



WEST BENGAL STATE UNIVERSITY
B.Sc. Honours 5th Semester Examination, 2021-22

MCBACOR12T-MICROBIOLOGY (CC12)

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.*

Question No. 1 is compulsory and answer any four from the rest

1. Answer any **four** questions from the following: 2×4 = 8
- (a) Define allotypic and idiotypic determinants.
 - (b) Define the function of bone marrow stromal cells in haematopoiesis.
 - (c) What are T1 antigens? Give two examples of T1 antigens.
 - (d) What do you mean by clonal anergy?
 - (e) What is chimeric antibody?
 - (f) What are exogeneous and endogeneous antigens?
 - (g) What are NKT cells?
 - (h) Mention any two biological consequences of complement activation.
2. (a) 'The central event of complement activation is proteolysis of C3 molecule'. 3
— Justify this statement.
- (b) Explain why the red blood cells of an individual are not normally destroyed as a result of innocent-bystander lysis by complements. 1
- (c) Briefly explain the mechanism of action of the following regulatory proteins of the complement activation pathways: 1+1
- (i) C1 inhibitor (C1 Inh),
 - (ii) Factor H
- (d) Define affinity and avidity in relation to antigen-antibody interactions. 2
3. (a) Draw the structure of IgG with proper labeling. 1
- (b) Explain the function of hinge region. 1
- (c) Explain the process of 'ADCC'. 2
- (d) Describe the principle of selection of monoclonal antibody-producing B-cells. 4
4. (a) What is meant by sensitized mast cell in Type I hypersensitivity? 1
- (b) Name any two pre-formed and any two newly-synthesized mediators involved in Type I hypersensitivity. 2

- (c) Write a short note on Erythroblastosis Fetalis. 3
(d) Define prozone effect. 2
5. (a) Mention the proposed mechanisms involved in development of autoimmune diseases. 3
(b) Name any two immunodeficiency diseases. 1
(c) What is central tolerance? How does it differ from peripheral tolerance? 2
(d) What are tumor antigens? 1
(e) What do you mean by paratope and agretope? 1
6. (a) Explain the ELISPOT technique. 3
(b) Distinguish between primary immune response and secondary immune response. 2
(c) What is the principle behind immunofluorescence technique? 2
(d) What do you mean by passive agglutination? 1
7. (a) Mention any one contribution of (i) Rodney Porter and (ii) Karl Landsteiner in the field of Immunology. 1
(b) What are Anaphylatoxins? 1
(c) Explain the antigen presentation process by the cytosolic pathway. 2
(d) Why are circulating IgM unable to activate the complement pathway? 2
(e) What are Superantigens? 2
8. (a) Define: (i) Haptens , (ii) Adjuvants. 2
(b) Following pair of antigens listed below are:- 2
(i) Native bovine serum albumin (BSA)
(ii) Heat – denatured BSA
Which one of these above is a better immunogen? Justify your answer.
(c) What are T & B cell epitopes? 2
(d) What are the differences between activated and resting lymphocytes? 2
9. (a) Mention one application of Flow cytometry. 1
(b) What are granzymes? 1
(c) How do cytotoxic T lymphocytes kill the target cells? Explain diagrammatically. 3
(d) What do you mean by co-stimulatory signal? 2
(e) What do you mean by bacterial agglutination? 1

N.B. : *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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