# 📘 MCQs: Pydantic Type Hints in Agentic AI

### 1. What is the primary role of ****type hints**** in Pydantic models?

A) Improve runtime speed  
B) Enable validation and schema generation  
C) Replace dictionaries  
D) Remove Python typing

**Answer:** B  
**Explanation:** Pydantic leverages Python type hints for **runtime validation** and **automatic schema definition**, essential in Agentic AI workflows.

### 2. Which type hint ensures a field must always be an integer?

A) str  
B) int  
C) float  
D) Any

**Answer:** B  
**Explanation:** Pydantic validates that the field matches the int type at runtime.

### 3. Which of the following type hints is best for ****optional fields****?

A) List  
B) Optional  
C) Dict  
D) Any

**Answer:** B  
**Explanation:** Optional[type] allows a field to be either the specified type or None.

### 4. What happens if a string is passed to a field typed as int in Pydantic?

A) It is always rejected  
B) Pydantic tries to coerce (e.g., "5" → 5)  
C) It converts everything to str  
D) The model crashes

**Answer:** B  
**Explanation:** Pydantic attempts **type coercion** when possible before raising validation errors.

### 5. Which type hint is best for a ****list of integers****?

A) int[]  
B) List[int]  
C) Array  
D) Set

**Answer:** B  
**Explanation:** List[int] enforces that the list contains only integers.

### 6. In Agentic AI, why are ****type-hinted schemas**** important?

A) They reduce computation time  
B) They provide structured communication between agents and tools  
C) They allow agents to generate SQL queries automatically  
D) They remove validation steps

**Answer:** B  
**Explanation:** Type hints ensure agents **produce/consume structured data**, reducing ambiguity.

### 7. Which type hint enforces ****unique unordered elements****?

A) List  
B) Set  
C) Tuple  
D) Dict

**Answer:** B  
**Explanation:** Set[type] validates uniqueness of items.

### 8. What does Dict[str, int] enforce?

A) Dictionary keys must be int and values str  
B) Keys are strings and values are integers  
C) Keys are any type and values must be integers  
D) Both keys and values are flexible

**Answer:** B  
**Explanation:** Dict[str, int] enforces **string keys and integer values**.

### 9. Which type hint should you use for ****fixed-length collections****?

A) List  
B) Tuple  
C) Set  
D) Any

**Answer:** B  
**Explanation:** Tuple[type, ...] ensures fixed-length, ordered collections.

### 10. What is the effect of using Union[str, int]?

A) Field must be both string and int  
B) Field can be either string or int  
C) Field is ignored  
D) Field defaults to int

**Answer:** B  
**Explanation:** Union allows multiple acceptable types.

### 11. Which type hint is most appropriate for an ****unstructured field****?

A) Any  
B) List  
C) Optional  
D) Dict

**Answer:** A  
**Explanation:** Any bypasses validation, useful when flexibility is required.

### 12. In Pydantic, how is ****nested validation**** handled?

A) Only with dictionaries  
B) Using other Pydantic models as type hints  
C) Using Any  
D) Manually with regex

**Answer:** B  
**Explanation:** You can nest **Pydantic models inside models** for structured validation in AI schemas.

### 13. Why are ****Literal types**** useful in Agentic AI?

A) To restrict fields to specific values  
B) To improve performance  
C) To disable validation  
D) To store long text

**Answer:** A  
**Explanation:** Literal["A", "B"] ensures a field only accepts defined values (useful for enums).

### 14. Which type hint is best for enforcing ****email strings****?

A) str  
B) EmailStr from Pydantic  
C) Any  
D) Optional[str]

**Answer:** B  
**Explanation:** EmailStr is a Pydantic custom type that validates proper email format.

### 15. Which type hint would validate a ****URL field**** in Pydantic?

A) str  
B) UrlStr  
C) HttpUrl  
D) Optional[Any]

**Answer:** C  
**Explanation:** HttpUrl enforces valid HTTP/HTTPS URLs.

### 16. How does conint(gt=0) differ from plain int?

A) It prevents integer usage  
B) It enforces extra constraints (e.g., greater than 0)  
C) It converts numbers to float  
D) It allows strings

**Answer:** B  
**Explanation:** Constrained types (conint, constr, etc.) enforce extra validation rules.

### 17. Which type hint allows AI agents to ****store structured JSON responses****?

A) Dict[str, Any]  
B) str  
C) Tuple  
D) Optional[int]

**Answer:** A  
**Explanation:** JSON-like data can be represented using dictionaries with flexible values.

### 18. What happens if a field is typed as Optional[int] but no value is provided?

A) It raises a ValidationError  
B) It defaults to None  
C) It defaults to 0  
D) It crashes the model

**Answer:** B  
**Explanation:** Optional makes the field nullable, defaulting to None if not provided.

### 19. Why are Pydantic type hints critical in ****Agentic AI tool definitions****?

A) They help agents enforce input/output schema contracts  
B) They remove token usage  
C) They make agents run faster  
D) They prevent temperature sampling

**Answer:** A  
**Explanation:** Agents rely on type-enforced schemas to avoid invalid tool calls and ambiguous outputs.

### 20. Which is the ****best practice**** when defining agent schemas in Pydantic?

A) Use Any everywhere for flexibility  
B) Always define explicit type hints for every field  
C) Avoid nested models  
D) Ignore constraints

**Answer:** B  
**Explanation:** Clear type hints ensure **strong validation, reliability, and structured communication** in Agentic AI systems.