(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2026

(Fourth semester)

Branch -**APPLIED MICROBIOLOGY**

APPLIED BIOTECHNOLOGY, IPR & BIOETHICS

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	Identify the microorganism which degrades plastics a) Escherichia coli b) Pseudomonas c) Saccharomyces cerevisiae d) Mycobacterium tuberculosis	K1	CO1
	2	---------- microorganism is commonly genetically engineered for antibiotic production. a) Saccharomyces cerevisiae b) Streptomyces c) Plasmodium falciparum d) Homo sapiens	K2	CO1
2	3	AFLP stands for ---------- a) Amplitude Fragmentation and Ligation Procedure b) Amplified Functional Ligase Process c) Amplitude fragment length Polymorphism d) Amplified Fragment Length Polymorphism	K1	CO2
	4	--------- is an example of reporter genes. a) p53 b) r RNA c) HSP 70 d) GFP	K2	CO2
3	5	Genetically engineered fish is used for a) Biosensor for water pollution b)Rapid growth c) Greater resistance d)All the above	K1	CO3
	6	The unit of genetic linkage is measured in: a) Centimorgans b) Base pairs c) Kilodaltons d) Amino acids	K2	CO3
4	7	WIPO was established in which year? a)1970 b)1979 c)1993 d)2000	K1	CO4
	8	Which of the following is not the online Patenting tools ? a) Innography b) Derwent Innovation c) Patsnap d) Photopea	K2	CO4
5	9	Which law prohibits the illegal trade of human organs? a) The Nuremberg Code b) The Universal Declaration of Human Rights c) The Human Organ Transplant Act d) None of the above	K1	CO5
	10	What ethical principle must researchers follow when studying ethnic and racial groups? a) Autonomy b) Justice c) Beneficence d) All of the above	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.	Identify the applications of genetically engineered organisms in biodegradation of Plastics.	K3	CO1
		(OR)		
	11.b.	Develop a strategy to enhance antibiotic production using engineered microorganisms.		
2	12. a.	Explain the molecular markers used in rDNA Technology.	K5	CO2
		(OR)		
	12.b.	Interpret the steps involved in transforming a plant using *Agrobacterium tumefaciens*.		
3	13.a.	Compile the methods of producing transgenic mice.	K6	CO3
		(OR)		
	13.b.	Discuss the role of RFLP in genetic mapping.		
4	14.a.	Discover the key Global patent databases with examples.	K4	CO4
		(OR)		
	14.b.	Examine the Patent Cooperation Treaty (PCT) in the international patenting process.		
5	15. a.	Assess the effects of genetically modified foods on health concerns.	K5	CO5
		(OR)		
	15.b.	Evaluate the ethical concerns of Xenotransplantation.		

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	Construct a flowchart illustrating the xanthan gum production process and key engineering targets.	K3	CO1
2	17	Discuss the physical methods of gene transfer in plants.	K5	CO2
3	18	Discuss the gene regulation of Lac operon.	K6	CO3
4	19	Compare Pre-grant and post-grant opposition.	K4	CO4
5	20	Explain the ethical protocol to conduct research using animals.	K5	CO5

Z-Z-Z END