[Time: 2½ Hours]   **[Marks:60]**

Please check whether you have got the right question paper.

N.B: 1. All questions are compulsory
            2. All questions carry equal marks
            3. Draw neat labelled diagram whenever necessary.

Q. 1 Answer the following **(Any Two)**   **12**
   1) Diagrammatically explain mechanism of Grave's disease
   2) Explain with the help of suitable example deficiencies of immunoglobulin classes.
   3) Quantitative deficiencies in neutrophils can be congenital or acquired – Justify
   4) Explain with the help of suitable experiment how T cells play a key role in allograft rejection.

Q. 2 a) Elaborate on the strategy use for inducible gene deletion in select tissues of transgenic mice   **08**
                                                OR
       b) Describe in detail the production of Transgenic mice   **08**

       p) Justify inbred strains can reduce experimental variation   **04**
                                                OR
       q) How Humanized antibodies are synthesized?   **04**

Q. 3 Do as directed **(ANY TWO)**   **12**
   1) Explain any Two methods of cell cycle analysis
   2) Elaborate on invitro cell imaging Techniques
   3) What are the approaches used in imaging live cells tissues
   4) Write a note on use of microarray for diagnosis of human diseases.

Q. 4 Answer **any 2** of the following   **12**
   1) Describe the role of cytokines in connecting immune system and brain.
   2) With the help of an example explain the impact of stress on immunity
   3) Psychological events can modulate immunity – Justify
   4) Write the functional significance of inflammation and phase response.

Q. 5 Write short notes on **(Any 3)**   **12**
   1) Common variable immunodeficiency
   2) Myasthenia Gravis
   3) Phage display
   4) Two photon microscopy
   5) MHC – Tetramer Technology
   6) Energy demand & Balance in PNI

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