Printed page: 02 **Subject Code: AMTBT0111**

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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY ,GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

MASTER OF TECHNOLOGY (M.TECH)

(SEM: First) Theory Examination (2020-2021)

SUBJECT NAME: IMMUNOLOGY & VACCINE TECHNOLOGY

Time: 3 Hours **Max. Marks:70**

General Instructions:

- All questions are compulsory. Answers should be brief and to the point.
- This Question paper consists of 02 pages & 8 questions.
- It comprises of three Sections, A, B, and C. You are to attempt all the sections.
- **Section A** -Question No- 1 is objective type questions carrying 1 mark each, Question No- 2 is very short answer type carrying 2 mark each. You are expected to answer them as directed.
- **Section B** - Question No-3 is Long answer type –I questions with external choice carrying 4marks each. You need to attempt any five out of seven questions given.
- **Section C** - Question No. 4-8 are Long answer type –II (within unit choice) questions carrying 7 marks each. You need to attempt any one part *a* or *b.*
- Students are instructed to cross the blank sheets before handing over the answer sheet to the invigilator.
- No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION – A

1.	**Answer all the parts-**		**[5x1=5]**	**CO**
	a.	Define vaccine.	**(1)**	**CO 3**
	b.	Write down the full-from of MHC.	**(1)**	**CO 1**
	c.	Define immunoglobulin.	**(1)**	**CO 2**
	d.	What are adjuvants?	**(1)**	**CO 3**
	e.	What is HLA typing?	**(1)**	**CO 1**
2.	**Answer all the parts-**		**[5×2=10]**	**CO**
	a.	What are antibiotic? Give two examples.	**(2)**	**CO 2**
	b.	On what condition FDA licenses the vaccine? Explain the criteria for the same.	**(2)**	**CO 5**
	c.	What is hematopoiesis?	**(2)**	**CO 1**
	d.	What are antigens? What is hapten?	**(2)**	**CO 2**
	e.	Name two protein based vaccine for COVID-19.	**(2)**	**CO 3**

SECTION – B

3.	**Answer any five of the following-**		**[5x4=20]**	**CO**
	a.	How you designed a vaccine for parasitic infection?	**(4)**	**CO4**
	b.	How is the virus causing rabies diseases is diagnosed in lab? Name the different methods/techniques involve in the diagnostic procedure?	**(4)**	**CO 4**
	c.	Explain the regulation of vaccines in developing countries.	**(4)**	**CO 3**
	d.	Describe the important features of humoral and cell mediated immunity.	**(4)**	**CO 1**
	e.	Differentiate between active and passive immunization.	**(4)**	**CO 1**
	f.	How would you compare the components of innate and acquired immunity?	**(4)**	**CO 1**
	g.	Write down the properties of IgG antibody.	**(4)**	**CO 2**

SECTION – C

4	**Answer any one of the following-**		**[5×7=35]**	**CO**
	a.	What is the MHC? Describe their role in immunity?	**(7)**	**CO 1**
	b.	Draw basic structure of Immunoglobulins. Write down the different classes of immunoglobulins, along with their properties.	**(7)**	**CO 2**
5.	**Answer any one of the following-**			
	a.	Describe the basic role of MHC in immune responsiveness and disease susceptibility?	**(7)**	**CO 1**
	b.	Describe the kinetics behind the immune response?	**(7)**	**CO 2**
6.	**Answer any one of the following-**			
	a.	What facts shows the vaccination of immunocompromised hosts?	**(7)**	**CO 3**
	b.	How would you compare the recombinant DNA and protein-based vaccines?	**(7)**	**CO 3**
7.	**Answer any one of the following-**			
	a.	Describe live and inactivated vaccine for polio.	**(7)**	**CO 4**
	b.	Describe diphtheria toxoid and anthrax vaccines	**(7)**	**CO 4**
8.	**Answer any one of the following-**			
	a.	Detail out the procedure for vaccine manufacturing.	**(7)**	**CO 5**
	b.	What approach is being used for vaccine safety and Legal issues?	**(7)**	**CO 5**