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Question Paper Code: UC305

B.E./B.Tech. DEGREE EXAMINATION, APRIL / MAY 2025

Professional Elective

Biotechnology

21BT305 VACCINE TECHNOLOGY

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Recite the term "Vaccine". CO1 U
2. State the difference between 'active immunization' and 'passive immunization'. CO1 U
3. Identify the role of cytokines in the immune system. CO1 U
4. Differentiate conformational epitope and linear epitope. CO1 U
5. 'Live' vaccines are dangerous if not properly preserved in refrigerator. Reason out the statement. CO1 U
6. What are the procedures for administration of rabies vaccine? CO1 U
7. Define the concept of 'Immuno Informatics'. CO1 U
8. Adeno virus vectors are of great importance for new vaccine design. How? CO2 -App
9. Write down some basic regulations to be done before starting clinical trials in healthy humans for new vaccine. CO1 U
10. What are the essential ethics required for performing clinical trials in tribal population? CO1 U

PART – B (5 x 16= 80 Marks)

11. (a) Explain in detail about general immunization practices guidance CO1 U (16)
Or
(b) Expand the mechanism behind killed vaccine with a detailed explanation of an example. CO1 U (16)

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| 12. | (a) | Summarize the mechanism of MHC I and MHC II | CO1 U | (16) |
| | | Or | | |
| | (b) | Explain in detail about the types of hypersensitivity reactions. | CO1 U | (16) |
| 13. | (a) | Describe in detail about the mechanism, procedure and advantages in the design of Polio Vaccine. | CO1 U | (16) |
| | | Or | | |
| | (b) | Explain the mechanism, procedure and advantages in the design of Hepatitis B Vaccine | CO1 U | (16) |
| 14. | (a) | Describe the rationale approach for vaccine development in detail. | CO1 U | (16) |
| | | Or | | |
| | (b) | Explain the process of T-Cell expression cloning for identification of vaccine targets for intracellular pathogens. | CO1 U | (16) |
| 15. | (a) | Outline the process of using ‘immunoinformatics’ for ‘better’ vaccine design in detail. Highlight the ramifications in designing novelty in Vaccine Technology. | CO2 -App | (16) |
| | (b) | A Computer Science student wants to do a project on vaccine design. Provide strategies and help him in designing a ‘nearly’ successful vaccine candidate using softwares. | CO2- App | (16) |