



W1-2-60-1-6

**JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY**  
**University Examinations 2019/2020**

**EXAMINATION FOR THE DEGREE OF MASTER OF SCIENCE**

**TIM 3111: SIGNAL TRANSDUCTION AND PROTEMICS**

**DATE: FEB, 2020**

**TIME: 3 HOURS**

---

**INSTRUCTIONS: Answer any FOUR Questions (25 Marks Each)**

---

**Question One**

a) Define the following terms:

- i. Intracellular receptors [2 marks]
- ii. Signal transduction [2 marks]
- iii. Ligand [2 marks]
- iv. Synapse [2 marks]

b) Briefly discuss three categories of cell-surface receptors. [12 marks]

c) Differentiate between internal and external receptors. [5 marks]

**Question Two**

a) Discuss FOUR types of cell signaling mechanisms. [20 marks]

b) Describe the mechanism cyclic AMP activates protein kinase A. [5 marks]

**Question Three**

a) Explain allosteric regulation and phosphorylation as ways that protein function is regulated.

- i. Allosteric regulation [10 marks]
- ii. Phosphorylation [10 marks]

b) Using illustrations distinguish between the different forms of reversible inhibitors. [5 marks]