Register Number:……..

KUMARAGURU
college of technology
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B. TECH DEGREE EXAMINATIONS: NOV/DEC 2022

(Regulation 2018)

Seventh Semester

BIOTECHNOLOGY

U18BTE0005 Vaccine Technology

COURSE OUTCOMES

CO1: Comprehend knowledge about the historical vaccine development and conventional vaccines in disease prevention
CO2: Classify and understand about different bacterial vaccine preparation methods
CO3: Acquire fundamental research knowledge to implement the production viral vaccines
CO4: Understand advancement of therapeutic vaccines and technological applications
CO5: Recognize the fundamental knowledge vaccine production through modern recombinant DNA and vaccine delivery methods
CO6: Understand the regulatory issues, guidelines and environmental concerns with the use of recombinant vaccines

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

(Answer not more than 40 words)

1.	Mention Lady Mary Wortley Montagu's contribution in the field of vaccine research.	CO1	[K_2]
2.	Expand the following type of vaccine: i).RVV and ii.) PCV .	CO1	[K_2]
3.	BCG vaccination should only be considered for children who have a negative TB test and who are continually exposed, and cannot be separated from adults- Justify this statement.	CO2	[K_4]
4.	List any two bacterial components used to prepare acellular pertussis vaccines.	CO2	[K_2]
5.	Tabulate the main similarity between Europe, Japan, and India for production of different types of rabies vaccine.	CO3	[K_2]
6.	Tissue culture is a useful method for cultivating clinical samples suspected of harboring a virus- Justify.	CO3	[K_3]
7.	What are the strategies to be considered while developing a recombinant coronavirus vaccine?	CO4	[K_3]
8.	State any one salient feature of "Covifenz" vaccine and where it developed?	CO4	[K_2]
9.	Distinguish vaccinia and variola virus.	CO5	[K_3]
10.	Categorize recombinant viral vaccines based on their replication ability.	CO5	[K_2]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	a)	Identify the knowledge gap to develop new vaccines by understanding vaccine induced antibody in biological system.	4	CO1	[K_3]
	b)	Tabulate and compare different types of vaccines and their clinical uses – Give an example for each type.	12	CO1	[K_3]
12.	a)	Analyse the effect of temperature and freezing condition on the final quality/effectiveness of vaccine.	8	CO2	[K_4]
	b)	Illustrate process flow diagram for production of any ONE vaccine with critical steps.	8	CO2	[K_3]
13.	a)	Narrate various applications of cell culture techniques for vaccine development.	8	CO3	[K_2]
	b)	When you start to establish primary culture for vaccine production, what type of adventitious agents may be noticed with primary cells? Give example for each primary cell.	8	CO3	[K_3]
14.	a)	Explain any TWO protein based edible vaccines with suitable host plant for synthesis.	4	CO4	[K_2]
	b)	As a clinical pathologist, how will you choose adjuvants for formulation of a vaccine? Give specifications for these adjuvants.	12	CO4	[K_4]
15.	a)	Compare any two vaccine delivery methods and add a note their limitations.	4	CO5	[K_3]
	b)	Routes of vaccine administration will vary with respect to age and nature of vaccine – Justify this statement with specific examples.	12	CO5	[K_3]
16.	a)	How is a vaccine approved for mass production and distribution from laboratory scale to industrial scale?	4	CO6	[K_3]
	b)	Illustrate simple process flow diagram for clinical developmental plan, manufacture, packing and storage of vaccine with adequate guidelines.	12	CO6	[K_3]

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