

U.G. 4th Semester Examination - 2021**Molecular Biology and Biotechnology**
[HONOURS]**Course Code : MBBT-H-402-T-CCR-9**

Full Marks : 20

Time : 1 Hour

*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer any **five** questions: $1 \times 5 = 5$
- a) Explain the importance of codominant expression of MHC alleles.
 - b) Explain with examples how an adjuvant augments an immune response.
 - c) What are DNA vaccines?
 - d) Define affinity and avidity.
 - e) Give two examples of nucleoside reverse transcriptase inhibitors of HIV.
 - f) What is inflammation? State characteristics of an inflammatory response.
 - g) What are classical and non-classical MHC Class I genes?

- h) Why adaptive immune response occurs only after a delay of several days?
2. Answer any **one** of the following: $5 \times 1 = 5$
- a) Classify and explain the clinical stages of HIV infection. 5
 - b) State the mode of action of any recombinant vaccine with example. Explain why it is often difficult to design a vaccine against some parasitic infections like *Trypanosoma*. 3+2
 - c) What is clonal selection theory? Matching or mismatching of class I antigens has a lesser effect on graft survival unless there is also mismatching of class II antigens. Explain. 2+3
3. Answer any **one** of the following: $10 \times 1 = 10$
- a) How will you determine if donor and recipient are compatible for graft transplantation? What test you will perform to accomplish HLA typing of potential donor and recipient? Explain the process of graft acceptance and rejection with schematic diagram. 2+3+5
 - b) Differentiate between RIA and ELISA. What are the different types of ELISA? With some examples differentiate between active and passive immunization. 2+5+3

[Turn Over]

- c) How antigen receptors with an almost infinite range of specificities are encoded by a finite number of genes? ‘Allelic exclusion ensures a single antigenic specificity’ — Explain. What is ‘Class Switching’ or ‘Isotype Switching’?

5+3+2
