

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION MAY 2026
(Sixth Semester)

Branch - BIOTECHNOLOGY
ANIMAL BIOTECHNOLOGY

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	Gametogenesis results in formation of _____. (i) Embryo (ii) Gametes (iii) Blastula (iv) Zygote	K1	CO1
	2	Maternal proteins in the egg mainly help in _____. (i) Cell wall synthesis (ii) Early embryo patterning before genome activation (iii) Preventing cleavage (iv) DNA mutation	K2	CO1
2	3	Unequal cleavage due to yolk distribution is called _____. (i) Holoblastic cleavage (ii) Meroblastic cleavage (iii) Radial cleavage (iv) Spiral cleavage	K1	CO2
	4	Serum in culture media provides _____. (i) Antibiotics only (ii) Hormones and growth factors (iii) Carbon dioxide (iv) Buffer salts only	K2	CO2
3	5	A culture derived directly from tissue is called _____. (i) Secondary culture (ii) Cell line (iii) Primary culture (iv) Continuous culture	K1	CO3
	6	Cryopreservation protects cells mainly by _____. (i) Increasing metabolism (ii) Preventing ice crystal damage (iii) Raising pH (iv) Increasing oxygen	K2	CO3
4	7	Transfer of DNA into animal cells is called _____. (i) Translation (ii) Transfection (iii) Replication (iv) Transduction	K1	CO4
	8	Selectable markers are used to _____. (i) Kill all cells (ii) Identify successfully modified cells (iii) Increase mutation rate (iv) Stop cell division	K2	CO4
5	9	Gene therapy aims to _____. (i) Replace defective genes (ii) Destroy chromosomes (iii) Prevent fertilization (iv) Block transcription permanently	K1	CO5
	10	Pharming refers to _____. (i) Production of drugs from plants only (ii) Production of therapeutic proteins using transgenic animals (iii) Vaccine storage technique (iv) Cell culture sterilization	K2	CO5

Cont...

SECTION - B (35 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain gametogenesis in animals.	K3	CO1
		(OR)		
	11.b.	Describe cleavage patterns and explain how early embryo development is controlled.		
2	12.a.	Outline the history of animal cell culture and list requirements of a cell culture laboratory.	K2	CO2
		(OR)	K3	
	12.b.	Relate the composition of culture media to the functions of CO ₂ , serum and growth factors.		
3	13.a.	Explain types of animal cell culture and their characteristics.	K2	CO3
		(OR)	K3	
	13.b.	Describe the various cell counting methods and its cryopreservation techniques.		
4	14.a.	Explain methods to introduce DNA into animal cells.	K2	CO4
		(OR)	K4	
	14.b.	Compare gene silencing and gene knockout methods.		
5	15.a.	Describe types of vaccines and their production using cell culture.	K2	CO5
		(OR)	K4	
	15.b.	Critically examine methods of producing transgenic animals and their ethical concerns.		

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	Discuss embryo preservation techniques and semen banking. Add notes on AI, IVF	K2	CO2
2	17	Analyze the role of balanced salt solutions and describe the chemical and metabolic functions of culture media components.	K3	CO3
3	18	Outline the steps involved in cell banking and describe how cytotoxicity of drugs is tested using PI and MTT assays.	K3	CO3
4	19	Discuss gene therapy approaches and their importance in modern medicine.	K4	CO4
5	20	Explain pharming and production of therapeutic proteins in transgenic animals.	K4	CO5