Never be activated
   c. Form Barr body
   d. Be degraded

4. The reason why haemophilia is more commonly observed in human males than in females is due to:
   a. The disease is due to Y linked recessive mutation
   b. The disease is due to X linked recessive mutation
   c. As a huge population of girls die in infancy
   d. The disease is due to X linked dominant mutation

5. The extrachromosomal element present in eukaryotic cell:
   a. Mitochondrial DNA
   b. Chloroplast DNA
   c. Both a and b
   d. None of the above

6. Which of the following is a sex-linked disease?
   a. Alzheimers
   b. Colour blindness
   c. Leukemia
   d. Malignancy

7. Which of the following is not a characteristic feature of Down's syndrome?
   a. Very tall
   b. Short life span
   c. Protruding tongue
   d. Rough skin

8. If non-disjunction of chromosomes take place in meiosis II, then:
   a. 25% gametes will be normal
   b. 50% gametes will be normal
   c. 75% gametes will be normal
   d. 100% gametes will be normal

9. Which of the following represents compensating nullisomic tetrasomy?

a. 2n-1-1
b. 2n-1+1
c. 2n-2+1
d. 2n-2+2

10. In poultry, F_1 (Walnut, RrPp) is self-crossed to give how many types of combs in F_2?

a. 1
b. 2
c. 3
d. 4

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Descriptive

Time : 1 hr. 15 mins. Marks : 25

[Answer question no.1 & any two (2) from the rest]

1. Solve the problem. 5
   If a woman heterozygous for colour blindness marries a colour blind man, what is the probability that their first child will be a colour blind daughter?

2. What is cytoplasmic inheritance? What are the different types of extra chromosomal element found in pro and eukaryotes? Describe the process of cytoplasmic inheritance in paramecium. 1+4+5=10

3. What do you mean by aneuploidy? Explain the different kinds of chromosomal anomalies associated with aneuploid. 3+7=10

4. Write short notes on: (*any two*) 5+5=10
   a) Co dominance
   b) Penetrance
   c) Expressivity

5. What is the difference between structural and numerical chromosomal aberrations? Discuss the various monogenic disorders with proper examples. 2+8=10

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