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**THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED**

**Q.1. Answer the following short questions: (10x3=30)**

- i. Define conjugation.
- ii. What is difference between generalized and specialized transduction?
- iii. What is basic principle of genetic engineering?
- iv. What is difference between same sense mutation and non-sense mutation?
- v. Define Evolution. What are its types?
- vi. What is difference between starch and cellulose?
- vii. Differentiate between saturated and unsaturated fats.
- viii. Draw tertiary structure of protein.
- ix. What is difference between glyoxysomes and peroxisomes?
- x. What are purines? Give its types.

**Q.2. Answer the following questions. (3x10=30)**

- i.
  - a. Explain Lac Operon.
  - b. What is genetic recombination and its types?
- ii.
  - a. Define crossing over. Explain its mechanism.
  - b. What is inversion and translocations?
- iii.
  - a. What are different types of endoplasmic reticulum? Explain their functions.
  - b. Explain the functions of plasma membrane.