

**UNIVERSIDAD DE DAGUPAN**

*SCHOOL OF INFORMATION TECHNOLOGY EDUCATION*

ITP03 | OBJECT-ORIENTED PROGRAMMING

MIDTERM EXAM | SET A

**Instructions:**  Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Turn off your cell phone/s. Use of CP is not Year, Course & blk : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Allowed during exam. Subject : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Write ALL YOUR ANSWERS LEGIBLY. Date : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Use black pen only. Strictly: **NO ERASURE**.
* READ and FOLLOW the DIRECTIONS carefully!

**PART I: Multiple Choice (30)**

*Direction:* Read each question carefully and choose the best answer from the given options. Write your answer on the blank provided ***(USE UPPERCASE ONLY)***.

\_\_\_\_\_1. In PHP OOP, inheritance allows a class to:

|  |  |
| --- | --- |
| 1. Store multiple values in an array | 1. Reuse the properties and methods of another class |
| 1. Hide implementation details from the user | 1. Convert code into machine language |

\_\_\_\_\_2. The class being inherited from is also called the:

|  |  |
| --- | --- |
| 1. Derived class | 1. Base or parent class |
| 1. Interface class | 1. Abstract class |

\_\_\_\_\_3. The keyword to call a parent method inside a child class is:

|  |  |
| --- | --- |
| 1. super:: | 1. this:: |
| 1. parent:: | 1. base:: |

\_\_\_\_\_4. Which type of inheritance involves one base class and multiple child classes?

|  |  |
| --- | --- |
| 1. Single inheritance | 1. Single inheritance |
| 1. Hierarchical inheritance | 1. Multiple inheritance |

\_\_\_\_\_5. Method overriding allows:

|  |  |
| --- | --- |
| 1. A child class to reuse parent methods without changes | 1. A parent class to remove a child’s method |
| 1. A child class to redefine a method from the parent class | 1. PHP to compile faster |

\_\_\_\_\_6. Inheritance promotes:

|  |  |
| --- | --- |
| 1. Code duplication | 1. Code reuse and modularity |
| 1. Slower runtime | 1. Method hiding only |

\_\_\_\_\_7. Which is NOT a valid type of inheritance in PHP?

|  |  |
| --- | --- |
| 1. Single | 1. Multilevel |
| 1. Hierarchical | 1. Multiple (directly supported) |

\_\_\_\_\_8. To extend, but not replace, a parent’s behavior you can use:

|  |  |
| --- | --- |
| 1. parent::methodName() | 1. parent::methodName() |
| 1. super.method() | 1. override() |

\_\_\_\_\_9. What is the relationship between a derived class and a base class?

|  |  |
| --- | --- |
| 1. Derived is the parent of base | 1. Base is independent of derived |
| 1. Derived inherits from base | 1. Derived and base are identical |

\_\_\_\_\_10. Inheritance with constructors allows:

|  |  |
| --- | --- |
| 1. Preventing object creation | 1. Calling a parent constructor within the child |
| 1. Disabling method overriding | 1. Creating abstract methods |

\_\_\_\_\_11. Polymorphism means:

|  |  |
| --- | --- |
| 1. One class, one behavior | 1. One interface, many behaviors |
| 1. Many classes, one behavior | 1. Static method binding only |

\_\_\_\_\_12. Polymorphism is achieved mainly through:

|  |  |
| --- | --- |
| 1. Variables | 1. Method overriding |
| 1. Abstract keywords only | 1. Constructors |

\_\_\_\_\_13. Late static binding in PHP decides which method version to use:

|  |  |
| --- | --- |
| 1. At compile time | 1. At runtime |
| 1. During inheritance declaration | 1. Before code execution |

\_\_\_\_\_14. The phrase “many forms” refers to:

|  |  |
| --- | --- |
| 1. Abstraction | 1. Encapsulation |
| 1. Polymorphism | 1. Inheritance |

\_\_\_\_\_15. Which scenario best demonstrates polymorphism?

|  |  |
| --- | --- |
| 1. A variable stores a string | 1. Different classes implement the same method name with unique logic |
| 1. A constructor initializes properties | 1. A parent class stores data |

\_\_\_\_\_16. Late static binding allows:

|  |  |
| --- | --- |
| 1. Child methods to override even when called in parent code | 1. Early method binding only |
| 1. Prevention of overriding | 1. Hiding static variables |

\_\_\_\_\_17. Polymorphism allows code to be:

|  |  |
| --- | --- |
| 1. Less flexible | 1. More flexible and extensible |
| 1. Only usable in one class | 1. Less reusable |

\_\_\_\_\_18. In PHP, overriding methods in different classes with the same interface demonstrates:

|  |  |
| --- | --- |
| 1. Abstraction | 1. Polymorphism |
| 1. Encapsulation | 1. Composition |

\_\_\_\_\_19. The primary benefit of polymorphism is:

|  |  |
| --- | --- |
| 1. No need to declare an object | 1. Code duplication |
| 1. Flexibility in method calls | 1. Preventing interface usage |

\_\_\_\_\_20. Polymorphism can also be described as:

|  |  |
| --- | --- |
| 1. A parent class using child methods at runtime | 1. A method hiding mechanism |
| 1. Static-only behavior | 1. Class overloading only |

\_\_\_\_\_21. Abstraction in OOP:

|  |  |
| --- | --- |
| 1. Hides unnecessary details and shows essential features | 1. Duplicates code for clarity |
| 1. Is the same as encapsulation | 1. Disables method overriding |

\_\_\_\_\_22. Abstract classes in PHP:

|  |  |
| --- | --- |
| 1. Cannot have methods with bodies | 1. Provide a base structure and may have both normal(no body) and abstract methods(with body) |
| 1. Are implemented directly without extension | 1. Do not enforce method implementation |

\_\_\_\_\_23. Interfaces in PHP:

|  |  |
| --- | --- |
| 1. May contain both methods and properties with bodies | 1. Contain only method signatures |
| 1. Cannot be implemented by multiple classes | 1. Are used only for variables |

\_\_\_\_\_24. Which keyword is used to declare an abstract class?

|  |  |
| --- | --- |
| 1. base | 1. abstract |
| 1. interface | 1. parent |

\_\_ 25. A class implementing an interface must:

|  |  |
| --- | --- |
| 1. Only implement some methods | 1. Provide all methods defined in the interface |
| 1. Override constructors only | 1. Use multiple inheritance |

\_\_ 26. Interfaces are different from abstract classes because:

|  |  |
| --- | --- |
| 1. Interfaces can contain implemented methods | 1. Interfaces support multiple implementations in PHP |
| 1. Abstract classes cannot have constructors | 1. Interfaces hide variables only |

\_\_ 27. The purpose of abstract classes is to:

|  |  |
| --- | --- |
| 1. Prevent all inheritance | 1. Serve as templates for subclasses |
| 1. Store unrelated constants | 1. Replace interfaces completely |

\_\_ 28. Abstraction focuses on:

|  |  |
| --- | --- |
| 1. How an object does its work | 1. What an object does |
| 1. Variable types | 1. Static binding |

\_\_ 29. Interfaces in PHP are defined using the keyword:

|  |  |
| --- | --- |
| 1. interface | 1. implements |
| 1. abstract | 1. class |

\_\_ 30. Abstraction and interfaces promote:

|  |  |
| --- | --- |
| 1. Code inconsistency | 1. Tight coupling |
| 1. Code consistency and flexibility | 1. Avoiding code reuse |

**PART II: Coding (20 Points)**

*Direction:* Answer the coding problem clearly on the provided paper. Write neat and complete solutions for each problem.

Create a program that demonstrates inheritance using books. Follow these requirements:

* Create a parent class Book with properties title, author, and price, plus a displayInfo() method to show them.
* Create a child class PrintedBook that inherits from Book, adds a unique attribute NumberOfPages, calls the parent constructor, and overrides displayInfo() to include NumberOfPages.
* Create another child class EBook that inherits from Book, adds a unique attribute fileSize (MB), calls the parent constructor, and overrides displayInfo() to include file size.
* In your main program:
  1. Create a PrintedBook with "1984", "George Orwell", 350, 328 pages.
  2. Create an EBook with "Clean Code", "Robert C. Martin", 450, 2 MB.
  3. Call displayInfo() for both objects.

Expected Output:

Title: 1984

Author: George Orwell

Price: 350

Pages: 328

Title: Clean Code

Author: Robert C. Martin

Price: 450

File Size: 2 MB

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