**Question 1**

**Name the phases of Waterfall life cycle model**.

Mention activities (objectives) and deliverables in each phase.

Answer:

The steps are:

1. System Engineering
2. Requirement analysis
3. Design
4. Construction
5. Testing
6. Installation

7.Maintenance

**3. What is the advantages of XML?**

1. XML is platform independent and programming language independent.

2. XML supports unicode.

3. The data stored and transported using XML can be changed at any point of time without affecting the data presentation.

4. XML allows validation using DTD and Schema.

5.XML is not limited to the fixed set of tags.

6.XML is completely compatible with Java™ and 100% portable.

7. XML is extendable.

**4. What is XML namespace and why do we use it?**

**নেমস্পেস কি?**

এক্সএমএল নেমস্পেস হচ্ছে এলিমেন্ট এবং এট্রিবিউটকে আলাদা বা একক বা অনন্য (unique) করার জন্য একটা পদ্ধতি। যখন একই নামের একাধিক এলিমেন্ট ডকুমেন্টে থাকবে তখনি নেমস্পেস ব্যবহার করে সেগুলিকে অনন্য বা unique করে নিতে হবে।

**কেন এক্সএমএল নেমস্পেস ব্যবহার করতে হবে?**

মুলত ২টি কারনে এক্সএমএল নেমস্পেস ব্যবহার করা হয়। প্রথমত প্রত্যেকটি এলিমেন্ট এবং এট্রিবিউটকে অনন্য করার জন্য (যখন একই নামের একাধিক এলিমেন্ট থাকে)। দ্বিতীয়ত একই শ্রেনীর সব এলিমেন্ট এবং এট্রিবিউটকে একসাথে রাখার জন্য।

(i) XML Namespaces provide a method to avoid element name conflicts.

**XML namespaces** are used for providing uniquely named [elements](https://en.wikipedia.org/wiki/Data_element) and attributes in an [XML](https://en.wikipedia.org/wiki/XML) document. They are defined in a [W3C](https://en.wikipedia.org/wiki/W3C) [recommendation](https://en.wikipedia.org/wiki/W3C_recommendation).

**5. What is the advantages of DTD?**

Advantages of using DTD

* **Documentation** − You can define your own format for the XML files. Looking at this document a user/developer can understand the structure of the data.
* **Validation** − It gives a way to check the validity of XML files by checking whether the elements appear in the right order, mandatory elements and attributes are in place, the elements and attributes have not been inserted in an incorrect way, and so on.

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In this case the DTD would contain the following elements: product, description, size, and prize

The DTD then lets you do validation in your XML document (are you using 'allowed' elements), and it also describes what kind of element for example the price element is (e.g. is it PCDATA?).

Last, but not least, there is currently work going on at the W3C on schemas, which is planned to replace DTD's in the near future.

**6: What is a JDBC DriverManager?**

A: JDBC DriverManager is a class that manages a list of database drivers. It matches connection requests from the java application with the proper database driver using communication subprotocol.

7. What is the purposes of JDBC?

**8: What are the basic steps to create a JDBC application?**

A: Following are the basic steps to create a JDBC application:

Import packages containing the JDBC classes needed for database programming.

Register the JDBC driver, so that you can open a communications channel with the database.

Open a connection using the DriverManager.getConnection () method.

Execute a query using an object of type Statement.

Extract data from result set using the appropriate ResultSet.getXXX () method.

Clean up the environment by closing all database resources relying on the JVM's garbage collection.

**8.What are the common tasks or steps of JDBC?**

1. Create an instance of a JDBC driver or load JDBC drivers through jdbc.drivers;  
2. Register a driver;  
3. Specify a database;  
4. Open a database connection;  
5. Submit a query;  
6. Receive results

**9: What is difference between statement and prepared statement**?

A: Prepared statements offer better performance, as they are pre-compiled. Prepared statements reuse the same execution plan for different arguments rather than creating a new execution plan every time. Prepared statements use bind arguments, which are sent to the database engine. This allows mapping different requests with same prepared statement but different arguments to execute the same execution plan. Prepared statements are more secure because they use bind variables, which can prevent SQL injection attack.

**9: What is a statement?**

A: Statement encapsulates an SQL statement which is passed to the database to be parsed, compiled, planned and executed.