



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions. (6x5=30)

- i. Write two methods for the protection and deprotection of carbonyl group in chemical reaction.
- ii. What are 1,3 dipolar cycloaddition reactions? Give two examples.
- iii. What is phase transfer catalysis? Describe how quaternary ammonium salts act as phase transfer catalyst?
- iv. What is solid phase synthesis? Give one example with complete procedure.
- v. Briefly explain the structure and reactivity of singlet nitrene and triplet nitrene?
- vi. Explain the chemical utility of phosphorus ylides.

Answer the following questions.

- Q. NO. 2. i. By using energy level correlation diagram explain the thermal and photochemical electrocyclic reactions of conjugated polyenes with $4n+2 \pi$ electrons. [8]
- ii. What is Sigmatropic rearrangement reaction? Give one example of [3,3] Sigmatropic rearrangement. [2]

- Q. NO. 3. Write two reactions with complete mechanism for each of the following: [5 +5]
- i. Organic synthesis involving boron reagent.
 - ii. Organic synthesis involving silicon reagent.

- Q. NO. 4. I. Explain the mechanisms for addition of singlet carbene and triplet carbene to a carbon carbon double bond. [5]
- II. What is benzyne? Briefly explain its structure, reactivity and methods for generation. [5]