

**Third Semester FYUGP Degree (Reg) Examination  
NOVEMBER 2025**

**KU3DSCBTC201 - EMBRYOLOGY AND  
DEVELOPMENTAL BIOLOGY**

2024 Admission onwards

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Time : 2 hours

Maximum Marks : 70

**Section A**

**Answer any 6 questions. Each carry 3 marks.**

1. What is Sonic Hedgehog (Shh)?
2. What is pattern formation?
3. What is the difference between monothealous and dithealous anther?
4. What is the function of the embryo sac?
5. What is triple fusion?
6. What distinguishes centrolecithal eggs from other types, and in which organisms are they commonly found?
7. Which animals exhibit a hollow blastula with a blastocoel, and what is it called?
8. Define polydactyly

**Section B**

**Answer any 4 questions. Each carry 6 marks.**

9. How might the intricate patterns and textures on pollen grains serve dual purposes—both in pollination and in protecting the genetic material inside?
10. Design a hypothetical experiment to visualize the stages of megasporogenesis in a flowering plant. What key morphological features would you look for at each stage?
11. Create a labeled diagram showing the pathway of pollen tube growth and describe the guiding mechanisms.
12. Can you think of an analogy or a real-world example that illustrates the significance of different cleavage patterns in the early stages of development? How does this analogy help in understanding the process better?
13. Develop a detailed narrative comparing individual and group cell movements during gastrulation.

14. Explain the significance of gastrulation in embryogenesis.

### **Section C**

**Answer any 2 questions. Each carry 14 marks.**

15. Write the steps involved in spermatogenesis and oogenesis
16. Explain the steps involved in fertilization
17. Apply your knowledge of amphibian fate maps to explain the presumptive fate of dorsal lip of blastopore.