

ASSIGNMENT TOPICS
M.Sc Zoology Second Year

M.ScZD2.01 GENETICS AND EVOLUTION

Answer any THREE questions
All questions carry equal marks

3 x 10 = 30

1. Write a detailed note on the inheritance of X and Y-linked genes with suitable examples.
2. What is polyploidy? Explain the origin of polyploidy and its effects on the organisms.
3. Give a detailed account on the various autosomal and sex chromosomal disorders.
4. What is speciation? Explain the different models of speciation.
5. (a) Genetic counseling.
(b) Inborn errors of carbohydrate metabolism.
6. Give a detailed account on microevolution and macroevolution.
7. Describe the various destabilizing forces operating in the population.
8. Give an elaborate description on
 - (a) Gene evolution.
 - (b) Hardy-weinberg's equilibrium.

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M.ScZD2.02 DEVELOPMENTAL BIOLOGY AND ENDOCRINOLOGY

Answer any THREE questions
All questions carry equal marks

3 x 10 = 30

1. Describe about the hormonal regulation of Spermatogenesis and Oogenesis. Add a note on their specific gene expression and genomics.
2. What is fertilization? Explain the chemistry of fertilization events in detail.
3. Write an essay on the MOFT (multiple ovulation and embryo transfer technology) and in vitro fertilization techniques in detail.
4. What is an embryo induction? Give a detailed note on the mechanism of induction.
5. Discuss the anatomy and hormonal secretions of thyroid and adrenal gland in detail.
6. Describe the receptor structure and signal transduction mechanisms of G-protein family.
7. Explain about the calcium and phosphate homeostasis and the hormones involved in it.
8. (a) Pituitary gland secretions.
(b) Hormonal regulation of Nitrogen metabolism.

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M.ScZD2.03 CELL AND MOLECULAR BIOLOGY AND BIOTECHNOLOGY

Answer any THREE questions
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3 x 10 = 30

1. What is the molecular composition and arrangement of Bio-membranes?
2. Describe Cell cycle and CDK regulation.
3. Explain DNA damage and repair mechanisms.
4. What are stem cells? Add note on Embryonic stem cell and their applications.
5. What are the tools and molecular vectors needed for r-DNA technology. Add note on PBR-322.
6. Describe the techniques-Western blotting. Northern blotting and Southern blotting.
7. Explain PCR and its applications.
8. Describe the production of transgenic animals-mice and their applications.

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M.ScZD2.04 PATHOBIOLOGY AND IMMUNOLOGY

Answer any THREE questions
All questions carry equal marks

3 x 10 = 30

1. Write an essay on the pathogenicity and epidemiology and Dengue.
2. Write about bacterial infectious disease Diarrhoea.
3. Discuss the life cycle, pathogenicity and epidemiology of *Entamoeba histolytica*.
4. Describe the life cycle, pathogenicity and epidemiology of *Wuchereria bancrofti*.
5. What is mechanism of Humoral immunity?
6. What is cell mediated immunity? Add short notes on T-cell maturation and differentiation.
7. What are Antigens? Write different types of antigens and its structure and functions.
8. Explain different Antigen-AB interactions and precipitation reactions.
