

MSc DEGREE EXAMINATION MAY 2026
(Second Semester)

Branch -**ZOOLOGY**

EXPERIMENTAL EMBRYOLOGY

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	The cell that undergoes meiosis I during spermatogenesis is (i) Spermatogonium (ii) Secondary spermatocyte (iii) Primary spermatocyte (iv) Spermatid	K1	CO1
	2	Nucleo-cytoplasmic interactions ensure proper development by (i) Preventing fertilization (ii) Blocking differentiation (iii) Coordinating gene expression and cellular metabolism (iv) Causing mutation	K2	CO1
2	3	The embryonic region that controls the development of surrounding tissues is called (i) Blastocoel (ii) Notochord (iii) Organizer (iv) Archenteron	K1	CO2
	4	Primary induction differs from secondary induction because it (i) Occurs later in development (ii) Establishes main embryonic axis (iii) Is reversible (iv) Involves ectoderm only	K2	CO2
3	5	Roux killed one blastomere using (i) Heat needle (ii) Acid treatment (iii) Cold shock (iv) Electric current	K1	CO3
	6	Rh incompatibility leads to foetal damage mainly due to (i) Reduced oxygen supply (ii) Placental detachment (iii) Maternal antibodies destroying foetal RBCs (iv) Hormonal imbalance	K2	CO3
4	7	The first successful test tube baby was born in (i) 1968 (ii) 1985 (iii) 1978 (iv) 1990	K1	CO4
	8	Government childcare schemes contribute to foetal and child development mainly by (i) Increasing birth rate (ii) Reducing genetic mutation (iii) Improving nutritional and immunization coverage (iv) Promoting infertility treatment	K2	CO4
5	9	The mass of undifferentiated cells formed during regeneration is called (i) Morula (ii) Gastrula (iii) Blastula (iv) Blastema	K1	CO5
	10	Teratogens cause congenital abnormalities mainly by (i) Enhancing enzyme activity (ii) Increasing chromosome number (iii) Preventing fertilization (iv) Altering normal developmental processes	K2	CO5

Cont...

Answer ALL questions
ALL questions carry EQUAL Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	List the role of cytoplasmic gradients in axis formation in <i>Drosophila</i> embryos.	K1	CO1
		(OR)		
	11.b.	Define nucleo-cytoplasmic interactions in early embryonic development.		
2	12.a.	Apply Waddington's experiment and explain its significance in embryonic induction.	K3	CO2
		(OR)		
	12.b.	Identify the types of differentiation occurs during embryogenesis.		
3	13.a.	Analyze Roux's experiment in explaining mosaic development in embryos.	K4	CO3
		(OR)		
	13.b.	Examine the significance of tissue transplantation in developmental biology.		
4	14.a.	Assess the causes and prevention of congenital abnormalities.	K5	CO4
		(OR)		
	14.b.	Evaluate the significance of twin studies in understanding human development.		
5	15.a.	Estimate the regeneration experiments of T. H. Morgan.	K6	CO4
		(OR)		
	15.b.	Discuss about the regeneration mechanisms in Amphibia.		

SECTION -C (30 Marks)

Answer ANY THREE questions
ALL questions carry EQUAL Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Define gametogenesis with reference to spermatogenesis.	K1	CO1
2	17	Analyze embryonic induction with reference to organizer experiments and differentiation mechanisms.	K4	CO2
3	18	Examine embryo transplantation and xenotransplantation and explain their applications in developmental studies.	K4	CO3
4	19	Evaluate about government childcare programs and assess their impact on maternal and child health.	K5	CO4
5	20	Discuss about teratology concepts and design preventive strategies for developmental abnormalities.	K6	CO5

Z-Z-Z- END