OOSD(CS3003)-Mid Sem Exam, Oct-2021

Points: 50/60

1

Choose the Incorrect statements
(0/1 Point)

- [x] Hierarchy is a ranking or ordering of abstractions
- [ ] Object structure is known as “is a” hierarchy ✓
- [x] Class structure is known as “is a” hierarchy
- [ ] Class structure is known as “part of” hierarchy ✓
- [x] Object structure is known as “part of” hierarchy

2

Which one is used to show the Inheritance property using graph?
(0/0.5 Points)

- ( ) Aggregation
- (•) Dependency
- ( ) Generalization ✓
- ( ) Association

3

Choose the Correct statements.
(0.5/0.5 Points)

- [x] A pure virtual function is a virtual function that has no definition within the base class ✓
- [ ] A pure virtual function is a virtual function that has at most one definition within the base class
- [x] A class that contains at least one pure virtual function is said to be abstract ✓
- [x] Virtual functions implement the "one interface, multiple methods" ✓
- [x] The derived class redefines the virtual function to fit its own needs ✓

4

Which of the following definition is incorrect for polymorphism?
(0.5/0.5 Points)

- ( ) Polymorphism helps in redefining the same functionality
- ( ) Polymorphism concept is the feature of object-oriented programming (OOP)
- (•) It always increases the overhead of function definition ✓
- ( ) Ease in the readability of the program

5

Choose the incorrect statement in terms of Objects.

- ( ) Objects are abstractions of real-world

- Objects can't manage themselves ✓
- Objects encapsulate state and representation information
- All of the mentioned

6

Which object will be created first? Consider the following code:
(1/1 Point)

```
class student
 {
      int marks;
 };
student s1, s2, s3;
```

- s3
- s2
- s1 ✓
- all are created at same time

7

What type of relationship can be represented by Shape class and Square where Shape class derives the Triangle class and square class?
(0.5/0.5 Points)

- Realization
- Generalization ✓
- Aggregation
- Dependency

8

Consider the code snippet shown on right side of box. What is the second line of output of this program? If following code is inserted at line no. 25:

```
p=&d2;
p=&d1;
p->vfunc();
```

(1/1 Point)

- Hello World
- Welcome to derived1
- Welcome to derived2
- Welcome to Derived1 ✓
- Run time error

9

Objects are executed
(0.5/0.5 Points)

- sequentially
- in Parallel
- sequentially & Parallel ✓
- none of the mentioned

10

Which of the following feature is also known as run-time binding or late binding?
(0/0.5 Points)

- Dynamic typing
- Dynamic loading
- Dynamic binding ✓
- Data hiding

11

Exceptions are called by variety of exceptional circumstance:
(1/1 Point)

- Running out of memory ✓
- Not being able to open a file ✓
- Able to open the file
- Trying to initialize an object to an impossible value ✓
- Using an out-of-bounds index to a vector ✓

12

Which among the following is not a member of the class?
(0.5/0.5 Points)

- Virtual function
- const function
- Static function
- Friend function ✓

13

Data flow in a DFD must have
(i) An arrow showing direction of flow of data
(ii) A meaningful name
(iii) A label such as: xyz
(iv) No arrows as they are confusing
(1/1 Point)

- i and iii
- ii and iv
- iii and iv
- i and ii ✓

14

How many types of constructors are available for use in general (with respect to parameters)?
(0.5/0.5 Points)

- 2 ✓

- 3
- 4
- 5

15

Consider the code snippet shown on right side of box. What is the output of this program?
(1/1 Point)

- Hello World ✓
- Welcome to derived1
- Welcome to derived2
- Run time error

16

Which among the following is correct?
(1/1 Point)

- class student{ public: int student(){} };
- class student{ public: void student (){} };
- class student{ public: student{}{} };
- class student{ public: student(){} }; ✓

17

Which feature of OOPS described the reusability of code?
(0.5/0.5 Points)

- Abstraction
- Encapsulation
- Polymorphism
- Inheritance ✓

18

Which are the example of late binding
(1/1 Point)

- [ ] Function overloading
- [x] Function Overriding ✓
- [ ] Operator overloading
- [x] Virtual function ✓

19

Choose the correct statements
(1/1 Point)

- [x] Concurrency is the property that distinguishes an active object from one that is not active. ✓

- [ ] Concurrency does not allow the mutual exclusion
- [x] You must consider how active objects synchronize their activities with one another once concurrency is introduced into a system
- [x] Concurrency allows the mutual exclusion

20

Which of the following is a mechanism that allows several objects in an class hierarchy to have different methods with the same name?
(0.5/0.5 Points)

- ( ) Aggregation
- (•) Polymorphism ✓
- ( ) Inheritance
- ( ) All of the mentioned

21

Which feature of OOPS derives the class from another class?
(0.5/0.5 Points)

- ( ) Abstraction
- ( ) Encapsulation
- (•) Inheritance ✓
- ( ) Polymorphism

22

To keep the software product up-to date is known by
(1/1 Point)

- ( ) Corrective Maintenance
- (•) Adaptive Maintenance ✓
- ( ) Perfective Maintenance
- ( ) Preventive Maintenance

23

A means of system evaluation in terms of four quality measures are
(1/1 Point)

- [x] Correspondence ✓
- [x] Correctness ✓
- [x] Verification ✓
- [x] Validation. ✓
- [ ] None of these

24

The property by which an object continues to exist even after its creator ceases to exist is known by _____
(-/0.5 Points)

- ( ) Object Containment
- (•) Persistence
- ( ) Object Identity
- ( ) Constructor

25

If every requirement stated in the Software Requirement Specification(SRS) has only one interpretation, SRS is said to be ____?
(0.5/0.5 Points)

- Correct
- Unambiguous ✓
- Verifiable
- Consistent

26

Consider the code snippet shown on right side of box. What is the second line of output of this program? If following code is inserted at line no. 25:

```
p=&d2;
p->vfunc();
```

(1/1 Point)

- Welcome to Derived2
- Welcome to derived1
- Welcome to derived2 ✓
- Welcome to Derived1
- Run time error

27

Inherited object classes are self-contained.
(0.5/0.5 Points)

- True
- False ✓

28

Consider the below code. Predict the output and write what property of object-oriented programming is used.

```
#include<iostream>
using namespace std;
class Display {
   private:
     int num;
    public:
      void set(int a)
      {    num =a;   }

      int get( )
      { return num;  }
};
int main()
{
      Display obj;
      int a=5;
      obj.set(6);
      cout<<obj.get();
      return 0;
}
```

(0.5/0.5 Points)

- 5, Data hiding
- 5, Abstraction
- 6, Encapsulation ✓
- 5, Encapsulation

29

In DFD, decomposition of a bubble should be carried on until _____
(1/1 Point)

- [ ] A level at which the function of the bubble can be described using a complex algorithm.
- [x] A level at which the function of the bubble can be described using a simple algorithm. ✓
- [ ] A level at which the process can be described using multiple algorithm.
- [x] A level at which the process can be described using a single algorithm. ✓

30

What should we have for a good software design?
(0.5/0.5 Points)

- [x] High Cohesion ✓
- [ ] Low Cohesion
- [ ] High Coupling
- [x] Low Coupling ✓

31

Which one is not a software process model?
(1/1 Point)

- ( ) Evolutionary
- ( ) Prototyping
- ( ) Spiral model
- (•) UML ✓
- ( ) Agile models

32

If class C inherits class B. And B has inherited class A. Then while creating the object of class C, what will be the sequence of constructors getting called?
(1/1 Point)

- ( ) Constructor of C then B, finally of A
- ( ) Constructor of A then C, finally of B
- (•) Constructor of A then B, finally C ✓
- ( ) Constructor of C then A, finally B
- ( ) None of these

33

Select the correct statement with respect to Software Engineering
(0.5/0.5 Points)

- [x] A Requirement gathering is to fully understand the user requirements. ✓
- [x] Requirement analysis is performed to remove inconsistencies, anomalies, etc. from requirements. ✓
- [x] Requirement specification is document requirements properly in an SRS document. ✓
- [x] Requirement review is used to further gathering and analysis of requirements. ✓

34

Match the correct combination
Relationship Definition
R1:Aggregation (i.) IS-A
R2:Composition (ii.) HAS-A
R3:Inheritance (iii.) Whole/Part
(0/1 Point)

- [ ] R1-->(i.), R2-->(ii.), R3-->(iii.)
- [ ] R2-->(i.), R1-->(ii.), R3-->(iii.)
- [x] R3-->(i.), R2-->(ii.), R1-->(iii.) ✓
- [ ] R3-->(i.), R1-->(ii.), R2-->(iii.) ✓

35

Consider the below code. Predict the output and write what type of Inheritance is used.

```
#include<iostream>
using namespace std;

class base
{
protected:
int i, j;
public:
void set (int a, int b)
{
i = a;
j = b;
}
void show ()
{
cout << i << " " << j << " ";
}
};

class derived: public base
{
int k;
public:
// derived may access base's i and j
void setk ()
{
k = i * j;
}
void showk ()
{
cout << k << "\n";
}
};

int
main ()
{
derived ob;
ob.set (5, 6);
ob.show ();
ob.setk ();
ob.showk ();
return 0;
}
```

(1/1 Point)

- ( ) 5 6 36, Simple Inheritance
- ( ) 5 6 30, Multiple Inheritance
- ( ) 5 6 25, Multiple Inheritance
- (•) 5 6 30, Simple Inheritance ✓

36

Which of the following points related to Object-oriented development (OOD) is true?
(0.5/0.5 Points)

- ( ) OOA is concerned with developing an object model of the application domain
- ( ) OOD is concerned with developing an object-oriented system model to implement requirements
- (•) Both mentioned ✓
- ( ) None of the mentioned

37

Which one represents the strongest relationship?
(0.5/0.5 Points)

- Association
- Composition ✓
- Aggregation
- Dependency

38

Which are the attributes of a good software?
(0/1 Point)

- [x] Usability ✓
- [ ] Non-extensibility
- [x] Security ✓
- [ ] Non-availability
- [ ] Productivity ✓

39

What is the typical relationship between coupling and cohesion?
(0.5/0.5 Points)

- [ ] There is no relationship between coupling and cohesion.
- [ ] As cohesion increases, coupling increases.
- [x] As cohesion increases, coupling decreases ✓
- [x] Both are used to measure the quality of software design ✓

40

Which among the following is not a necessary condition for constructors?
(0.5/0.5 Points)

- Its name must be same as that of class
- It must not have any return type
- It must contain a definition body ✓
- It can contains arguments

41

Consider the code snippet shown on right side. Predict the output after adding following code:

```
int main()
{
  loc ob1(101, 202), ob2( 50, 60), ob3(95, 85);
  ++ob2;
  ob3 = ob3-ob2;
  ++++ob3;
  ob3.show();
  return 0;
}
```

(0/1 Point)

- 46 26
- 44 24
- 45 25 ✓
- 47 27
- Run time error

42

Consider the following program. Predict the output and write what type of Inheritance is used.

```
#include<iostream>
using namespace std;
class base
{
public:
int i;
};

class derived1: virtual public base
{
public:
int j;
};

class derived2: virtual public base
{
public:
int k;

};

class derived3:public derived1, public derived2
{
public:
int sum;

};

int main ()
{
derived3 ob;
ob.i = 10;
ob.j = 20;
ob.k = 30;
ob.sum = ob.i + ob.j + ob.k;
cout << ob.j << " " << ob.k << " ";
cout << ob.sum;
return 0;
}
```

(1/1 Point)

- 20 30 60, Only Multiple Inheritance
- 20 30 60, Only Multilevel Inheritance
- 10 30 60, Hybrid Inheritance
- 20 30 60, Hybrid Inheritance ✓
- 10 30 60, Multilevel Inheritance and Multiple Inheritance

43

Which are the example of early binding
(1/1 Point)

- [x] Function overloading ✓
- [ ] Function Overriding
- [x] Operator overloading ✓
- [ ] Virtual function

44

An object that provides a generalized set of operations, all of which perform the same kind of function
(1/1 Point)

- Entity abstraction
- Action abstraction ✓
- Virtual machine abstraction
- Coincidental abstraction

45

Choose the correct statements.
(1/1 Point)

- [x] A rectangular box represents a module ✓
- [x] The main focus of a structure chart is to provide interaction among different modules ✓
- [ ] Modules in a structure chart should not be arranged in layers or levels
- [x] The aim of structured design is to transform the results of structured analysis into a structure chart ✓
- [ ] Not easily implementable using programming languages using structure chart representation

46

Which of the following is a disadvantage of OOD ?
(0.5/0.5 Points)

- Easier maintenance
- Objects may be understood as stand-alone entities
- Objects are potentially reusable components
- None of the mentioned ✓

47

Which among the following is correct for the class defined in right box?
(1/1 Point)

- Object s3, syntax error
- Only object s1 and s2 will be created
- Program gives the output 100 ✓
- Program will give compile time error

48

What encapsulates both data and data manipulation functions ?

- Object ✓
- Class
- Super Class
- Sub Class

49

A mechanism that binds together code and the data it manipulates known by
(0.5/0.5 Points)

- Data Abstraction
- Encapsulation ✓
- Data Hiding
- None

✗

50

Functional independence between module
(0/0.5 Points)

- [x] Reduces error propagation ✓
- [x] Reuse of module is possible ✓
- [ ] Decrease the level of abstraction
- [x] Can be measured quantitatively using Fan-in and Fan-out factor

51

How is generalization implemented in Object Oriented programming languages using _____?
(0.5/0.5 Points)

- Inheritance ✓
- Polymorphism
- Encapsulation

- Abstract Classes

52

Choose the correct statements
(1/1 Point)

- [x] Method Overriding is a perfect example of dynamic binding ✓
- [ ] Method Overriding is a perfect example of static binding
- [x] The method definition and method call are linked during the run time in method overriding ✓
- [ ] The method definition and method call are linked during the compile time in method overriding

53

Which one is not a relationship
(0/0.5 Points)

- Association
- Aggregation
- Identity ✓
- Persistence

54

A DFD is levelled by
(1/1 Point)

- Merging a number of simple processes in a DFD into a complex processes in a new DFD
- Examining complex processes in a DFD and expanding them into new DFDs with more processes which are easy to understand ✓
- Expanding the functions of a number of external entities into simpler functions
- Splitting a number of data flows into simpler data flows

55

Choose the correct statements in the context of DFD
(1/1 Point)

- [x] No function specified in the SRS document should be overlooked ✓
- [ ] Function specified in the SRS document should be overlooked
- [x] A DFD model does not represent control information ✓
- [ ] A DFD model represents control information
- [ ] Assume extra functionality of the system not specified by the SRS document

56

Choose the correct statements.
(1/1 Point)

- [x] Structured analysis is typically carried out by using DFD and Data Dictionary ✓
- [ ] Structured design is typically carried out by using State Transition diagram and ER diagram
- [x] Structured design uses Structure Chart ✓
- [x] Structured analysis is typically carried out by using State Transition diagram and ER diagram ✓
- [ ] Structured analysis uses Structure Chart

57

Choose the Incorrect statements.
(0.5/0.5 Points)

- [ ] A copy constructor is a member function which initializes an object using another object of the same class
- [x] A copy constructor is a member function which initializes an object using same object of the another class ✓
- [ ] A copy constructor is called when the compiler generates a temporary object
- [x] A copy constructor helps to deallocate the memory of an object ✓
- [ ] A copy constructor is called when an object of the class is returned by value and passed (to a function) by value as an argument

58

If a class is derived from one class, which is already derived from another class then which type of Inheritance is used?
(0.5/0.5 Points)

- ( ) Multiple Inheritance
- ( ) Hybrid Inheritance
- (•) Multilevel Inheritance ✓
- ( ) Hierarchical Inheritance

59

Choose the correct statements in the context of DFD
(1/1 Point)

- [x] All external entities should be represented in the context diagram ✓
- [ ] Each bubble should be decomposed to exactly 3 or 7 bubbles
- [x] External entities should not appear at any other level DFD ✓
- [ ] All external entities should not be represented in the context diagram
- [x] Each bubble should be decomposed between 3 to 7 bubbles ✓

✗

60

Consider the following code:

```
#include<iostream>
using namespace std;
class loc {
int longitude, latitude;
public:
loc() {}
loc(int lg, int lt) {
longitude = lg;
latitude = lt;
}
void show()
{
cout << longitude << " ";
cout << latitude << " ";
}
loc operator+(loc op2);
loc operator-(loc op2);
loc operator=(loc op2);
loc operator++();
};
loc loc::operator+(loc op2)
{
loc temp;
temp.longitude = op2.longitude + longitude;
temp.latitude = op2.latitude + latitude;
return temp;
}

// Overload - for loc.
loc loc::operator-(loc op2)
{
loc temp;
// notice order of operands
temp.longitude = longitude - op2.longitude;
temp.latitude = latitude - op2.latitude;
```

```
return temp;
}
// Overload asignment for loc.
loc loc::operator=(loc op2)
{
longitude = op2.longitude;
latitude = op2.latitude;
return *this;
}
// Overload prefix ++ for loc.
loc loc::++operator()
{
longitude++;
latitude++;
return *this;
}
int main()
{
loc ob1(50, 60), ob2( 70, 80), ob3(90, 100);
ob1=ob2-ob1;
ob1.show();
ob1 = ob2 = ob3;
++ob1;
ob1.show();
return 0;
}
```

Correct the typo error and then predict the output after rectifying the typo error. Write the complete line of corrected syntax in the exact format of syntax (Don't use any unnecessary space) and then comma (",") followed by output. Don't use any space before and after comma in the answer. For example, write abc xyz,20 30 40 where abc is the corrected syntax and complete code of that line is abc xyz; 20 30 40 is the predicted output after rectifying the code.
(0/1 Point)

loc loc::operator++(), 20 20 91 101

Correct answers: loc loc::operator++(),20 20 91 101

61

Object that collects data on request rather than autonomously is known as
(0.5/0.5 Points)

- Active Object
- Passive Object ✓
- Multiple instance
- None of the mentioned

62

Choose the correct statements.
(1/1 Point)

- An object is an entity that has a state and a undefined set of operations
- The state is represented as a set of object attributes. ✓
- Objects are created according to some object class definition. ✓
- An object class definition does not serve as a template for objects

63

In multiple inheritance, if class C inherits two classes A and B as follows, which class constructor will be called first?
(1/1 Point)

```
class A{ };
class B{ };
class C: public A, public B{  };
```

- B()
- A() ✓
- C()

Can't be determined

64

To design a bicycle database with objects, it contains following objects(wheel, brake, gear). This property is known as _____. Write the answer in capital letters.
(0/0.5 Points)

AGGREGATION

Correct answers: OBJECT CONTAINMENT,CONTAINMENT

65

Choose the correct statements.
(1/1 Point)

- [x] Function-oriented or Procedural uses Top-down approach ✓
- [x] Function-oriented design is carried out using structured analysis and structured chart ✓
- [x] Object-oriented design is carried out using bottom-up approach ✓
- [ ] Object-oriented design is carried out using top-down approach

66

Consider a line of code: virtual void show() = 0;
(0/1 Point)

What is described by above code?

- [x] Polymorphism ✓

Virtual function

- [x] Pure virtual function ✓
- [ ] Copy constructor

67

Composite data are defined in terms of primitive data items using simple operators in DFD. Choose the correct statements with respect to DFD
(1/1 Point)

- [x] a+(b) represents either a or a+b ✓
- [x] a+b represents data a together with b ✓
- [ ] [a,b] represents either a and b
- [x] [a,b] represents either a occurs or b ✓
- [ ] a+b represents data either a or b

68

Consider the code snippet shown on right side of box. What are the part of output after adding following code?

```
int main()
{
 cout << "Start\n";
 Xhandler(0);
 Xhandler(1);
 Xhandler(2);
 cout << "End";
 return 0;
}
```

(0/1 Point)

- [x] Start ✓
- [x] Caught an integer ✓
- [ ] Caught Character
- [ ] Caught character ✓
- [x] Caught one!
- [x] End ✓

69

Which generic activity in all software processes defines "changing the software in response to changing demands"?
(0.5/0.5 Points)

- ( ) Specification
- ( ) Development
- ( ) Validation
- (•) Evolution ✓

70

The waterfall model of software development is
(0.5/0.5 Points)

- ( ) A good approach when a working program is required quickly
- (•) A reasonable approach when requirements are well defined ✓
- ( ) The best approach to use for projects with large development teams
- ( ) An old fashioned model that is rarely used any more
- ( ) None of the above

71

Which member can never be accessed by inherited classes?
(0.5/0.5 Points)

- (•) Private member function ✓
- ( ) Public member function
- ( ) Protected member function
- ( ) All can be accessed

72

Choose the correct statements
(0.5/0.5 Points)

- [x] An aggregation is a stronger form of relationship where the relationship is between a whole and its parts ✓
- [ ] A dependency relationship is a stronger form of relationship
- [ ] An aggregation is a weaker form of relationship
- [x] A dependency relationship is a weaker form of relationship ✓

73

Select the correct rules with respect to DFD
(0.5/0.5 Points)

- [ ] All data flows must contain data
- [x] All data flows must begin and/or end at a process ✓
- [x] Data flowing into or out of a bubble, must match the data flows at the next level of DFD. ✓
- [ ] None of the above

74

Which of the following is not an OOPS concept?
(0.5/0.5 Points)

- ( ) Encapsulation
- ( ) Polymorphism
- (•) Exception ✓
- ( ) Abstraction

75

Consider the code snippet shown on right side. Predict the output after adding following code:

```
int main()
{
  loc ob1(11, 22), ob2( 35, 50), ob3(80, 100);
  ++ob1;
  ob2 = ob2- ++ob1;
  ob2.show();
  return 0;
}
```

(1/1 Point)

- ( ) 13 24
- (•) 22 26 ✓
- ( ) 23 27
- ( ) Compile time error
- ( ) Run time error

76

Which among the following is correct for the class defined in right box?
(1/1 Point)

- Object s3, syntax error
- Only object s1 and s2 will be created
- Program runs and all objects are created ✓
- Program will give compile time error

77

Function overloading starts execution at _____
(0.5/0.5 Points)

- Compile time ✓
- Run Time
- Both compile and run time
- None

78

Choose the correct statements.
(1/1 Point)

- [ ] Modularization is the process of combining a program into modules
- [ ] Modularity is the property of a system that has been decomposed into a set of cohesive and tightly coupled modules
- [x] Modularity is the property of a system that has been decomposed into a set of cohesive and loosely coupled modules ✓
- [x] Modularization consists of dividing a program into modules ✓

79

Consider a system where a heat sensor detects an intrusion and alerts the security company. What kind of a requirement the system is providing?
(1/1 Point)

- Non-Functional
- Functional ✓
- Known Requirement
- Quality Requirement
- None of the mentioned

80

Select the properties of a good SRS document
(0.5/0.5 Points)

- [x] Complete ✓
- [x] Consistent ✓
- [x] Traceable ✓

- [x] Verifiable ✓

81

Choose the correct statements.
(0.5/0.5 Points)

- [x] Validation begins as soon as the project starts ✓
- [x] Verification can begin only after a specification has been accepted ✓
- [x] Verification and validation are independent of each other ✓
- [ ] Verification and validation are dependent to each other

82

Which of the following describes "IS-A-Relationship" ?
(0.5/0.5 Points)

- ( ) Aggregation
- (•) Inheritance ✓
- ( ) Dependency
- ( ) All of the mentioned