Higher National Diploma in Information Technology
First Year, Second Semester Examination – 2018
HNDIT1209- Object Oriented Programming – Model Answers

Question 01

Part No	Expected Answers	Marks
I	What is Java **Application Programming Interface (API)**? It is Java Application Programming Interface, a large collection of ready-made software components that provide many useful capabilities	3

II	Write three features of the Java programming language.
	
	     − Simple - Secure
	     − Portable - Object-oriented
	     − Robust - Multithreaded
	     − Architecture-neutral
	     − Interpreted - High performance
	     − Distributed - Dynamic
	         Consider any 3 correct answers
		1*3→3

III	a. 'SLIATE
	      "Sri Lanka
	 b. true
	      100
	 c. 200
		2
		
		 2
		
		 2

IV	State whether the following statements are true or false a. ".class" is the extension of java source code file. b. Static variables are declared with the static keyword in a class, but outside a method, constructor or a block. c. JDK is used to compile, debug and execute a java program. d. $main is a valid identifier in java. e. Access modifiers can be used for local variables. f. Multiplication and division operators have a higher precedence than addition and subtraction operators in Java.	1*8→8

g. Java's automatic Garbage Collection can be controlled by a program

h. Java is a platform independent language.

a. False

b. True

c. True

d. True

e. False

f. True

g. False

h. True

Question 02

Part No	Expected Answers	Marks
I	State three control structures in java. Sequence, Selection, Repetition/Iteration	1*3→3
II	2 4	3
III	Distinguish between a. **if** and **switch**	3*2→6

If	Switch
Can test many variables	Only one variable
Any data type	A switch works with the byte, short, char, and int primitive data types. It also works with *enumerated types, Strings and Byte, Short, Character and Integer.*
Can use <, > == !=...	Only checks equality
Slower than switch	Faster switch operation

	b. while and do - while	
	While loop executes the code block only if the condition is True. In Java Do While loop, condition is tested at the end of the loop so Do While executes the statements in the code block at least once even if the condition Fails.	

IV	import java.util.Scanner; →1 mark
	
	class PrintPattern{
	
	public static void main(String args[]){
	    Scanner sc= new Scanner(System.in); →1 mark
	    System.out.println("Enter an Integer");
	    int i = sc.nextInt(); →1 mark
	    for(;i>0;i--){ →1 marks
	    for(int j=1;j<=i;j++){ →2 marks
	        System.out.print(i); →1 mark
	    }
	System.out.println(); →1 mark
	}
	
	}
	}
	
	Consider any other correct answer.
		8

Question 03

Part No	Expected Answers	Marks

I	`dataType[] arrayRefVar = new dataType[arraySize];`
	
	   eg:
	`int[] temps = new int[99];`
		3

II	Wrapper class provides the mechanism to convert primitive into object and object into primitive Wrapper classes: Boolean, Character, Integer, Byte, Short, Long, Float, Double.	1 1*2 →2
III	a. Exception is a runtime error	3
	b. 5 / 5 is 1 10 / 10 is 1 Exception 1 40 / 5 is 8 80 / 10 is 8 Exception 2	3
IV	a. 12	2
	b. S	2
	c. Irs	2

	d.
	if(Ob1.equals(Ob3))
	    System.out.println("Equal");
	else
	    System.out.println("Diffrent");
		2

Question 4

Part No	Expected Answers	Marks
I	a. A class is a blueprint, or prototype, that defines the variables and the methods common to all objects of a certain kind. b. An object is a software bundle of variables and related methods c. Constructor is a special method which initializes an object immediately upon creation.	1*3→3
II	What is the difference between this and super keyword in java? this. always refers to the currently executing object. super - refer parent class objects	2*2 →4

III	Compiler Error.	1
	X is a constant. Here, x is assigned a value twice. Once we assigned a value to a final variable it can't be changed.	2

IV	class Atom {
	
	//a
	
	private int protons;
	
	private int neutrons;
	
	private int electrons;
	
	//b
		2

	protected static int electronCharge; //c	2

	public Atom(int p, int n, int e){
	
	this.protons = p;
	
	this.neutrons = n;
	
	this.electrons = e; }
		2

	//d void setProtons(int p)	1
	{ this.protons = p; } int getNeutrons(){	
	return neutrons; } //e	1
	public static void main(String args[]){	
	Atom Ob1 = new Atom(10,20,30);	2

	//This part is optional
	
	Ob1.setProtons(10);
	
	int x=Ob1.getNeutrons();
	
	}
	
	}	

Question 05

Part No	Expected Answers	Marks
I	Inheritance, Polymorphism, Encapsulation, Abstraction –allocate marks for correct description of any 2	2*2→4

II	What are abstract and concrete classes in Java?	2*2→4
	An abstract class is a template definition of methods and variables of a class (category of objects) that contains one or more abstracted methods. Declaring a class as abstract means that it cannot be directly instantiated, which means that an object cannot be created from it.	
	A concrete class is a class that has an implementation for all of its methods that were inherited from abstract or implemented via interfaces. It also does not define any abstract methods of its own	
III	Display Car Number	2
	Display Car Number	
	OOP concepts: Inheritance, Polymorphism	2
IV	a. What is an interface in Java?	3
	Java interface is a blueprint of a class. It has static constants and abstract methods.	
	b. 20.0	2
	c. No. Interface fields are public, static and final by default.	
	Therefore, it cannot be assigned values to final type variable.	3

Question 06

Part No	Expected Answers	Marks
I	Lightweight process	2
II	Extend the java.lang.Thread class and override its run() method	4
	Implement java.lang.Runnable interface	
III	It provides platform independent components	2
	It provides lightweight components	