



BRAINWARE UNIVERSITY

Term End Examination 2019 - 20

Programme – Bachelor of Science honours in Biotechnology

Course Name – Genetics

Course Code – BBTC102

(Semester – 1)

Time allotted: 2.5 Hours

Full Marks: 60

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group –A

(Multiple Choice Type Question)

20 x 1 = 20

1. *Choose the correct alternative from the following (Answer any Twenty)*

(i) The genotypic F₂ ratio of monohybrid cross is

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|----------|-------------|
| a. 1:1. | b. 1:2:1. |
| c. 2:1:2 | d. 9:3:3:1. |

(ii) In a plant, red fruit (R) is dominant over yellow fruit (r) and tallness (T) is dominant over shortness. If a plant with RRTt genotype is crossed with a plant that is rrtt then

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|-------------------------------------|---|
| a. 25% will be tall with red fruit. | b. 50% will be tall with red fruit. |
| c. 75% will be tall with red fruit. | d. All of the offsprings will be tall with red fruit. |

(iii) When dominant and recessive alleles express together it is called

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|--------------------|---------------------|
| a. Codominance | b. Dominance |
| c. amphidominance. | d. pseudodominance. |

(iv) Which of the following is test cross?

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|-------------|-------------|
| a. Tt × tt. | b. TT × tt. |
| c. Tt × Tt. | d. tt × tt. |

- (xxiii) C band identify
- | | |
|---------------------------|-------------------------|
| a. heterochromatin | b. euchromatin |
| c. Secondary constriction | d. primary constriction |
- (xxiv) very lysine rich histone in chromosome is
- | | |
|-------|--------|
| a. H2 | b. H2B |
| c. H3 | d. H1 |
- (xxv) Choose the incorrect option wrt genetic code
- | | |
|-----------------|------------------------------|
| a. Triplet code | b. Genetic Code is ambiguous |
| c. Degenerate | d. AUG is non degenerate |

Group – B

(Short Answer Type Questions)

4 x 5 = 20

Answer any *four* from the following

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|----|----|--|---|
| 2. | a. | Distinguish between dominant and recessive epistatis. | 3 |
| | b. | Explain recessive epistatis with suitable example | 2 |
| 3. | a. | Briefly elaborate the experimental design made by Mendel to carry out his monohybrid and dihybrid cross in Pea. | 4 |
| | b. | Why Mendel's work was not accepted by contemporary scientist? | 1 |
| 4. | a. | State the law of independent assortment. | 2 |
| | b. | Using Punnett square demonstrate the law of independent assortment in dihybrid cross involving two heterozygote parents. | 3 |
| 5. | a. | Discuss the pattern of inheritance of ABO blood group in human. | 3 |
| | b. | Why Mendel selected Pea as an experimental material? | 2 |
| 6. | a. | Discuss blending and non blending theory of inheritance with suitable example | 3 |
| | b. | Explain expressivity with suitable example. | 2 |
| 7. | a. | What are the differences between SAT- DNA and SAT chromosome? | 3 |
| | b. | What is VNTR sequences? How it helps in DNA finger printing? | 2 |

Group – C

(Long Answer Type Questions)

2 x 10 = 20

Answer any two from the following

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|-----|-----|---|---|
| 8. | (a) | Discuss the historical development during pre and post Mendelian genetics. | 3 |
| | (b) | What are the application of model organism in genetics? | 7 |
| 9. | (a) | Inheritance pattern of flower colour in garden pea and Snapdragon differs. Why is the difference? | 4 |
| | (b) | Explain showing the cross up to F2 generation. | 4 |
| | (c) | Explain phenomenon of multiple allelism and co-dominance taking ABO blood group as example. | 2 |
| 10. | (a) | What are the role of meiosis in the life cycle of organism? | 5 |
| | (b) | Discuss the check point in cell cycle pregression of yeast. | 5 |
| 11. | (a) | Discuss different components of eukaryotic chromosome. | 6 |
| | (b) | What is facultative and constitutive heterochromatin. | 4 |
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