Time: 2 ½ HOURS **MARKS: 75**

N.B. 1. All Questions are compulsory
2. Marks on the right indicate full marks to the questions
3. Draw neat and labeled diagram wherever necessary
4. Use of Non scientific calculator is permissible

Q.1 A) Describe the following- **(Any one)** (10)

a. Dissociation Reassociation Constant and significance of Cot curves.
b. Griffith's experiment of 1928 and its outcome.

B) Attempt the following- **(Any one)** (05)

a. Explain the role of promoters and enhancers in transcriptional regulation.
b. Describe structure of Solenoid fiber in organization of DNA.

Q.2 A) Explain the following- **(Any one)** (10)

a. Generalized Transduction with suitable diagram.
b. Seven deletion mutants within 'C' cistron of rII region of phage T4 were tested in all pairwise combinations for wild type recombinants.

Following are the results where, '+' = Recombinants obtained and ' 0 ' = No recombinants obtained.

	1	2	3	4	5	6	7
1	0	+	0	0	+	0	0
2		0	0	0	+	+	0
3			0	0	+	+	0
4				0	+	0	0
5					0	0	0
6						0	0
7							0

Construct a topological map for these Deletions.

B) Explain/Solve the following- **(Any one)** (05)

a. Recombination in phages and its importance.
b. Following are five Hfr strains with the marker order donated as shown in the following table:

Hfr Strain	Order of markers donated
1	Z W E M S
2	A X P S M
3	B N C A X
4	B Z W E M

1. What is the order of the markers on the original F^+ and their site of integration ?
2. Does the data support the concept of linearity?

Q.3.A. Answer **any one** of the following: (10)

a. Give a detailed account on secondary lymphoid organ
b. Comment on the organisation and expression on immunoglobulin gene for generation of antibody diversity.

Q.3.B. Write short notes on **any one** of the following: (05)

a. Distinguish between innate and adaptive immunity
b. Structure of IgG.

Q.4.A. Answer **any one** of the following: (10)

a. Explain the processing and presentation of antigen via endogenous pathway
b. Describe in detail the Classical Complement pathway.

Q.4.B. Write short notes on **any one** of the following: (05)

a. Allelic polymorphism
b. Regulation of complement pathway.

Q. 5 Explain the following- **(Any three)** (15)

a. F' factor and its significance
b. C value paradox
c. Complementation in phages
d. Monoclonal antibody
e. Immunoelectrophoresis
f. Neutrophil

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