5. With the help of suitable diagrams describe the formation of germ layers in mammalian ectoderm, mesoderm and endoderm. [14]

OR

6. Write notes on the following: [7x2=14]
   (a) Gastrulation
   (b) Twins

7. Describe the mechanism involved in the establishment of dorso-ventral polarity in Drosophila. Outline the role of hox genes in establishing segment identity in Drosophila. [7+7=14]

OR

8. Discuss the roles of gap genes, segment polarity genes and pair rule genes in laying down the para segment boundaries in Drosophila. [14]

9. Answer the following: [7x2=14]
   (a) What is apoptosis. Describe the role of apoptosis in development.
   (b) Elucidate the mechanism of apoptosis involving intrinsic and extrinsic pathways.

OR

10. Write notes on the following: [7x2=14]
   (a) Mitochondrial control of ageing.
   (b) Insulin pathway control of ageing.

★★★

PG Even Semester Examination, May 2025

LIFE SCIENCE & BIOINFORMATICS

4th Semester

Course No. : LS - 651 (Z)

(Developmental Biology)

Full Marks : 70

Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

(Answer all questions)

1. What is specification? Describe the different types of specifications with their characteristics. [2+12= 14]

OR

2. Write short notes on the following: [7x2= 14]
   (a) Concept of genomic equivalence
   (b) Cytoplasmic determinants

3. Write short notes on the following: [7x2=14]
   (a) Chemotaxis and sperm activating peptides
   (b) Cortical granule reaction

OR

4. Enlist major differences in the meiosis in males and females. With suitable diagram explain the structure of sperm.

(Turn Over)