

**Exam Code: 221203**  
**(20)**

**Paper Code: 3229**

**Programme: Master of Science (Zoology)**  
**Semester-III**

**Course Title: Research Techniques and Methodology**

**Course Code: MZOL-3481**

**Time Allowed: 3 Hours**      **Max Marks: 80**

**Note:-** Attempt five questions in all selecting at least one question from each section and fifth question any section. Each question carries equal (16)marks. Draw neat and well labelled diagrams wherever required.

**Section — A**

1. Discuss in detail ion exchange chromatography.      16
2. Discuss in detail types of centrifugation.      16

**Section — B**

3. Give schematic representation of instrumentation of NR spectroscopy. Explain in detail various components UV spectroscope.      16
4. Write short notes on following  
(a) FRET

(b) Patch Clamp

2X8=16

**Section — C**

5. Give theory and applications of Capillary Electrophoresis. 16
6. Define SDS-PAGE. Give stepwise procedure in detail. 16

**Section - D**

7. Give theory and applications of Geiger-Muller tube. 16
8. What is the role of radioisotopes in biological tissues? 16

**Exam Code: 221203**  
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**Paper Code: 3230**

**Programme: Master of Science(Zoology)**  
**Semester-III**

**Course Title: Developmental Biology-I**

**Course Code: MZOL-3482**

**Time Allowed: 3 Hours**

**Max Marks: 80**

**Note: Attempt five questions in all, selecting at least one question from each section (A to D). Fifth question can be attempted from any section. All questions carry equal marks (16). Support your answers with suitable diagrams wherever necessary.**

**Section A**

1. Elaborate major events in the metamorphosis of spermatid into sperm. Why these changes are essential?  
16
2. Give a detailed account of
  - a) Vitellogenesis
  - b) Invitro Fertilization8+8



### Section B

3. Write notes on
  - a) Cleavage Patterns
  - b) Morphogenetic Movements8+8
4. Give an account of parthenogenesis citing suitable examples and illustrations. 16

### Section C

5. Explore the concept of Cellular Commitment and its various levels in embryonic development. 16
6. What do you mean by specification and discuss in detail the autonomous and conditional specifications. 16

### Section D

7. Describe the mechanism underlying Differential Gene Expression in cells. 16
8. Investigate the mechanisms and significance of Post-Translational regulation in gene expression. 16

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**Programme: Master of Science (Zoology)**  
**Semester-III**

**Course Title: General Biochemistry**

**Course Code: MZOL-3483**

**Time Allowed: 3 Hours**

**Max Marks: 80**

**Note: Attempt five questions in all, selecting at least one question from each section and fifth question from any section. Each questions carries equal (16) marks. Draw neat and well labelled diagrams wherever required.**

**Section — A**

1. What is enzyme inhibition? Discuss various types of enzyme inhibition with suitable examples. 16
2. Discuss Michaelis — Menton Kinetics in details. 16

**Section - B**

3. Discuss phases of glycolysis in detail. 16
4. Write various steps of Pentose Phosphate Pathway and write its significance. 16

### Section — C

5. Give various reactions involved in Kreb's cycle. 16
6. Discuss following
  - (a) Regulation of citric acid cycle 8
  - (b) Glyoxylate cycle 8

### Section — D

7. Give detailed account of beta oxidation of fats. 16
8. Explain Electron Transport Chain in detail. 16



**Exam Code: 221203**  
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**Paper Code: 3232**

**Programme: Master of Science (Zoology)**  
**Semester-III**

**Course Title: Applied Zoology-II (Vertebrates)**

**Course Code: MZOL-3484**

**Time Allowed: 3 Hours**

**Max Marks: 80**

**Note:- Attempt five questions in all selecting at least one question from each section and fifth question any section. Each question carries equal (16) marks. Draw neat and well labelled diagrams wherever required.**

**Section A**

1. Write a note on products and by products from Pisciculture. 16
2. Explain housing system of poultry. 16

**Section B**

3. Explain Fur processing in detail. 16
4. Write a note on structure and physicochemical properties of wool. 16

### Section C

5. Explain housing system of dairy animals in detail. 16
6. Discuss different steps for processing of leather. 16

### Section D

7. Write a note on management and housing of Pigs. 16
8. Explain pharmaceuticals obtained from animals. 16