1. Types of Authentication and Authorization in IIS.
ANS: Types of Authentication: Anonymous Authentication, Windows Authentication, Digest Authentication Types of Authorization: Anonymous

2. Types of Authentication and Authorization in ASP.Net.
ANS: Types of Authentication: Windows Authentication, Forms Authentication Types of Authorization: File Authorization and URL Authorization

3. ASP.Net Life cycle?
ANS: The request starts with the client and processed through IIS. In IIS, there are 2 utilities- INetInfo.exe and ASPNet_ISAPI.dll the InetInfo.exe checks for the syntax and semantics of the request and then the request goes to the ASPNet_ISAPI.dll which is the filter to filter the .aspx files. Here the URL request split in to 2 parts- virtual directory and webpage. Now worker process which is nothing but the application factory basically contains all the virtual directories and checks for the current virtual directory. If this is first request, then there will be no Virtual directory available. Now the worker process (W3wp.exe) creates a memory area called as AppDomain to check for the current page. As AppDomain is the Page Handler factory so it contains all the processes pages. If this is the new page then it will not find here. The request further move to the HttpPipeline where the actual execution of the page happened by using the ProcessRequest method and creates the events of the page. After creation of event and execution of all the event, the HTML page gets back to the user.

4. ASP.Net Page Life Cycle?
ANS: There are few events which gets generated during the page execution like: Page_BeginRequest, Page_Init, Page_Load, Page_Prerender, Page_Render, Page_Unload etc. For the details of the page life cycle, you can follow the previous question.

5. What are types: Value Type and Reference Type?
ANS: Value type holds data directly, Value type stored in the stack memory, we can get the direct value of the value types. Value type data type can’t be null.
Reference types: This type doesn’t hold the data directly. They hold the address on which the actual data present. They stored in heap memory, Can have default values.
We can make and work with null reference type.

6. Boxing and Unboxing: Terminology, Advantages and Disadvantages.
ANS: Converting the value type data type in to the Reference type is called as Boxing. Converting the Reference type data type and keep its value to stack is called as the reference type.
byte b= 45;
Object o = b.Tostring();
The Advantage of boxing and unboxing is that we can convert the type of the object in to another type. The disadvantage is that it requires lot of memory and CPU cycles to convert from one type to another type.
Object o=10;
Int i= Convert.ToInt32(o.ToString());

7. What is Type Safety?
ANS: TypeSafe is a way through which the application or framework that the memory will not be leaked to outside environment. E.g. C# is the type safe language where you must have to assign any object before using it. In VB.Net it will take the default value. So C# is the type safe language while VB.Net is not.

8. What is Strong Name?
ANS: Strong Name (SN) is used to make the dll as the unique as:
SN -k fileName.dll Now it will have the unique name. This assembly when placed in the GAC, it

will treat as the unique with its version number and other details. 2 assemblies with the same name can exist in the GAC but both will have different version. The CLR takes the latest version assembly while running the application.

9. What are Extensions, modules and handlers?
ANS: HttpModule and HttpHandler are the utilities which are used in the HttpPipeline under the ASP.Net page life cycle. When the request received to HttpPipeline, the HttpModule checks for the Authentication of the request and then it route the request to the respective handler. After that HttpHandler takes that request and process it. After Processing the request again the HttpModule takes the response and send it back to the worker process and finally to the user.

10. What is worker process?
ANS: Worker process (w3wp.exe) is an executable which is also called as the Application Factory. This is used for the execution of the request and handling of the request for the current web page.

11. CLR and DLR?
ANS: CLR (Common Language Runtime) is the utility in the .Net framework to run the application. It is the run-time engine which actually executes the application with many responsibilities like taking care of memory management, versioning, CasPol etc.
DLR is new with .Net 4.0 which is the Dynamic Language Runtime and used to run the application on the fly wherever required. CLR runs as statically while DLR runs dynamically.

12. In case more than one version of an installable is installed, which version is invoked by default?
ANS: By default the CLR will take and invoke the latest version of the dll and execute it accordingly. There could be the same name assemblies exists in the GAC but they will have different versions altogether for their uniqueness.
So while running the application, CLR takes the latest version assembly and use in the application.

13. What are Globalization and localization? How to implement them?
ANS: Globalization is the concept of developing the application in more than one language while the Localization is used for a particular language. Like if we develop the application in more than one language we need to create the resource files (.resx) by using System. Globalization and when we open the application in a particular language, then the localizations used to convert that application to the selected language.

14. What is assembly, GAC? Where they are physically located?
ANS: Assembly is the collection of classes, namespaces, methods, properties which may be developed in different language but packed as a dll. So we can say that dll is the assembly.
There are 3 types of assemblies- Private Assembly, Shared Assembly, and Satellite Assembly.
GAC (Global Assembly Cache)- When the assembly is required for more than one project or application, we need to make the assembly with strong name and keep it in GAC or in Assembly folder by installing the assembly with the GACUtil command.
To make the assembly with strong name:
SN -k MyDll.dll
And to install it in GAC:
GacUtil -i MyDll.dll
GAC assemblies are physically stored in Assembly folder in the system.

15. How to configure HTTPS for a web application?
ANS: To configure the HTTPS (HTTP with Secure) for the web application, we need to have a client certificate. We can purchase the client certificate from the trusted providers and

then we need to install that provider for our site. By implementing the HTTPS, all the data which is passing will be in encrypted format and will be more secure.

16. What are in-proc and out-proc? Where are data stored in these cases?
ANS: In-Proc and Out-Proc is the types of Sessions where the session data can be stored in the process memory of the server and in the separate state server.
When the session data is stored in the process memory of the server, the session is called as the In-Proc server. In this case when the server is restarted, the session data will be lost.
When the session data is stored in the separate server like in state server or in Sql Server, the type of session is called as the Out-Proc session. In this case, if the server where the application is running is restarted, the session will be still remain in the separate servers.
So in the in-Proc session state, the session data is stored in the Process memory of the Server where the application is running.
In the Out-proc session state, the session data is stored in the separate server- may be state server or in sql server.

17. When the View state is saved, and when is it loaded? How to enable/ disable View states?
ANS: View State data is stored in the current page in base64 encoded format. It gets loaded with the page and displays the values to the controls after the decoded. Internally it actually saves the check-sum of all the control data where the view state is enabled. So that when the page gets loaded due to any post back, it again finds the check-sum and then decodes the Base64 encoded string and gets back the same data to the controls. We can see the view state base 64 encoded string in View Source of the page. It will be like _VIEWETATE="DSDSDF8DGDGDFGFD5FDGGDJFF23BNN457M9UJOG" this.
View state won't take the client or server memory to keep the view state data.

18. Difference between GET and POST. Which one is more secure?
ANS: GET and POST methods are used for the data transfer between the web pages. GET mainly used for small data which is not secure because in case of GET method, the data which we are passing will be visible in the url so we can't keep the secure data which will be visible in the url. There is also limited data which can be passed in case of GET method (max 255 character).
POST is used for transferring the huge data between the pages where we can keep the secure data and can transfer it. In case of using the POST method, the data which is transferring between the pages will not be visible so it is more secure than the GET method. Also there is no limit for POST method to post the data to the next page.
POST is more secure.

19. What are Razor engines? How is it diff from ASP Engines?
ANS: RAZOR engine is the new concept in the MVC 3 which is mainly used to create the views in the MVC applications. It created the cshtml pages for the MVC application and cshtml pages can be generated automatically by using the Razor engine.ASP engine create the aspx pages while Razor engine creates the pages.

20. Pros and cons of JavaScript and AJAX.
ANS: JavaScript is a scripting language and mainly used for client side validation. We can validate the client side data before sending to the server. So by this we can improve the performance of the application.
Ajax is Synchronous JavaScript and XML which is used for the Asynchronous calls from the server. It uses internally the JavaScript for making the call and use XML for the Data Transfer. It basically uses the XmlHttpRequest for the asynchronous calls to the server and communicates with the XML data which is

platform independent. So Ajax can be used with any technology.

21. In how many different ways can JavaScript be used/called in an application?
ANS: JavaScript can be used for Client Side validation, can also be used for calling of server side methods and functions, can be used for calling the web services etc.

22. What needs to be done to call a JavaScript function from code behind?
ANS: If we want to call the JavaScript function from the code behind, we need to attach the JavaScript to the events in the page_load event as:

```
protected void btnSave_cliekc9object sender, EventArgs e)
{
 btnSave.Attributes.Add("onclick,"JavaScript: retrun Validatedata();");
}
```

Here ValidateData is the JavaScript function which can be used to validate the page data and if validation fails, it will return and will not execute the server side btnSave_click event.

23. Difference between Server Controls and User controls?
ANS: User controls are used for the re-usability for the controls in the application. By using the user control, we can use the same control in the various pages. User controls can be created by combining more than one control. To use the user controls, first we need to register them in the web page where we want to use that control. A separate copy is need in each page where we want to use the user control. User controls can't be included in to the toolbox.
Server controls are those controls which can be found in the toolbox and can be directly drag to the application like textbox, button etc. For the server control, only 1 copy of the control is needed irrespective of the number of web pages. If we want 10 text-boxes to be added in our web page, we need only 1 copy of the textbox in the toolbox and can be dragged 10 times.

24. Difference between var, object and dynamic types.
ANS: var is the keyword introduced with .net 3.5 and used to store any kind of data like data-set, data table, int, float, char etc. We can keep any kind of data in the var variable.
var myVar = new String[] {"hello", "world!!"} ;
Here the myVar is the var type variable which is used to store the string array. Like this we can store any type of data into the var.
Object is the type which is used to store the objects of any kind. These objects need to be type caste when required.
Like object mybject = "Hello"
Here the myObject variable of object type is used to keep the string variable. Now when we want this variable value, we need to typecast it like
string strvar= (string) myobject;
Dynamic- It's a keyword introduces with the .net 4.0 and used to keep the data similar to the var keyword. The difference between the var and dynamic is that the dynamic variable uses the same memory location to store the object and not changes throughout the application.

25. Difference between Functions and methods.
ANS: in.Net terminology, both are same. in general, we use method in .net but in scripting language we use function like JavaScript function.
Here the difference can be Function always returns a value which method may or may not. It depends upon the return type of the method.

26. Difference between Abstract classes and Interface. Explain with scenario where to implement one?
ANS: Collection of the Abstract (Incomplete) and Concrete (complete) methods is called as the Abstract class. If there is at least one abstract method in a class, the class must be abstract class.

When there is the similar behavior, we can use the abstract class.

e.g. We want to calculate the area of few component. As this is not generic to the application. We have only few component- like Circle, Ellipse, parabola, Hyperbola, Triangle etc.

So we can create an abstract class and implement it like below:

```
public abstract class MyAbstractClass
{
   // some other concrete members
   public abstract void Area();// abstract member
}
```

Now in the child class, let’s say i have a circle class and want to calculate the area of the circle:

```
public class Cicle: MyAbstractClass
{
   public override void Area()
   {
     // calculate the area of the circle
   }
}
```

In the similar fashion, we can calcite the area of other shapes.

Collection of abstract members is called as the Interface. When the behavior is not similar, we need to use the interface. All the members of the interface must be overrides in the child class.

e.g. Print functionality of the application can have an interface like:

```
interface Inf
{
  void Print();
}
```

Now as this is the generic functionality and can be implemented in any of the page so we have taken it as interface. Now we can implement this functionality in to any page like:

```
class MyClass:Inf
{
  public void print
   {
     // write details about the print
   }
  // Here we can implement any kind of print-like print to excel, xml, word all depends on the our decision.
}
```

27. Different forms of Polymorphism. Differences between Abstraction and Polymorphism.

ANS: Polymorphism is to use the same function in many forms. The polymorphism is of 2 types-

Ans: Classical polymorphism (Overloading)

b. AdHoc polymorphism (Overriding)

When the runtime (CLR) find the behavior of class members at the runtime of the program, it is called as the AdHoc polymorphism or Overriding.in this the method name is same but they are implemented in the different class. We use virtual keyword in the base class method to be overrides in the child class using the override keyword.

e.g.

```
public class MyClass
{
   Public int  Add(int a, int b)
   {
     Return a+b;
  }
  Public int  Add(int a, int b, int c)
  {
    Return a+b+c;
  }
}
```

When the run-time (CLR) find the behavior of class members at the compilation of the program, it is called as the Classical polymorphism or Overloading.in this the method name is same but there prototypes (parameters) are different and it is implemented in the same class.

e.g.

```
Public  class MyBaseClass
{
   Public virtual void Show(string  message)
   {
    Console.WriteLine("Your message is : "+
message);
  }
}
Public class MyChildClass: MyBaseClass
{
  public override void Show(string  message)
  {
    Console.WriteLine("Your new message is :
"+ message);
  }
}
```

Abstraction is the behavior to get the required functionality in the child class. So we don't matter whatever is written in the base class. We only need to force the child class to implement my required functionality.
Abstract keyword is used to get the abstraction behavior.

28. What are Delegates and Events?
ANS: A Delegate is an object, which points to another method in the application. Delegate holds, name of the method, arguments of the method (if any) and the return type of the method.
See the below points regarding the Delegate:-
-Delegate keyword is sealed type in System. Multicast namespace.
-Delegate works like a function pointer in C language.
-Delegate holds the address of the function.
-Delegate hides the actual information which is written inside the method definition.
-A delegate can hold address of a single function as well as the address of multiple functions.
-There are 2 types of delegate- Single-cast delegate (hold single function) and Multicast delegate(hold multiple functions).
-Addition and subtraction are allowed for the delegates but NOT multiplication and division. It means, we can add delegates, subtract delegates etc. e.g. To create a single cast delegate, first we can create a class with a method as:

```
public class DelegateDemo
{
  public void Show(string msg)
  {
    Console.WriteLine(msg);
  }
}
```

Now we can call the method Show using the delegate as:

```
public  delegate void MyDelegate(string
message); //declare delegate
```

now we need to create the object of the delegate with the address of the method as:

```
DelegateDemo obj = new
DelegateDemo();//class object
MyDelegate md= new
MyDelegate(obj.Show("Hello World!!"));
md(); // call the delegate
```

We can create the events and event handler by using delegate with the below syntax:

```
public delegate void
textChangedEventHandler(Object sender,
TextEventArgs e);
```

This event handler will be used to handle the textbox text changed event.

29. Covariance and Contra-variance.
ANS: covariance and contra variance are the new features added with the .net 4.0. They are basically used for the implicit reference conversion for different .net types like array, delegate, and generic etc.

30. What are Extension methods?
ANS: Extension methods are special types of methods which are static methods but called as the instance methods. The extension methods are added with the .Net framework 3.5 and with the Visual Studio 2008.
These methods won't affect the existing class and the label. These methods are used for the extra behavior which the calls can provide.
There is no need to build the class again if we add any extension method to the class.
There are various inbuilt methods added in .Net 3.5 with the introduction of LINQ. We can see

the extension methods like Order By when we use the Linq as: e.g.

```
int[] numbers = { 10, 45, 15, 39, 21, 26 };
var orderedNumbers = numbers.OrderBy(a =>
a);
```

31. What are Anonymous methods and Lambda Expression?

ANS: Anonymous methods are those methods which does not have the name. As they don't have the name, so there is no way to call these methods. These methods are created by using the work delegate as below:

```
button1.Click +=
delegate{listBox1.Items.Add(textBox1.Text)};
```

Lambda Expression: It's an easy way to create anonymous functions. It is also an anonymous function which has the capability to contain expressions and statements. We can create the delegate and expression tree types using the lambda expression.

For more details regarding the anonymous method and lambda express.

32. Multithreading. How to implement Multithreading?

ANS: Executing more than one process simultaneously called as multithreading. To implement the multithreading concept, we need to use the System. Threading .dll assembly and the System. Threading namespace. To write the thread program, we need to create a class with the method. Now we can create the thread object and then pass the method by using the class object to the method. After that we need to create the ThreadStart delegate which will call the actual method of the class.

33. Which interface is used to -

a. Convert Boolean values to Visibility values?

b. Compare two integer values?

c. Compare String values?

ANS: Check the below interfaces which are used in these scenarios:

a. Convert Boolean values to Visibility values?

b. Compare two integer values?- IComparable interface

c. Compare String values? IComparer interface

SQL Server

34. What is the difference between a View and a Cursor?

ANS: View: It is one of the database object which is also called as virtual table. We can also say that it is a window through which we can see some part of database. View is also called as stored query because we are going to fetch some data using View.

View doesn't contain any datAns: It's just a virtual table which is used to get the records from the base table for which the view is created. View is faster than ad hoc queries because when we create the view and execute it once. Next time onwards it will be available as the compiled format. So whenever the view is called, it will just execute rather than compiling.

Cursor: Cursor is a database object which is also the buffer area which is created as a result of any sql statement to hold the intermediate values.

Views are used to format the rows individually. By using the views, we can process the individual rows. There are 4 types of cursors in Sql Server-

a. Static Cursor

b. Dynamic Cursor

c. Key set cursor

d. Read-only cursor

35. How to execute multiple update on different conditions in a single query?

ANS: To execute multiple update using a single Sql update statement is the new feature available with the SQL Server 2008. In this, we can update multiple rows using a single update command.

36. Left outer joins and Right Outer joins

ANS: Joins are used to join 2 or more tables using some conditions. There are 3 types of Joins in SQL Server database-

a. Left Outer Join

b. Right Outer Join
c. Full Join
In order to extract the matched row from both the tables and unmatched row from the first table, left Outer join is used. The syntax for left outer join condition is:
T.Col1* = T2.Col1
In order to extract the matched row from both the tables and unmatched row from the second table, right Outer join is used. The syntax for right outer join condition is:
T.Col1 = *T2.Col1
In order to extract the matched row from both the tables and unmatched row from the first table and then unmatched row from the second table, full join is used. The syntax for full join condition is:
T.Col1* = *T2.Col1

37. Exception handling.
ANS: Exception Handling is the way to handle the unexpected error. From the SQL Server 2005 version, try…catch block is also supported to catch the exceptions in SQL Server database. There is various other ways to catch the error like @@Error which is the global variable and used to get the error. RaiseError is another inbuilt method which is used to display the error.

38. What is Performance Tuning? How do you implement it?
ANS: Performance Tuning is the process through which we can optimize the SQL Server objects like functions, triggers, stored procedure so that we can achieve high response time to the front end. In the performance tuning process we generally check for the below point and optimize the objects processing:
a. Through Query Execution plan, check for the processing time of the query execution.
b. Check the join conditions and break all the condition for executions of the queries individually
c. Check for the error prone process, conditions in the queries.
d. Check for the loops whether they are terminated if any error occurs
e. Check for the processes which are taking more time in execution and how to reduce the response time.

39. Difference between Having and Where clauses.
ANS: When the where clause is not able to evaluate the condition which consists of group functions, Having clause is used. Having clause is always followed by the Group By clause. Where clause is used to filter the records based on the conditions. If there is the requirement to get the group data in the select statement and where clause is not able to get it, we can use the Having clause.
e.g. Display DeptNo, No.of Employees in the department for all the departments where more than 3 employees are working
```
SELECT DEPTNO, COUNT(*) AS
TOTAL_EMPLOYEE
FROM EMP
GROUP BY DEPTNO HAVING COUNT(*) >3
```

40. Difference between Temp tables and Tables variables?
ANS: Temp Table in SQL Server:
a. Temp table is the special type of tables which are used to store the intermediate data of the actual table.
b. Temp tables are only visible to the current sessions of the sql server instance. When the session end, these table data automatically drops.
c. We can't join the temp tables as they don't allow the foreign key constraints.
d. Temp tables are created in TempDB database.
e. We can use the same temp table name for the different user sessions.
f. Mostly used in stored procedure to handle the intermediate data.

41. What does @ and @@ suffixed by property names specify?

ANS: @- This is used for the variable declaration
e.g. @name varchar2(50)
@@- This is used for the Global variable declaration
e.g. @@Error=0

42. Self-join queries.
ANS: Self-Join is a type of join which is used to join the same table by creating the second instance of the same table. So we join 2 instances of the same table in case of self-join. This type of join is used when there is the requirement to get the referenced data which is available in the same table.
e.g. A table contains EmpId, Ename and ManagerId
As the manager id is also an employee id. Now if we want that who is the manager of which employee. In this situation, we need to create the instance of the same table and get the required data as:

```
SELECT EMPID, ENAME, ENAME AS [MANAGER NAME]
FROM EMP E1, EMP E2
WHERE E1.EMPID= E2.MANAGERID
```

43. Types of Index.
ANS: Indexes are one the database objects which is used to improve the performance of the database queries. it reduces the table scan while retrieving the data from the database and the search gets fast-
There are 2 types of indexes used in the SQL server:
a. Clustered index
b. Non clustered index
There are 3 more types of index but those comes under the above two-
a. unique index
b. Composite Index
c. XML Index-added in SQL Server 2005
The index basically works on searching like binary tree where the root value is the finding value and it will be compared with the partitioned value of the tree.

44. Difference between Primary key, Unique key and Candidate key?
ANS: Primary Key: It is a key to make the unique identification of the row in a table. It doesn't allow null values in the primary key column. We can create the lookup columns based on the primary key. One table allows maximum of 1 primary key and in 1 table, we can create the primary key column by using 16 columns. Due to one of the normalization rule, we have to create primary key for the table to make the rows unique.
Unique Key: Primary Key+ Not null is called as unique key. Unique key is also used to make the rows as unique in a table. The only difference between primary key and unique key is that primary key doesn't allow null value while the unique key allow. The limitation of the null in unique key is that it allows only one Null so in only one row; we can make the key as null for the unique key.
Candidate key- the key other than primary key to make the rows as unique is called as candidate key. In candidate key, we take the columns which are not in the primary key and make the key for uniqueness of the row.

45. What is the default value for Date type. What are Min and Max values for Date in 2008.
ANS: The default value of Date is CURRENT_TIMESTAMP
Below are the new date and time values in Sql Server 2008:
In SQL Server 2008:
1. DateTime2
Min Value: 0001-01-01 00:00:00.0000000
Max Value: 9999-12-31 23:59:59.9999999
2. Date
Min Value: 0001-01-01
Max Value: 9999-12-31

WCF

46. What is WCF also known as?

ANS: WCF (Windows Communication Foundation) also knows an Indigo by its code name.

47. Difference between WCF and Web Services?
ANS: Below are the main differences between the WCF and Web Service:
Web Service:
a. Can be hosted in IIS only
b. Only two types of operations affects- One-Way, Request-Response
c. To serialize the data use System.Xml.Serialization
d. To encode the data use- XML 1.0, MTOM, DIME, Custom
WCF service:
a. Can be hosted in IIS, Self Hosting, WAS, Windows Services etc
b. Three types of operations affects- One-Way, Request-Response and Duplex
c. To serialize the data use System.Runtimel.Serialization
d. To encode the data use- XML 1.0, MTOM,Binary, Custom
e. WCF Service can be accessed through HTTP, TCP, Named pipes, MSMQ,P2P etc.

48. What are Endpoints?
ANS: The collection of Address, Binding and Contract is called as End Point. In Sort,
EndPoint = A+B+C
Address (Where) - it means where the service is hosted. URL of the service shows the address.
Binding (How) - How to connect to the service, is defined by the Binding. It basically has the definition of the communication channel to communicate to the WCF service
Contract (what) - It means what the service contains for the client. What all the methods are implemented in the WCF service is implemented in the Contract.

49. What are Behavior and Bindings?
ANS: Binding mainly describes about the communication of the client and service. For this, there are protocols corresponding to the binding behavior which will take care of the communication channel. There are different protocols which we use for the different types of bindings. E.g. HTTP, TCP, MSMQ, Named Pipes etc.
Behavior is used for the common configurations that could be for endpoints. When we use the common behavior, they affect to all the end points. Adding the service behavior affect the service related stuff while the endpoint related behavior affects the end points. Also operations level behavior affects the operations.

50. What are different types of Contracts supported?
ANS: There are mainly 5 type of contracts used in WCF service:
a. Service Contract
b. Operation Contract
c. Data Contract
d. Message Contract
e. Fault Contract

51. What is the difference between Transport and Message Security mode?
ANS: WCF supports 2 types of security- Transport Level Security and Message Level Security
Transport Level Security- In this type of security, we make the transport channel as secure so that the data flows in that channel will be automatically secured. For HTTP channel, we use the client certificate for the security of the web address. SSL is used for the HTTP channel security. As we don’t need to secure each of the messages which are floating between the client and the service, the speed is faster as direct message is going to the client from the service.
Message level security- This type of security in WCF is used where we don’t have the fixed transport medium and we need to secure each message which is floating between the server and the client. In this type of security we use certain algorithms for making the message as secure message. We use some extra bits and

send with the message. We also use some encryption techniques like SHA1 or MD5 which make the proper security for our message. As each message needs to be secured, this type of security makes some delay in the process of sending and receiving the messages.

52. How to configure WCF security to support Windows authentication?
ANS: To support the WCF security in Windows Authentication, we need to add the ClientCredetialType attribute to “Windows” under the security tab element:

```
transport clientCredentialType="Windows"
```

53. How to use Fault Contract?
ANS: Fault Contract is mainly used for viewing and displaying the errors which occurred in the service. So it basically documents the error and the error message can be shown to the user in the understandable way. We can’t use here the try….catch block for the error handling because the try…catch is the technology specific (.Net Technology). So we use the Fault contract for the error handling.
e.g. To use the Fault contract, we can simply write like the below:

```
public  int Add(int number1,int number2)
{
  // write some implementation
  throw new FaultException (“Error while adding data..”);
}
```

Here the fault Exception method is the inbuilt method which will throw the exception and display the message . We can use the custom class so that the message can be customized and the customized message can be sent to the client.
So we can creeat a clss like:

```
Public Class CustomException()
{
  public int ID{get;set;}
  public string Message{get;set;}

  public string Type{get;set;}
}
```

Now this custom type we ca use with the Operation Contract as:

```
[ServiceContract]
Public interface IMyInterface
{
   [OperationContract]
   [FaultContract(typeOf(CustomException))]
   Int Add(int num1,int num2);
}
```

Now while implementation of the Add method, we can assign the class properties.

WPF

54. Diff between XML and XAML.
ANS: XAML is the declarative XML based language which is used to define the objects and properties. XAML document is loaded by XAML parser. So XAML Parser initiates the objects and set those properties. XAML is mainly used in creating the objects in WPF and Silverlight applications.

55. Stack Panel and Wrap Panel.
ANS: StackPanel is one of layout control in WPF. We can place the child controls inside the stack panel either horizontally or vertically. So it provides two types of orientations- Horizontal Orientation and Vertical orientation.

Wrap panel is another layout control which is similar to the StackPanel. Wrap panel not only keep the control in horizontal and vertical orientation but also wrap them in to new line if there is no space. Here also the orientation can be set as horizontal or vertical. Its main use is to arrange the tabs in the tab control, menu control or in toolbar items.

56. Hierarchical Data Template.
ANS: Hierarchical Data Template is a type of data template which is used to bind the controls which supports HeaderedItemsControl, like TreeViewItem or MenuItem

We can bind those controls items using the Hierarchical Data Template. It displayed the data in to Hierarchical structure in the tree structure. It could be in the left to right or top to bottom.

57. Virtualization.
ANS: This is the feature in WPF which increases the efficiency of the programs when there are the large data objects. If the WPF ItemsControl is bound with the large collection data source object and we enabled the virtualization, then the controls will show only the data which is in the visual container for those items which are visible currently. This visual data is only the small part of the large data object. Now when the user will scroll down or up, the rest of the data will be visible and previous data will be hidden again. So this is increase the efficiency of the program from the UI prospective.

58. Events and Routed Events.
ANS: Routed event is special type of event which can invoke and handle multiple events from different objects rather than the event which is coming from one object. So it generally handles the object from the element tree. So whatever the elements inside the element tree and if they generate the event-may be multiple events, the routed event is capable of handling those events.
The routed event can be invoked in both the directions but in general it comes from the source element and then bubbled up in the element tree until the root element.

59. Bubbling and Tunneling.
ANS: Bubbling: When the events are raised form the innermost element in the visual tree and comes up towards the root element, is called as bubbling.
Tunneling: It is the opposite process of Bubbling where the events fired by the root element goes down towards the last child element control.

60. Resource Dictionary, Static Resources and Dynamic Resources.
ANS: Static and Dynamic resources are used for binding the resources to the control objects.
The main difference between StaticResource and DynamicResource is that how the resource is retrieved elements. If the resource is StaticResource, it will be retrieved only once by the element whoe is referencing it and it will be used for all the resources. While the DynamicResource gets its value each time they reference to the objects. So StaticResource is faster than the DynamicResource , because StaticResource needs to get the value only once while the DynamicResource needs each time to get it.

61. What is Prism?
ANS: Prism is the framework or the set of guidelines which is used to develop the WPF desktop application as well as the Silverlight Rich Internet applications. So it's a kind of Design pattern to Develop the XMAL based application. It also used to develop the Windows 7 applications. Prism mainly helps to design the loosely coupled components which can be easily integrated with the other components of the overall application. Prism mainly used to build the composite applications which need various other components to be integrated.
Prism mainly guides of creating the applications using the Model-View-ViewModel (MVVM) model, Managed Extensibility Framework (MEF), and navigation in the application.
To use the Prism framework, we need to use their library called as Prism Library. So prism Library is the inbuilt set of components which can be used in developing the WPF and Silverlight applications.

62. Dependency Injection, Event Aggregator.
ANS: For the details about the dependency injection, you can follow the below link:
http://wpftutorial.net/ReferenceArchitecture.html

EventAggregator : It is the utility service which contains the events and allows the decouple the publisher and subscriber so that they can be buildup independently. Decouple is primarily useful when a new module needs to be added or removed or modified. The new module can be added as per the event fired and defined in the shell.

63. Shell, Bootstrapper and Region Managers
ANS: Bootstrapper:- An utility in WPF engine which is mainly responsible for the initialization of the application by using the composite application library. By using the bootstrapper we can find out how the components of the application are wired up in the composite application library. The bootstrapper responsibility to create the Shell or main window. Composite application library has the default abstract class UnityBootstrapper which actually handles the initialization.
Region and Region Managers: This is concept of Prism framework. We define the region through XAML code and once a region is defined, automatically it will be registered with the RegionManager. Actually the Bootstrapper registers a service called the RegionManager at run time. RegionManager is a dictionary where the key is name of the region. The value of the key is the reference of the IRegion interface. RegionAdapter is used to create the instance reference of the IRegion interface.

64. What are MEF and Unity?
ANS: The MEF (Managed Extensibility Framework) is the new concept in .net 4.0. It is used to create the lightweight and extensible applications to create Managed Extensibility Framework. It is not only allows the extension but also reused within the application. Extension can be easily encapsulating the code using the MEF.

65. How to navigate to another page?
ANS: There is a class NavigationService which can be used for navigation of the WPF window:

```
this.NavigationService.GoForward();
//or
this.NavigationService.Navigate("MysecondPage.xaml")
```