

**BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI**  
**DEPARTMENT OF PHARMACY**  
**Mid Semester Examination**

**Cellular and Molecular Pharmacology PHA G625 (Closed Book)**

**Weightage: 30%**

**Duration: 90 Mins**

**Date: 31/10/2022**

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**Instructions:**

- ✓ **Write correct and precise answer.**
- ✓ **No spelling mistakes.**
- ✓ **Marks will only be given to correct and well explained answer and not to partial answers.**
- ✓ **Write in clear and legible handwriting.**
- ✓ **Answer the questions in same sequence. Write the each question on a separate sheet.**

1. Tissue-specific regulation of metabolism during feeding, which helps in regulating the metabolic homeostasis. In this context,
  - a. Explain the concept of "Pre-Diabetic Stage". **5M**
  - b. Explain the progression of normal physiology to type II diabetic pathophysiology. **4M**
  
2. The lipid bilayer is permeable to oxygen, carbon dioxide, water and steroids, but impermeable to glucose. Justify this statement by explaining the permeability of glucose in response to feeding. **5M**
  
3. Rapid degradation of damaged mitochondria is necessary for cell survival. Explain the steps involved in mitophagy process and role of mitophagy in acute and chronic kidney diseases. **6M**
  
4. The process of protein synthesis to folding and transport is highly complex and is prone to errors. Improper protein folding may lead to several pathophysiological conditions. Explain role of this important process in the type II diabetes progression. **5M**
  
5.  $\text{Ca}^{2+}$  is a ubiquitous intracellular messenger that controls diverse cellular functions. Explain the processes which control the cytosolic  $\text{Ca}^{2+}$  concentration. **5M**