V.S.B. Engineering College, Karur.
Department of Information Technology
Academic Year: 2017-2018(EVEN Semester)
Two Marks Question and Answers

Class/Semester: IV Year/VIII Semester
Subject Code/Subject Name: IT 6801-Service Oriented Architecture

UNIT – I INTRODUCTION TO XML

PART-A

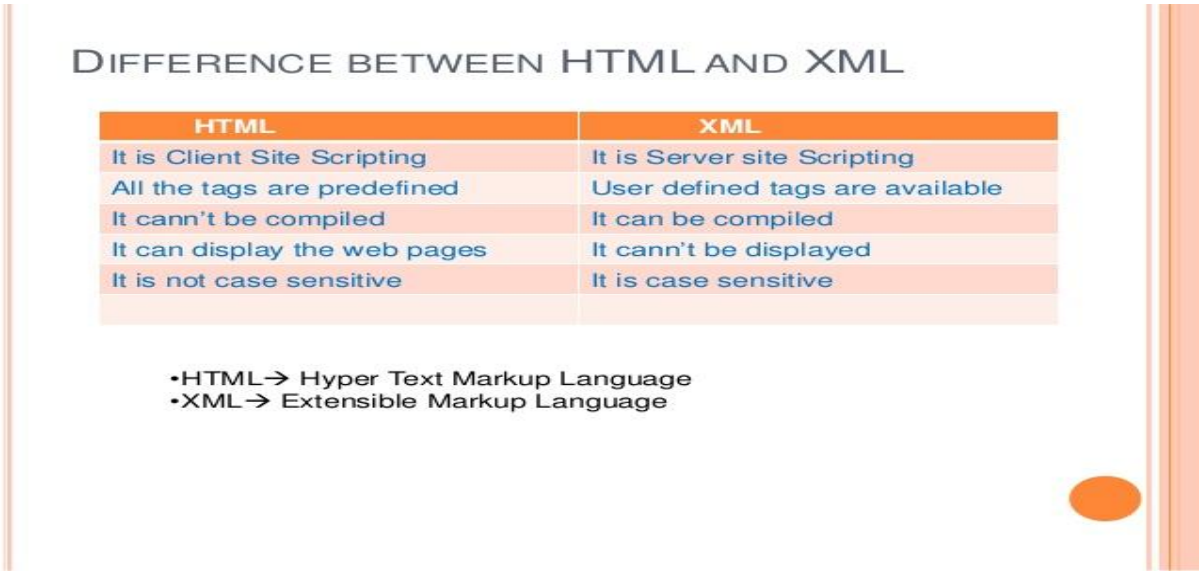
1. What is XML? (Apr/May 2017) (Nov/Dec 2017)

Extensible markup language. It offers a standard, flexible and inherently extensible data format, XML significantly reduces the burden of deploying the many technologies needed to ensure the success of Web services.

2. Define XML attributes

- XML elements can have attributes in the start tag, just like HTML.
- Attributes are used to provide additional information about elements.
- Attributes cannot contain multiple values (child elements can)
- Attributes are not easily expandable (for future changes)

3. Write the main difference between HTML and XML.



4. What is meant by a XML namespace?(Nov/Dec 2016)

XML Namespaces provide a method to avoid element name conflicts. When using prefixes in XML, a so-called **namespace** for the prefix must be defined. The namespace is defined by the **xmlns attribute** in the start tag of an element. The namespace declaration has the following syntax. **xmlns:*prefix*="*URI*".**

```
<root> <h:table xmlns:h="http://www.w3.org/TR/html4/">
<h:tr>
<h:td>Apples</h:td>
<h:td>Bananas</h:td>
```

</h:tr> </h:table>
<f:table xmlns:f="http://www.w3schools.com/furniture">
<f:name>African Coffee Table</f:name>
<f:width>80</f:width>
<f:length>120</f:length> </f:table> </root>

5. Give the rules for well formed documents in XML. (Nov/Dec2016)

- All XML documents must contain a single root element.
- XML tags are case sensitive.
- All XML elements must have proper nesting.
- All XML elements must have a closing tag.
- Attributes value must be quoted either 'Single' or "Double" quotes.

6. What is the purpose of namespace?

XML Namespaces provide a method to avoid element name conflicts. In XML, element names are defined by the developer. This often results in a conflict when trying to mix XML documents from different XML applications.

7. What are all the Transformation techniques?

- XSLT - it is an XML- based languages used to transform XML documents into others format such as HTML for web display.
- XLINK - highlighting that element or taking the user directly to that point in the document.
- XPATH - XPath gets its name from its use of a path notation to navigate through the hierarchical tree structure of an XML document
- XQUERY - it is W3C initiative to define a standard set of constructs for querying & searching XML document.

8. What is XSLT?

- XSLT stands for XSL Transformations
- XSLT is the most important part of XSL
- XSLT transforms an XML document into another XML document
- XSLT uses XPath to navigate in XML documents.

XSLT is a W3C Recommendation

9. Define the term DTD.

A Document Type Definition (DTD) defines the legal building blocks of an XML document. It defines the document structure with a list of legal elements and attributes.

10. List two types of DTD declaration

DTD is stands for Document Type Definition which is used to structure the XML document. The type of DTD are as follows i) Internal Declaration ii) External Declaration.

11. How to declare DTD attributes?

An attribute declaration has the following syntax:

<!ATTLIST element-name attribute-name attribute-type default-value> DTD example:
<!ATTLIST payment type CDATA "check">
XML example: <payment type="check" />

12. What is XML schema?

An XML schema is itself an XML document. It provides more detail about the kind of data that can appear as part of an XML document.

13. What is the purpose of XML schema? (APR/MAY 2013)

- The schemas are more specific and provide support for data types.
- The schema is aware of namespace
- The XML Schema is written in XML itself and has a large number of built-in and derived types.
- The xml schema is the W3C recommendation. Hence it is supported by various XML validator and XML Processors.

14. What are the disadvantages of schema?

- The XML schema is complex to design and hard to learn
- The XML document cannot be if the corresponding schema file is absent.
- Maintaining the schema for large and complex operations sometimes slows down the processing of XML document.

15. Explain DTD for XML Schemas.

- XML documents are processed by applications
- Applications have assumptions about XML documents
- DTDs allow formalizing some of these constraints.

16. List some browsers that support XML and XSL

Mozilla Firefox

As of version 1.0.2, Firefox has support for XML and XSLT (and CSS).

Mozilla: Mozilla includes Expat for XML parsing and has support to display XML + CSS. Mozilla also has some support for Namespaces. Mozilla is available with an XSLT implementation.

Netscape: As of version 8, Netscape uses the Mozilla engine, and therefore it has the same XML / XSLT support as Mozilla.

Opera: As of version 9, Opera has support for XML and XSLT (and CSS). Version 8 supports only XML + CSS. Internet Explorer: As of version 6, Internet Explorer supports XML, Namespaces, CSS, XSLT, and XPath. Version 5 is NOT compatible with the official W3C XSL Recommendation.

17. What is XML presentation technique?

XML presentation technologies provide a modular way to deliver and display content to a variety of devices. There are different presentation technologies used in XML to display the content. Eg: CSS

18. List some of presentation technologies.

Presentation technologies provide a modular way to deliver and display content to a variety of devices. i) CSS ii) XSL iii) XFORMS iv) XHTML

19. Explain XSLT.

XSLT (eXtensible Stylesheet Language Transformations) is the recommended style sheet language for XML.

XSLT is far more sophisticated than CSS. With XSLT you can add/remove elements and attributes to or from the output file. You can also rearrange and sort elements, perform tests and make decisions about which elements to hide and display, and a lot more. XSLT uses XPath to find information in an XML document.

20. Define XML attribute.

XML Attributes Must be Quoted

Attribute values must always be quoted. Either single or double quotes can be used. For a person's gender, the person element can be written like this:

<person gender="female">

or like this: <person gender='female'>

If the attribute value itself contains double quotes you can use single quotes, like in this example: <gangster name='George "Shotgun" Ziegler'> or you can use character entities:

<gangster name="George "Shotgun" Ziegler">

PART-B

1. Draw the XML Tree Structure or XML Document structures or well formed and valid documents.
2. Explain Namespaces in XML. (Nov/Dec 2017)
3. Elucidate the XML DTD.(Nov/Dec 2016)
4. Explain XML – SCHEMA. (Nov/Dec 2016) (Nov/Dec 2017)
5. Difference between DTD and XSD.
6. Explain X – Files (X – Path, X-Link, X-Pointer). (Nov/Dec 2016)
7. Elaborate XML structure with is example. (Apr/May 2017)

UNIT – II BUILDING XML- BASED APPLICATIONS

PART-A

1. Write about DOM.

DOM is W3c supported standard application programming interface(API) that provides a platform and language- neutral interface to allow developers to programmatically access and modify the content and structure documents.

2. What is SAX?

SAX is an example of a grass- roots development effort to provide a simple; Java based API for processing XML.

3. What are the levels of DOM?

DOM provides a platform and language- neutral interface to allow developers to programmatically access and modify the content and structure documents. It has Level 0, Level 1, Level 2, Level 3

4. Compare CSS and XSL.

CSS can be used with HTML. But XSL can't be used in HTML Both can be used in XML
CSS is not a transformation language but XSL.

5. What does XML-Signature elements provide?

The XML-Signature elements provides message integrity and authentication information about the originator of the message.

6. Give the basic structure of the XML signature.

```
<Signature>
        <SignedInfo>
        <CanonicalizationMethod />
        <SignatureMethod />
                <Reference>
                        <Transforms>
                        <DigestMethod>
                        <DigestValue>
                </Reference>
                <Reference />
```

```
        </SignedInfo>
        <SignatureValue/>
        <KeyInfo/>
        <Object/>
</Signature>
```

7. List the different XSLT elements.

- Stylesheet
- Value-of
- For-each
- Sort.

8. What are the 2 traditional ways of assigning event handlers in DOM?

1) Via HTML, using attributes 2) Via scripting

9. How to add Nodes in DOM Tree.

- Nodes can also be added to the DOM. You've already seen how attribute nodes can be created and applied to an element so let's look at adding element and text nodes within the document tree (without using the innerHTML property).
- The first step is to create a node object of the type you want using one of document.createElement (), document.createAttribute () or document.createTextNode (). For attributes, however, you'll probably just want to create an element node and assign it attributes directly.

10. What are the types of nodes in DOM Tree?

Element nodes, as we've seen, correspond to individual tags or tag pairs in the HTML code. They can have child nodes, which may be other elements or text nodes.

Text nodes represent content, or character data. They will have a parent node and possibly sibling nodes, but they cannot have child nodes.

Attribute nodes are a special case. They are not considered a part of the document tree - they do not have a parent, children or siblings. Instead, they are used to allow access to an element node's attributes.

11. What is Window Object in DOM?

The window object represents an open window in a browser. If a document contain frames (or tags), the browser creates one window object for the HTML document, and one additional window object for each frame. Some of the window object properties are:

- Closed • document • frames • history.

12. Mention any 3 XML Parsers.

• SAX (Simple API for XML) Parser • DOM (Document Object Model) Parser and • XSLT (XML Style Sheet) Parsers.

13. What is meant by XSL formatting? (Apr/May 2017)

XML formatting was designed to assist with the printing and displaying of XML data. The main emphasis is on the document layout and structure. This includes the dimensions of the output document, including page headers, footers and margins.

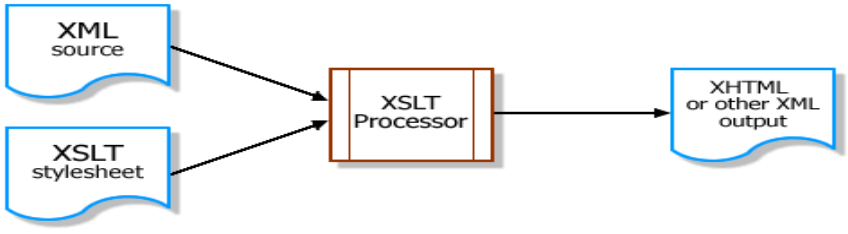
14. What is XSL Programming?

XSL (XML Stylesheet) Programming is the Next Generation of the CSS (Cascading Style Sheet Programming). In CSS, users can use certain style tags which the browsers can understand and are predefined by W3 consortium. XSL takes this to one step ahead and users can define any tags in the XML file. XML sheets can help in showing the same data in different formats.

15. What is XSLT?

• XSLT stands for XSL Transformations • XSLT is the most important part of XSL • XSLT transforms an XML document into another XML document • XSLT uses XPath to navigate in XML documents • XSLT is a W3C Recommendation.

16. Sketch the working diagram of XSLT.



17. List the XML DOM node types.

- Document node.
- Element node.
- Attribute node.
- Text node.
- CData node.
- Comment node.
- Processing instructions node,
- Document fragments node.
- Entity node.
- Entity reference node.
- Notations node.

18. Compare and contrast DOM Vs SAX.

Differences between DOM and SAX

	DOM	SAX
Standardization	W3C Recommendation	No formal specification
Manipulation	Reading and Writing (manipulation)	Only Reading
Memory Consumption	Depends on the size of the source xml-file, can be large	Very low
XML handling	Tree-based	Event-based

19. Write a simple sheet using XSL. (Nov/Dec 2016)

<? xml version=1.0 encoding=”UTF-8”?>
<xsl: stylesheet xmlns: xsl=”URI” version=”1.0”>
<!- XSLT Conversion rules->
</xsl: stylesheet>

20. Write the interfaces used in DOM traversal.

1. NodeIterator.
2. TreeWalker.
3. NodeFilter.
4. DocumentTraversal.

21. List the advantages of SAX. (Nov/Dec 2017)

- SAX is similar to a one pass compiler. After it reads part of the document it cannot navigate backward to re-read the data it has processed, unless we start all over again.
- Because SAX does not store the data that it has processed, we cannot modify this data and store it back in the original document.
- Because SAX does not create an in-memory document structure, we cannot build an XML document by using a SAX parser.

22. What is DOM? List the DOM interfaces. (Nov/Dec 2017)

- The Document Object Model (DOM) is a platform and language neutral interface that allows programs and scripts to dynamically access and update the content, structure, and style of a document.
- DOM is an application programming interface (API) for HTML and XML documents. It defines the logical structure of a documents and the way a document is accessed and manipulated.

Interfaces:

- Node
- NodeList
- NamedNodeMap
- Document
- DocumentFragment.
- Element
- Attr
- CharacterData.

PART-B

1. Explain the DOM (DOCUMENT OBJECT MODEL). (Nov/Dec 2017)
2. Explain XML Parser using DOM.
4. Elucidate XML parser using SAX: (Nov/Dec 2017)
5. Elucidate the Transforming XML with XSL.(Or) How XSLT can transform XML file into HTML. (Nov/Dec 2016)
6. Elaborate the XSL Formatting Object Language.
7. Elucidate Modeling database in XML. (Nov/Dec 2016)(Apr/May2017)

UNIT – III SERVICE ORIENTED ARCHITECTURE

PART-A

1. What is Service Oriented Architecture?(Nov/Dec 2013)(May/June 2013)

Service oriented architecture is essentially a collection of services. These services communicate with each other. The communication can involve either simple data passing or it could involve two or more services coordinating some activity.

2. Define Contemporary SOA.

Contemporary SOA represents an architecture that promotes service orientation through the use of web services.

3. List out some characteristics of Contemporary SOA.(Apr/May2017)(Nov/Dec 2017) (Nov/Dec 2016)

Some of the characteristics of contemporary SOA are:-

i. Contemporary SOA is at the core of the service oriented platform.
ii. Contemporary SOA increases quality of service.
iii. Contemporary SOA is fundamentally autonomous.
iv. Contemporary SOA is based on open standards.
v. Contemporary SOA supports vendor diversity.
vi. Contemporary SOA fosters intrinsic interoperability.

vii. Contemporary SOA promotes discovery.
viii. Contemporary SOA promotes federation.
ix. Contemporary SOA promotes architectural composability.
x. Contemporary SOA fosters inherent reusability.

3. What are the benefits of SOA? (Apr/May 2017)

The benefits of SOA are:

i. Improved integration and intrinsic interoperability
ii. Inherent reuse
iii. Streamlined architectures and solutions
iv. Leveraging the legacy investment
v. Establishing standardized XML data representation
vi. Focused investment on communications infrastructure
vii. "Best-of-breed" alternatives
viii. Organizational agility

4. What are the common pitfalls of adopting SOA?

The common pitfalls of adopting SOA are:

i. Building service oriented architectures like traditional distributed architectures
ii. Not standardizing SOA
iii. Not creating a transition plan
iv. Not starting with an XML foundation architecture
v. Not understanding SOA performance requirements
vi. Not understanding web services security
vii. Not keeping in touch with product platforms and standards development.

5. What is Architecture? (Nov/Dec 2013)

Architecture refers a systematic arrangement of computerized automation technological solutions.

6. What is application architecture? (May/June 2014) (Nov/Dec 2014)

Application architecture is a template for all others which specifically explained the technology, boundaries, rules, limitations, and design characteristics that apply to all solutions based on this template.

7. What is Single-tier client-server architecture?

Single-tier client-server architecture is an environment in which bulky mainframe back-ends server served the thin clients.

8. List out the primary characteristics of the two tier client server architecture?

The primary characteristics of the two tier client server architectures is given below which is compared to SOA

i. Application logic
ii. Application processing
iii. Technology
iv. Security
v. Administration

9. What is multi-tier client-server architectures?

Multi-tier architecture (often referred to as n-tier architecture) is a client-server architecture in which the presentation, the application processing, and the data management are logically separate processes.

10. What are the issues that are raised in the client-server and the distributed Internet architecture?

The issues that are raised in the client-server and the distributed Internet architecture comparisons are discussed in a comparison between multi-tier client-server and SOA.

i. Application logic
ii. Application processing
iii. Technology
iv. Security
v. Administration

12. List some of the characteristics of Application Service layer.

i. Expose functionality within a specific processing context
ii. Draw upon available resources within a given platform
iii. Solution – agnostic
iv. Generic and reusable
v. Achieve point-to-point integration with other application services
vi. Inconsistent in terms of the interface granularity they expose
vii. Mixture of custom-developed and third-party purchased services

13. Write down the steps for composing SOA.

Step 1: Choose service layers
Step 2: Position core standards
Step 3: Choose SOA extensions

14. What are the design characteristics required to facilitate interoperability in contemporary SOA?

The design characteristics required to facilitate interoperability are:

i. Standardization
ii. Scalability
iii. Behavioral predictability
iv. Reliability

15. Write down the layers of abstraction identified for SOA.

The three layers of abstraction identified for SOA are:

i. the application service layer
ii. the business service layer
iii. the orchestration service layer

16. What are the Types of Architecture?

• Application architecture • Enterprise architecture • Service-oriented architecture.

17. Define Application architecture.

Application architecture is to an application development team what a blueprint is to a team of construction workers.

18. Define Enterprise architecture.

Enterprise architectures often contain a long-term vision of how the organization plans to evolve its technology and environments. For example, the goal of phasing out an outdated technology platform may be established in this specification.

19. Logic components of automation logic/ SOA.

Fundamental parts of the framework 1. SOAP messages 2. Web service operations 3. Web services 4. Activities

20. Define messages.

Messages = units of communication (A message represents the data required to complete some or all parts of a unit of work).

21. Define operations.

Operations = units of work (An operation represents the logic required to process messages in order to complete a unit of work.)

22. Define services.

Services = units of processing logic (A service represents a logically grouped set of operations capable of performing related units of work.)

23. Define processes.

Processes = units of automation logic. (A process contains the business rules that determine which service operations are used to complete a unit of automation.

24. What are the layers of abstraction?

The three layers of abstraction we identified for SOA are: *) the application service layer *) the business service layer *) the orchestration service layer.

25. Define Application service layer.

While application services are responsible for representing technology and application logic, the business service layer introduces a service concerned solely with representing business logic, called the business service.

26. Define Business service layer.

Business services are the lifeblood of contemporary SOA. They are responsible for expressing business logic through service-orientation and bring the representation of corporate business models into the Web services arena.

PART-B

1. List out some characteristics of Contemporary SOA. (Apr/May2017)
2. What are the benefits of SOA?
3. What are the common pitfalls of adopting SOA? (Nov/Dec 2017)
4. Comparing SOA with client server architecture and distributed internet architectures.
5. Explain the Service Layers in detail. (Nov/Dec 2017)
6. Explain the principles of service orientation. (Nov/Dec 2016)

UNIT IV WEB SERVICES
PART-A

1. Define UDDI. (Apr/May 2017) (Nov/Dec 2017)

- UDDI stands for Universal Description Discovery and Integration.
- UDDI is an XML based standard for describing, publishing and finding web services.
- UDDI is a platform independent, open framework.
- UDDI can communicate via SOAP, CORBA, and Java RMI Protocol.

2. What is the use of RPC?

Client-server remote procedure call (RPC) connection is used for remote communication between components residing on client workstations and servers.

3. Write down the advantage of RPC?

Advantages of RPC are:

Better load balancing: More evenly distributed processing (e.g., application logic distributed between several servers)

More scalable: Only servers experiencing high demand need be upgraded Multiple concurrent requests are processed

4. Write down the disadvantages of RPC?

Disadvantages of RPC are:

In heavily loaded network

More distributed processing necessitates more data exchanges.

Difficult to program and test due to increased complexity.

5. Define the definition element?

The definition element is the root element in WSDL. It defines the name of the web service and specifies the namespace that would be used in the WSDL document.

6. Describe the message element.

The <message> element describes the data being exchanged between the web service Providers and consumers. The <message> element assigns the message a name and Contains one or more part child elements that each are assigned a type.

7. Define the binding element.

The binding element begins the concrete portion of the service definition, to assign a Communications protocol that can be used to access and interact with the WSDL. The binding construct contains one or more operation elements.

8. List out the elements in the WSDL document structure (Or) Types of WSDL elements.(Apr/May2017)

Element	Defines
<types>	The data types used by the web service
<message>	The messages used by the web service
<portType>	The operations performed by the web service
<binding>	The communication protocols used by the web service
<service>	The service location used by the web service

9. What is Web Services?

A web service is used to implement architecture according to service oriented architecture
(SOA) concepts. The basic unit of communication is message.

10. What are the basic parts comprised in the web services framework?

The basic parts comprised in the web services framework are:

i. one or more architectures
ii. technologies
iii. concepts
iv. models
v. sub-frameworks

11. List out the characteristics of web services framework.

The various characteristics of web services framework are:

i. An abstract (vendor-neutral) existence defined by standards organizations and implemented by (proprietary) technology platforms.
ii. Core building blocks that include web services, service descriptions, and messages.
iii. A communication agreement centered around service descriptions based on WSDL.
iv. A messaging framework comprised of SOAP technology and concepts.
v. A service description registration and discovery architecture sometimes realized through UDDI.
vi. A well-defined architecture that supports messaging patterns and compositions.
vii. A second generation of web services extensions (also known as the WS-* specifications) continually broadening its underlying feature-set.

12. Write down the advantage of web services.

The various advantages of web services are:

i. Flexible
ii. Adaptable

iii. Promotes interoperability
iv. Reduces complexity by encapsulation
v. Enables just-in-time integration

13. Give the classification of web services design.

The different classification of web services design is:

i. Temporary classification (service roles)
ii. Permanent classification (service models)

14. What is the service provider?

The service provider is used to identify the organization (or individual) responsible for actually providing the web service. It simply referred as the service being invoked.

15. What is service requestor?

Service requestor is a processing logic unit capable of issuing a request message that can be understood by the service provider.

16. What are service descriptions?

A WSDL service description explains how the service description document itself is organized. It is also known as WSDL service definition or just WSDL definition.

17. What are the categories of service description?

Service description id divided into two categories

i. Abstract description
ii. Concrete description

18. What does abstract description establish?

An abstract description establishes the interface characteristics of the web service without

any reference to the technology used to host or enable a web service to transmit messages.

19. What are the parts that comprise an abstract description?

The three main parts that comprise an abstract description are

i. Port type
ii. Operation
iii. Message

20. What does port type in abstract description provide?

Port type provides a high-level view of the service interface by sorting the messages a service can process into groups of functions.

21. What is metadata?

Metadata provides information about the service.

22. What is the use of SOAP?

The Simple Object Access Protocol (SOAP) is used to define a standard message format which is used for communication between services running on different operating systems.

23. List out some of the characteristics of SOAP messaging framework.

SOAP messaging framework ha the following three characteristics that are

i. Extensible
ii. Interoperable
iii. Independent

24. What are the parts of SOAP message?

SOAP message consists of the three parts:

SOAP envelope
SOAP header (optional)
SOAP body
SOAP fault

25. List out messaging styles offered by SOAP.

i. RPC (Remote Procedure Call) style
ii. Document – style

26. Sketch the anatomy of a SOAP message.(Nov/Dec 2016)

```
<?xml version="1.0"?>
<soap:Envelope
        xmlns:soap="http://www.w3.org/2001/12/soap-envelope"
        soap:encodingStyle="http://www.w3.org/2001/12/soap-encoding">
        <soap:Header>
        .....

        </soap:Header>

        <soap:Body>
```

```
                .....
                <soap:Fault>
                    .....
                </soap:Fault>
            </soap:Body>
        </soap:Envelope>
```

27. What is SOAP node?

The programs that use services to transmit and receive SOAP messages are referred to as SOAP nodes.

28. What is called the SOAP message path?

The route taken by the message is called the SOAP message path. The set of SOAP nodes through which the SOAP message passes, including the initial sender, the ultimate receiver and one or more intermediaries are called the SOAP message path.

29. Define Message Exchange Pattern.

Message Exchange Pattern (MEP) defines the way that SOAP messages are exchanged between the web service requester and web service provider. It represents a set of templates.

30. List out some primitive MEPs. (Nov/Dec2016)

A common set of primitive MEPs are listed below

i. Request-response
ii. Fire-and-forget
iii. Complex MEPs

31. What is Publish-and-subscribe pattern?

Publish-and-subscribe pattern is an asynchronous MEP in which publisher sends messages to all interested subscribers.

32. What is coordination?

Coordination is the act of one entity (known as the coordinator) disseminating Information to a number of participants for coordinating the activities of the web services that are part of a business process.

33. What does the style attribute of soap: binding element define?

The style attribute of the soap: binding element defines whether the SOAP messages used to support an operation are to be formatted.

34. List out the format supported by the style attribute of the soap:binding element.

i. Document – style messages
ii. RPC – style messages

35. What does the soap :body element define?

The soap:body element defines the data type system to be used SOAP processors, via the use attribute. The use attribute can be set to "encoding" or "literal".

36. What is the use of import element?

The import element is used to import parts of the WSDL definition as well as XSD schemas.

37. What is the use of the documentation element?

The documentation element is used to add descriptive, human-readable annotations Within a WSDL definition.

38. What is SOAP?

SOAP is an XML-based messaging protocol. It defines a set of rules for structuring messages that can be used for simple one-way messaging but is particularly useful for Performing RPC-style (Remote Procedure Call) request-response dialogues.

39. Give the structure of a SOAP message.

A SOAP message is encoded as an XML document consisting of

- an <Envelope> element, which contains
  - an optional <Header> element, and
  - a mandatory <Body> element. The <Fault> element, contained with in the <Body> is used for reporting errors.

40. What is the Envelope element?

The SOAP <Envelope> is the root element in every SOAP message, and contains two child elements

i. an optional <Header>
ii. a mandatory <Body>

41. What is the use of Header element?

The SOAP <Header> is used to pass application related information that is to be

processed by SOAP nodes along the massage path.

42. Give the skeleton for the Envelope element?

The root Envelope constructs hosting Header and Body constructs.

```
<Envelope xmlns=”http://schemas.xmlsoap/soap/envelope/”>
        <Header> .....</Header>
        <Body>.....</Body>
</Envelope>
```

43. What is the Fault element?

The SOAP <Fault> is a sub-element of the SOAP body, which i used for reporting errors.

It is used to carry error and status information within a SOAP message.

44. What is WS-choreography?

Web service choreography (WS-Choreography) is a XML based business process modeling language that describes collaboration protocols of cooperating web service participants, in which services act as peers, and interactions my be long lived and stateful.

45. How will you define the participant in WS-Choreography?

```
<participant Type name=”Buyer”>
    <description type=”documentation”>
        Buyer Participant
    </description>
    <roleType typeRef=”tns:BuyerRole”/>
 </partcipantType>
```

46. How will you declare the relationship between the roles in WS-Choreography?

```
<relationship Type name=”ncname”>
        <role type=”qname” behavior=”list of ncname”?/>
        <role type=”qname” behavior=”list of ncname”?/>
</relationship Type>
```

PART-B

1. Explain Web Services in detail.
2. Elaborate the WSDL in detail. (Nov/Dec2017) (May/June 2013)
3. Elucidate the Messaging with SOAP. (Apr/May 2017) (May/June 2013)
4. Explain UDDI with its registry.

5. Discuss the Message Exchange patterns.
6. Describe Orchestration and Choreography. (Nov/Dec 2016) (Nov/Dec2012)

UNIT V BUILDING SOA-BASED APPLICATIONS
PART-A

1. What is Service oriented analysis?

The service oriented analysis is the process of determining how business automation requirements can be represented through service orientation.

2. **What are the goals needed for performing a service-oriented analysis?**

The overall goals of performing a service-oriented analysis are as follows:

i. Define a preliminary set of service operation candidates
ii. Group service operation candidates into logical contexts. These contexts represent service candidates.
iii. Define preliminary service boundaries so that they do not overlap with any existing or planned services.
iv. Identify encapsulated logic with reuse potential.
v. Ensure that the context of encapsulated logic is appropriate for its intended use.
vi. Define any known preliminary composition models.

3. Give the step-by-step process in the service oriented analysis. (Nov/Dec 2016)

Step 1: Define business automation requirements
Step 2: Identify existing automation systems
Step 3: Model candidate services

4. What is Service modeling?

Service modeling is a process of identifying candidate service operation and then grouping them into a logical context.

5. What is Business-centric SOA?

Business-centric SOA is the process of introducing service oriented principles into the domain of business analysis.

6. What is the use of service candidates?

The service candidate is used to distinguish a conceptualized service from an actual implemented service.

7. What is the key service orientation principles applied to the service candidate?

i. Reusability
ii. Autonomy
iii. Statelessness
iv. Discoverability

8. What is service oriented design?

Service oriented design phase is a process that transforms previously modeled service candidates into physical service designs.

9. Give the overall goals for performing a service oriented design.

The overall goals of performing a service oriented design are as follows:

i. Determine the core set of architectural extensions.
ii. Set the boundaries of the architecture.
iii. Identify required design standards.
iv. Define abstract service interface designs.
v. Identify potential service compositions.
vi. Assess support for service orientation principles.
vii. Explore support for characteristics of contemporary SOA.

10. What does abstract definition contain?

The abstract definition contains a series of parts that include

i. Types
ii. Message
iii. Port type (or interface)

11. What does concrete definition comprised of?

The concrete definition is comprised of

i. Binding parts
ii. Service parts

12. What are the steps needed to design the Entity-centric business service?

Step 1: Review existing services
Step 2: Define the message schema types
Step 3: Derive an abstract service interface
Step 4: Apply principles of service orientation
Step 5: Standardize and refine the service interface

Step 6: Extend the service design
Step 7: Identify required processing

13. List out the SOA principles supported by Application service design.

i. Reusability
ii. Autonomy
iii. Statelessness
iv. Discoverability

14. Write down the steps for Task-centric business service design.

Step 1: Define workflow logic
Step 2: Derive initial interface
Step 3: Apply principles of service orientation
Step 4: Standardize service interface
Step 5: Identify required processing

15. Give the architecture components of J2EE to SOA.

i. Java Server Pages (JSPs)
ii. Struts
iii. Java Servlets
iv. Enterprise JavaBeans (EJBs)

16. What is JAX-WS?(Apr/May 2017)

JAX-WS is a technology for building web services using XML. In JAX-WS, a web service operation invocation is represented by an XML-based protocol such as SOAP.

17. Expand SEI.

SEI stands for

- Service Endpoint Interface or
- Service Endpoint Implementation

18. What is SEI?

SEI is a java interface or class that declares the methods that a client can invoke on the service.

19. Expand JAXB and JAXR.

JAXB stands for Java Architecture for XML Binding (JAXB)
JAXR stands for Java API for XML Registries (JAXR)

20. What is JAXB?

Java Architecture for XML binding API (JAXB) provides a means of generating Java classes from XSD schemas and further abstracting XML-level development.

21. Give the general steps to use the JAXB API.

The general steps to use the JAXB API are:

i. Bind the schema
ii. Unmarshalling
iii. Marshalling

22. **Write down the advantages of JAXB.**

It simplifies access to an XML document form a Java program.
It uses memory efficiently.
It is flexible.
It allows transportation from one XML document to another.

23. What is JAXR?

The Java API for XML Registries (JAXR) provides a uniform and standard Java API for accessing various kinds of XML registries.

24. What are the components of JAXR?

i. JAXR client
ii. JAXR provider

25. Write down the packages that are implemented by JAXR.

i. javax.xml.registry
ii. javax.xml.registry.infomodel

26. What are the tasks involved in managing registry data?

i. Getting authorization from the registry
ii. Creating an organization
iii. Adding classifications
iv. Adding services and service binding to an organization
v. Publishing a specification concept
vi. Removing data from the registry

27. Expand JAX-RPC and WSIT.

JAX-RPC stands for Java API for XML based RPC.
WSIT stands for Web Services Interoperability Technologies.

28. What is the use of JAX-RPC?

JAX-RPC is used for building and deploying SOAP+WSDL web services clients and endpoints. It enables clients to invoke web services developed across heterogeneous platforms.

29. What are the benefits of JAX-RPC?

i. Portable and interoperable web services
ii. Ease of development of web service endpoints and clients
iii. Increased developer productivity
iv. Support for open standards: XML, SOAP, WSDL
v. Standard API developed under Java Community Process (JCP)
vi. Support for tools
vii. RPC programming model with support for attachments
viii. Support for SOAP message processing model and extensions
ix. Secure web services
x. Extensible type mapping

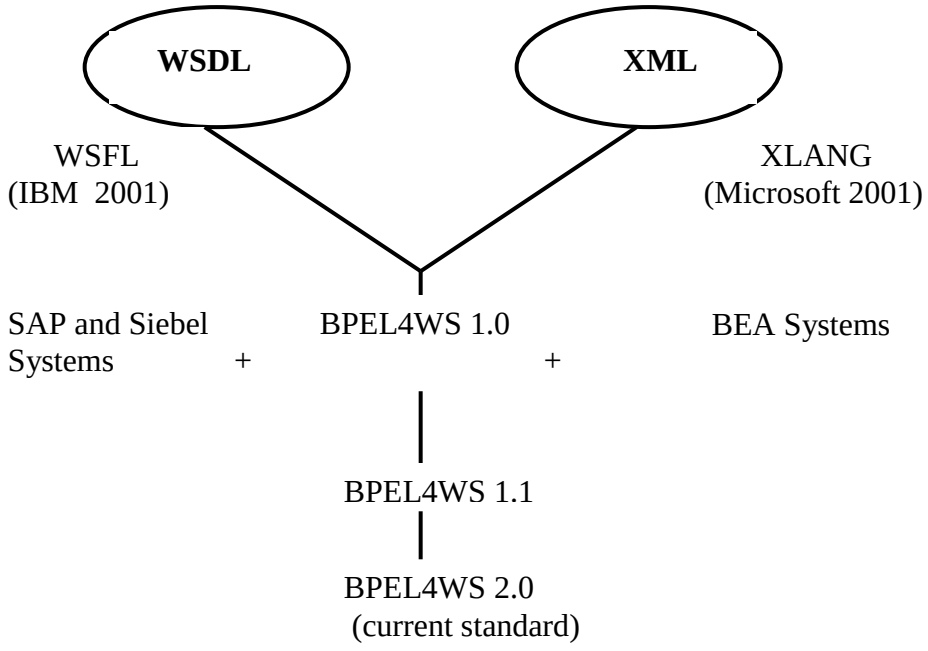
30. Expand WS-BPEL.

WS-BPEL stands for Web Services Business Process Execution Language.

31. What is WS-BPEL?

WS-BPEL is an XML based language (ie., it is described by a grammar) enabling users to describe business process activities as Web Services and define how they can be connected to accomplish specific tasks.

32. Draw the WS-BPEL family tree.



33. Give the overview of WS-Coordination.

WS-Coordination is a framework for coordinating distributed activities

- Coordinator
  - Activation service for creating coordination instance
  - Registration service for registering participating application
  - Additional protocol specific service
- Set of coordination protocols

34. What is the use of CoordinationContext element?

The Coordination Context is used to carry information about active coordination to Participants

- Information inside context is coordination protocol specific
- Context format is not mandated by the standard
- Typically passed is SOAP headers

35. What is WS-Policy?

WS-Policy defines a framework for allowing web services to express their constraints and requirements in relation to security, processing, or message content.

36. What is the goal of WS-Policy?

WS-Policy provides the mechanisms needed to enable web services application to specify Policies.

37. Give the specifications of WS-Policy framework.

The WS-Policy framework is comprised of the following three specifications:

- WS-Policy
- WS-Policy Assertions
- WS-Policy Attachments

38. What is WS-Security?

WS-Security is known as Web Services Security is a flexible extensible framework to SOAP to apply security to web services.

39. Why is WS-Security needed?

The WS-Security is used to implement

- Message-level security measures
  - Protect message contents during transport and during processing by service intermediaries.
- Authentication and authorization control
  - Protect service provides from malicious requestors.

40. Give the specifications of WS-Security framework.

The WS-Security framework is comprised of the following specifications:

- WS-Security
- XML-Encryption
- XML-Signature

41. Give the syntax of WS-Security element.

```
<Envelope>
        <Header>

.......
        <wsse:Security actor="...." mustUnderstand="...">
                .....
        </wsse:Security>
        </Header>
        <Body>
        .....
        </Body>
</Envelope>
```

42. Write the syntax for getVariableData function in WS BPEL. (Nov/Dec 2016)

- Syntax: GetVariableData (variablename, partname, location path)

43. Write any four attributes of 'invoke' element of BPEL. (Nov/Dec 2017)

- PartnerLink.
- PortType.
- Operation.
- InputVariable.
- OutputVariable.

44. What is service modeling process? (Nov/Dec 2017)

- Service modeling process is responsible for organizing the information gathered from the service oriented analysis process.

PART-B

1. Discuss in detail about service modeling.(Nov/Dec2016)
2. Write in detail about Service Oriented Design. (Nov/Dec2011) (Nov/Dec2012)
3. Write in detail about SOAP with examples.
4. Explain about SOA Composition Guidelines.
5. Discuss in detail about SOA Support with .NET. (Apr/May2017) (May/June 2013)
6. Discuss in detail about the WS – BPEL with code snippets.(Nov/Dec2016) (Nov/Dec2013) (May/June 2014)
7. Explain about WS-Coordination with code example. (Nov/Dec2014) (Nov/Dec2012)
8. Explain about WS-Policy with code example. (Nov/Dec2014) (Nov/Dec2011)
9. Explain about WS-Security with code example. (Nov/Dec 2017)(May/June 2014) (Nov/Dec2011)

GE6071-PROFESSIONAL ETHICS IN ENGINEERING

UNIT – I HUMAN VALUES
PART-A

1. What are human values?
Values decide the standard of behavior. Some universally accepted values are freedom Justice and equality. Other principles of values are love, care, honesty, integrity, self respect.

2. What are ethical values?
Trustworthiness, respect, responsibility, fairness, caring is ethical values

3. Distinguish values from ethics and culture.
Values are mainly related to individuals and since they are related to justice, they remain the same for everyone. E.g. truth, honesty, empathy, self respect. Values do not change from individual to individual. Ethics is common to a group of individuals; the group may be religious or professional. Ethics is mostly based on some code or law and judgment of any action is based on code of conduct or law. Ethics change from individual to individual Culture commonly refers to conduct of a group. E.g. system of worship, It may differ from society to society, nation to nation or religion to religion.

4. What is integrity?

Integrity is the unity of character based on moral values. Consistency in attitudes, emotions and conduct in relations to morally justified actions and values are also the part of integrity of individual. It implies honesty, trustworthiness.

5. Define work ethics.
By one's work one cannot harm others. Any worker cannot escape accountability. Worker has the moral responsibility to see that no other person's right, private or freedom is impaired or transgressed.

6. What is service learning?
Service learning tells that one has moral responsibility to increase the desirable effects and to decrease the harmful effects. Any service should increase the desirable result.

7. Mention some civic virtues?
Good citizen demand civic virtue. It is the principle of not harming the surroundings .it also includes living peacefully, respect for others, protecting the environment and being normally and ethically good

8. What is caring?
Caring is the essence of moral life. Caring involves feelings, relationship, contends with other persons and protecting others and causing least damage to others.

9. Write notes on honesty
Any human being should imbibe honesty -honesty in acts, honesty in speech and honesty in beliefs. Honesty is the fundamental virtue in human relationship even though in may be difficult to follow some times.

10. What is courage as a value?
Courage implies self respect and governs confrontations with danger and risk. It is not excessive rashes or cowardice, but it is the middle ground. Taking calculated risks and boldness in facing crises are the hallmarks of courage as a human value. It defines the mental make up of an individual in taking bold decisions even under adverse situations.

11. Define co -operation.
Co -operation means extending help to others, for a good cause. Co -operation may be through an idea, a suggestion, an assistance or physical work which extends to others for common benefit.

12. Define empathy.
Empathy means putting self in a position of someone else and thinking as the later and reasoning suitable action.

13. Define spirituality.
Spirituality raises a man above the materialistic world into a realm where he seeks peace and real happiness.

14. Define Integrity?

Integrity is the bridge between responsibility in private and professional life.

15. Define Compromise?
In a negative sense it means to undetermined integrity by violating one's fundamental moral principles. In a positive sense, however, it means to settle differences by mutual concessions or to reconcile conflicts through adjustments in attitude and conduct.

16. Give the two aspects of Honesty?
Truthfulness – Meeting responsibilities concerning truth -telling.
Trustworthiness – Meeting responsibilities concerning trust.

17. What is Self -respect?
Self-respect: It is a moral concept; refers to the virtue properly valuing oneself.

18. What is Self –esteem?
Self-esteem: It is a psychological concept; means having a positive attitude toward oneself, even if the attitude is excessive or otherwise unwarranted.

19. What is sharing?
Sharing means sharing of feelings, ideas thoughts, resources and profits. Sharing is always mutually beneficial. Sharing morally acceptable feelings, resources and materials is a value.

20. Define strict Liability?
It means if the sold product is effective, the manufacturer concerned is liable for any harm to users

PART- B

1. Briefly discuss honesty as value.
2. Write short notes on courage, co-operation.
3. What is service learning? Differentiate service learning from civic virtue.
4. Distinguish values from ethics and culture.
5. What do you understand by the term spirituality? Explain in detail.
6. Define the terms Values, Morals & Ethics?

UNIT – II ENGINEERING ETHICS
PART-A

1. Define Ethics?
   - Study of right or wrong
   - Good and evil
   - Obligations & rights
   - Justice
   - Social & Political deals

2. Define Engineering Ethics?

- Study of the moral issues and decisions confronting individuals and organizations engaged in engineering / profession.
- Study of related questions about the moral ideals, character, policies and relationships of people and corporations involved in technological activity.
- Moral standards / values and system of morals.

3. What is the need to study Ethics?
    - To responsibly confront moral issues raised by technological activity.
    - To recognize and resolve moral dilemma.
    - To achieve moral autonomy.

4. Differentiate Moral and Ethics?

MORAL:

- Refers only to personal behavior.
- Refers to any aspect of human action.
- Social conventions about right or wrong conduct.

ETHICS:

- Involves defining, analyzing, evaluating and resolving moral problems and developing moral criteria to guide human behavior.
- Critical reflection on what one does and why one does it.
- Refers only to professional behavior.

5. What is the method used to solve an Ethical problem?
- Recognizing a problem or its need.
- Gathering information and defining the problem to be solved or goal to be achieved.
- Generating alternative solutions or methods to achieve the goal.
- Evaluate benefits and costs of alternate solutions.
- Decision making & optimization.
- Implementing the best solution.

6. What are the Senses of Engineering Ethics?
- An activity and area of inquiry.
- Ethical problems, issues and controversies.
- Particular set of beliefs, attitudes and habits.
- Morally correct.

7. Differentiate Micro-ethics and Macro-ethics?

Micro-ethics: Deals about some typical and everyday problems which play an

important role in the field of engineering and in the profession of an engineer.

Macro-ethics: Deals with all the societal problems which are unknown and suddenly burst out on a regional or national level.

8. What are the three types of Inquiry?

- Normative Inquiry – Based on values.
- Conceptual Inquiry – Based on meaning.
- Factual Inquiry – Based in facts.

9. What are the sorts of complexity and murkiness that may be involved in moral situations?

- Vagueness
- Conflicting reasons
- Disagreement

10. What are the steps in confronting Moral Dilemmas?

- Identify the relevant moral factors and reasons.
- Gather all available facts that are pertinent to the moral factors involved.
- Rank the moral considerations in order of importance as they apply to the situation.
- Consider alternative courses of actions as ways of resolving dilemma, tracing the full implications of each. Get suggestions and alternative perspectives on the dilemma.
- By weighing all the relevant moral factors and reasons in light of the facts, produce a reasoned judgment

11. Define Moral Autonomy?

- Self-determining
- Independent
- Personal Involvement
- Exercised based on the moral concern for other people and recognition of good moral reasons

12. Give the importance of Lawrence Kohlberg's and Carol Gilligan's theory?

- Kohlberg gives greater emphasis to recognizing rights and abstract universal rules.
- Gilligan stresses the importance of maintaining personal relationships based on mutual caring.

13. Give the need for Authority?

Authority provides the framework in which learning can take place.

14. What are the criteria required for a Profession?

- Knowledge

- Organization
- Public Good

15. Give the general criteria to become a Professional engineer?
    - Attaining standards of achievement in education, job performance or creativity in engineering that distinguish engineers from engineering technicians and technologists.
    - Accepting as part of their professional obligations as least the most basic moral responsibilities to the public as well as to their employers, clients, colleagues and subordinates.

16. Define Integrity?
    Integrity is the bridge between responsibility in private and professional life.

17. Define Compromise?
    - In a negative sense it means to undetermined integrity by violating one's fundamental moral principles.
    - In a positive sense, however, it means to settle differences by mutual concessions or to reconcile conflicts through adjustments in attitude and conduct.

18. Give the two aspects of Honesty?
Truthfulness – meeting responsibilities concerning truth-telling.
Trustworthiness – Meeting responsibilities concerning trust.

19. Differentiate Self-respect and Self-esteem?
    Self-respect: It is a moral concept; refers to the virtue properly valuing oneself.
    Self-esteem: It is a psychological concept; means having a positive attitude toward oneself, even if the attitude is excessive or otherwise unwarranted.

20. What are the two forms of Self-respect?
    a. Recognition self-respect
    b. Appraisal self-respect

PART- B

1. Explain Human Values.
2. What are the general types of inquiries involved in engineering inspection? Explain in detail the specific virtues of professional responsibility.
3. Briefly explain the three main levels of moral developments, developed by Kohlberg.
4. Explain professions and professionalism**.**
5. What do you understand by the term moral dilemma? Differentiate with moral autonomy.

UNIT – III ENGINEERING AS SOCIAL EXPERIMENTATION
PART- A

1. What are the conditions required to define a valid consent?
   - The consent was given voluntarily.
   - The consent was based on the information that rational person would want, together with any other information requested, presented to them in understandable form.
   - The consenter was competent to process the information and make rational decisions.

2. What are the two main elements which are included to understand informed consent?

   Informed Consent is understood as including two main elements:
   - Knowledge [Subjects should be given not only the information they request, but all the information needed to make a reasonable decision].
   - Voluntariness [Subjects must enter into the experiment without being subjected to force, fraud, or deception].

3. What are the general features of morally responsible engineers?
   - Conscientiousness.
   - Comprehensive perspective.
   - Autonomy.
   - Accountability.

4. What is the purpose of various types of standards?
   - Accuracy in measurement, interchangeability, ease of handling.
   - Prevention of injury, death and loss of income or property.
   - Fair value of price
   - Competence in carrying out tasks.
   - Sound design, ease of communications.
   - Freedom from interference.

5. Define Code?

   Code is a set of standards and laws.
6. Enumerate the roles of codes?
   - Inspiration and Guidance
   - Support
   - Deterrence and Discipline
   - Education and Mutual Understanding

- Contributing to the Profession's Public Image
- Protecting the Status Quo
- Promoting Business Interests

7. Give the limitations of codes.
   - Á Codes are restricted to general and vague wording.
   - Á Codes can't give a solution or method for solving the internal conflicts.
   - Á Codes cannot serve as the final moral authority for professional conduct.
   - Á Codes can be reproduced in a very rapid manner.

8. What are the problems with the law in engineering?
   - Minimal compliance
   - Many laws are without enforceable sanctions.
9. What is the need to view engineering projects as experiments?
   - Any project is carried out in partial ignorance.
   - The final outcomes of engineering projects, like those of experiments, are generally uncertain.
   - Effective engineering relies upon knowledge gained about products before and after they leave the factory – knowledge needed for improving current products and creating better ones.
10. Differentiate scientific experiments and engineering projects?

    Scientific experiments are conducted to gain new knowledge, while "engineering projects are experiments that are not necessarily designed to produce very much knowledge".
11. What are the uncertainties occur in the model designs?
    - Model used for the design calculations.
    - Exact characteristics of the materials purchased.
    - Constancies of materials used for processing and fabrication.

12. Comment on the importance of learning from the past, using Titanic disaster, as an example?

    The Titanic lacked a sufficient number of lifeboats.
13. Comment on the importance of learning from the past, using the nuclear reactor accident at Three Mile Island, as an example?

    Values are notorious for being among the least reliable components of hydraulic systems. It was a pressure relief valve, and lack of definitive information regarding its open or shut state. Similar Malfunctions had occurred with the identical values on nuclear reactors because of the same reasons at other locations, but no attention had been given to them
14. Give any two prominent features of contemporary engineering practice that differentiate casual influence and moral accountability in engineering?

- Large-scale engineering projects involve fragmentation of work.
- Due to the fragmentation of the work, the accountability will spread widely within an organization.
- There is frequently pressure to move on to a new project before the current one has been operating long enough to be observed carefully.
- The contagion of malpractice suits currently afflicting the medical profession is carrying over into engineering.

15. Are SRBs inherently too dangerous to use on manned spacecraft? If so, why are they part of the design?

Yes, since they have the disadvantage that once the fuel is lit, there is no way to turn the booster off or even to control the amount of thrust produced. SRBs were used instead of safer liquid fueled boosters because they required a much smaller research-and-development effort. Numerous other design changes were made to reduce the level of research and development required.

16. Under what conditions would you say it is safe to launch a shuttle without an escape mechanism for the crew?
    - Design specifications ³ 310F
    - Have given valid consent
    - Instead of rubber, steel billets for O-rings
    - Liquid fueled boosters instead of Solid rocket boosters
17. In your opinion, was the 'Right for informed consent' of the astronauts of Space Shuttle Challenger respected?

No.

18. Define Ethical Conventionalism?

Ethical conventionalism is the view that a particular set of conventions, customs, or laws itself-certifying and not to be questioned as long as it is the set in force at a given time or for a given place.

19. State Babylon's Building Code?

If a builder has built a house for a man and has not made his work sound, and the house which he has built has fallen down and so caused the death of the householder, that builder shall be put to death. If it causes the death of the householder's son, they shall put the builder's son to death. If it causes the death of the householder's slave, he shall give slave for slave to the householder. If it destroys property he shall replace anything it has destroyed; and because he has not made sound the house which he has built and it has fallen down, he shall rebuild the house which has fallen down from his own property. If a builder has built a house for a man and does not make this work perfect and the wall bulges, that builder shall put that wall into sound condition at his own cost.

20. State the features of responsible engineers?

- Conscientiousness.
- Comprehensive perspective.
- Autonomy.
- Accountability.

PART- B

1. What is meant by informal consent when bringing an experimental product to the market?
2. How the ethical codes provide discipline among the engineers?
3. Briefly discuss the Space shuttle challenger accident. What are the ethical problems involved in this?
4. Why Engineering projects are viewed as experiments?
5. Mention the features of morally responsible engineers in social experimentation
6. Write about Research ethics.
7. Enumerate the code of ethics of engineers?

UNIT – IV SAFETY, RESPONSIBILITIES AND RIGHTS

PART- A

1. What is safety?

A thing is safe if its risks are justified to be acceptable designer thing is said to be safe if for the person who judges the perceived risk is less.

2. Define Risk?

Risk is defined as the probability of a specified level of hazardous consequences being realized .Risk ®is thus a product of probability (P) and consequence © which is given by the equation R=PxC.

3. What are the techniques that are available for reducing risk?

- Use of diversity and redundancy principles in instrumented protection systems
- Regular inspection and testing of safety systems to ensure reliability.
- Training of operating personnel and regular audits to ensure workability of the systems and procedures

- Development of a well considered emergency plan together with regular drills to ensure preparedness.

4. What are the principles of strict Liability?

- Consider the importance of chances of defects that are causing injury against the cost of minimizing defects.
- The following and implementing the accepted practices and observing standards are not sufficient.
- Standards and practices are simply the checklists. so the engineers have to use them creatively and judgementally.

5. List out the analytical methods used when testing is inappropriate?

- Scenerio Analysis.
- Failure models and Effect Analysis
- Fault Tree Analysis
- Event Tree Analysis

6. Define Risk Benefit Analysis?

Risk-benefit analysis is a method that helps the engineers to analyze the risk in a project and to determine whether a project should be implemented or not.

7. Define Prototype Testing?

It is the testing of a product carried out to destruction. This type of testing will be carried out after real accidents occur. It is also known as destructive testing.

8. What are the uncertainties in design?

- Purpose of designing
- Application of the product
- Material and skill used for producing the product.

9. What are the three conditions for safe exit?

- When a product fails, it will fail safely.
- The product can be abandoned safely.
- The user can safely escape the product.

10. Write the problems faced by the Engineers regarding the public conceptions of safety?

i. Optimistic Attitude

ii. Pessimistic Attitude

11. What is overestimation of Risk?

A product whose risks are comparatively less may be considered unsafe because of extraordinary safety concern of a person.

Eg: Judging fluoride in water can kill lot of people.

12. Give any two examples for safe Exit?

- Ships need lifeboats with sufficient spaces for all passengers and crew members.
- Buildings particularly multistoried need usable fire escapes.

13. Define strict Liability?

It means if the sold product is effective, the manufacturer concerned is liable for any harm to users

14. What are the available quantitative measures in overcoming difficulty in accessing personal risk?

- Assessing voluntary activities.
- Assessing dangerous/ risky job works can demand for increased wages to carry out the job.

15. How scenario analysis done?

In this analysis while testing the safety of a product, a person has to start from a given point and then study all the different consequences developed gradually from it.

16. What are the factors influenced in acceptability of risk?

- Voluntarism and control.
- Effect of information on risk assessment.
- Job related Pressures.
- Magnitude and Proximity

17. Define Disaster?

Disaster is defined as a series of continued event and a stste of unpreparedness.

18. What are the drawbacks that are involved in the definition of Lawrence on safety?

- Under Estimation of Risks.
- Over Estimation of Risks
- No Estimation of Risks.

19. Define acceptability of risks?

A risk is acceptable when those affected are generally no longer (or not) apprehensive about it.'Doubtfullness depends mainly on how the people take the risk or how people perceive it.

20. What are the reasons for the inadequacies in knowledge of risks?

- The information is not freely shared among industries.
- There are also new applications of old technologies that provide available data which are less useful.

PART- B

1. How does the engineer act to safeguard the public from risk?
2. Give the criteria which helps to ensure a safety design?
3. How will an engineer assess the safety?
4. Explain the Risk Benefit Analysis.
5. How will you assess the Safety and Risk?
6. Write short notes on Safety and Risk.
7. What are the reasons for the disaster at Bhopal?
8. Explain Collegiality & Loyalty?

9. Explain the respect for authority in detail?
10. Explain Collective Bargaining.
11. Discuss about Conflicts and interest.
12. Write short notes on occupational crime.
13. Discuss human rights, professional rights and employee rights in an engineering field.
14. Explain whistle blowing and list the problems associated with it.
15. What are the essential elements of IPR? Give examples of discrimination.

UNIT – V GLOBAL ISSUES
PART- A

1. Define Multinational Corporation with Example?

When a company operates its business in several countries, it is known as a multinational corporation. For example, Smith line Beecham, Hindustan lever Ltd., Ford, Toyota etc. is multinational corporations.

2. What is meant by Relative Values in multinational Corporation issues?

Relative values mean relative principles. These relative values help in deciding how the multinational corporations and individuals have to act in foreign or host countries.

3. What are the different forms of relativism in existence of the formation of a multinational corporation?

The following three forms are important

- Ethical Relativism
- Descriptive Relativism
- Moral Relativism or Contextualize.

4. What is known as technology transfer?

Technology Transfer is a process of changing the technology to a new setting and implementing it. Technology includes hardware such as machines and installations as well as techniques such as technical, organizational and managerial skills and procedures.

5. What is meant by appropriate technology?

Appropriate technology means identification, transformation and implementation of the most suitable technology for a new set of conditions.

6. What are the general effects of Acid rain?

- Bacteria's that are essential for life systems to be active are killed.
- High acidity results in reduced growth and killing of fishes.
- Accumulation of organic matter in lake and streams increases the degree of water pollution.
- Concentration of heavy particles like copper, zinc, lead, and manganese are increased in water.

7. What are the ethical issues or questions that arise in environmental protection?

The questions that arise in this sort of ethical issues are:

-Who is affecting? Who are affected? Does the environment get disturbed'? When does the disturbance take place? And how does it happen?

8. What does the Right Ethics stress for a livable environment?

Right ethics' stresses that the fundamental right to life enforces a right for livable environment in a particular period of time, when pollution and depletion of resources has reached a dangerous proportion.

9. What are the different categories of problems that exist in computer ethics? There are basically three categories of problems in computer ethics.

- Computer happened to be the instrument of an unethical act.
- Computer is the object of an unethical act. This act is properly known as hacking.
- Problems connected with autonomous nature of computer.

10. How is the computer ethics problems classified?

- When computers are used for unlawful activities, it makes it easier to steal from a variety of the people. For e.g.: Computers can be used to steal from an employer, an outsider can get into a system, a company can use the computer to steal from its clients and customers.
- Computer leads to the elimination of some jobs.
- Computers create problems of public accountability of business which use computer based services.

11. What are the professional issues in computer Ethics?

Computer Failures

- Computer Implementation
- Health Condition
-

12. What are the principles for conflict resolution?

- People must be separated from the problem.
- Focus must be only on interest and not on positions.
- Various options must be generated.
- An evolution criterion should be established.

13. What are the abuses of Engineers as expert witnesses?

- Hired Guns
- Financial Prejudices or Financial Influences
- Sympathy Biases.

14. What are the normative models for advisors?

The normative models for advisors are:

a) Hired Guns
b) Value-Neutral Analysts
c) Value-Guided advocates.

15. What is meant by moral Leadership?

Leadership points out the success in leading a group of persons towards the achievement of goals and objectives. Whenever the goals of a leader become permissible and also morally valuable, it is known as moral leadership.

16. What are the rules of practice framed in the codes of Ethics?
    - Engineers shall perform services only in the areas of their competence.
    - Engineers shall issue public statements only in an objective and truthful manner.
    - Engineers shall act in professional matters for each employer or client as faithful agents or trustees.
17. What are the Professional Obligations in codes of Ethics?
    - Engineers shall be guided in all their professional relations by the highest standards of integrity.
    - Engineers shall at all times strive to serve the public interest.
    - Engineers shall avoid all conduct or practice which is likely to discredit the profession or deceive the public.
18. What is Ego Biases?

    Many of the adversarial circumstances establish some competitive attitudes among engineers who act as expert witness.
19. List some of the environmental issues of concern to engineers?
    - Releasing harmful substance into water and air
    - Using toxic substance in food processing
    - Disturbing land and water balances
20. What are the international Rights?

    The following are some important international rights:
    - Freedom of physical movement of people
    - Ownership of properties
    - Freedom from Torture.
    - Fair Trial on the products.

PART-B

1. Discuss about Environmental Ethics?
2. Describe about Computer Ethics?
3. Write a note on Weapon Development?
4. Explain how should engineers act as managers, consultants, leaders?
5. Explain how should engineers act as expert witnesses & advisers?
6. Explain the various Global Issues?
7. List the various Sample Code of Conduct.

CS6004-CYBER FORENSICS

Unit-I

Network layer Security and Transport Layer security

1. State the different protocols for securing communications in the Internet.

Cryptographic methods and protocols have been designed for different purposes in securing communication on the Internet. These include, for instance, the SSL and TLS for HTTP Web traffic, S/MIME and PGP for e-mail and IPsec for network layer security.

2. What is the purpose of IPsec Protocol?

IPsec is designed to protect communication in a secure manner by using TCP/IP. The IPsec protocol is a set of security extensions developed by the IETF and it provides privacy and authentication services at the IP layer by using modern cryptography.

3. Mention the two main transformation types that form the basis of IPsec.

There are two main transformation types that form the basics of IPsec,

1. The Authentication Header (AH) and
2. The Encapsulating Security Payload (ESP).

- Both AH and ESP are two protocols that provide connectionless integrity, data origin authentication, confidentiality and an anti-replay service.
- These protocols may be applied alone or in combination to provide a desired set of security services for the IP layer. They are configured in a data structure called a Security Association (SA).

4. Specify the basic components of the IPsec security architecture.

The basic components of the IPsec security architecture are explained in terms of the Manual and automatic key management for the Internet Key Exchange (IKE), Oakley key determination protocol and ISAKMP.

5. What is IPsec Protocol Document?

In November 1998, the Network Working Group of the IETF published RFC 2411 for IP Security Document Roadmap. This document is intended to provide guidelines for the development of collateral specifications describing the use of new encryption and authentication algorithms used with the AH protocol as well as the ESP protocol.

6. What are the seven-group documents describing the set of IPsec protocols? o

The seven-group documents describing the set of IPsec protocols are:

1. **Architecture:** The main architecture document covers the general concepts, security requirements, definitions and mechanisms defining IPsec technology.

2. **ESP:** This document covers the packet format and general issues related to the use of the ESP for packet encryption and optional authentication.

3. **AH:** This document covers the packet format and general issue related to the use of AH for packet authentication.

4. **Encryption algorithm:** This is a set of documents that describe how various encryption algorithms are used for ESP.

5. **Authentication algorithm:** This is a set of documents that describe how various authentication algorithms are used for AH and for the authentication option of ESP.

6. **Key management:** This is a set of documents that describe key management schemes.

7. **DOI:** This document contains values needed for the other documents to relate each other.

7. Name the three parameters that uniquely identify the SA.

Security Associations (SAs) is uniquely identified by three parameters as follows:
Security Parameters Index (SPI): This is assigned to each SA
IP Destination Address: This is the address of the destination endpoint of the SA.

Security Protocol Identifier: This identifier indicates whether the association is an AH or
ESP security association.

8. What is a Security association database?

The **SAD** contains parameters that are associated with each security association. Each SA has an entry in the SAD. For outbound processing, entries are pointed to by entries in the SPD.

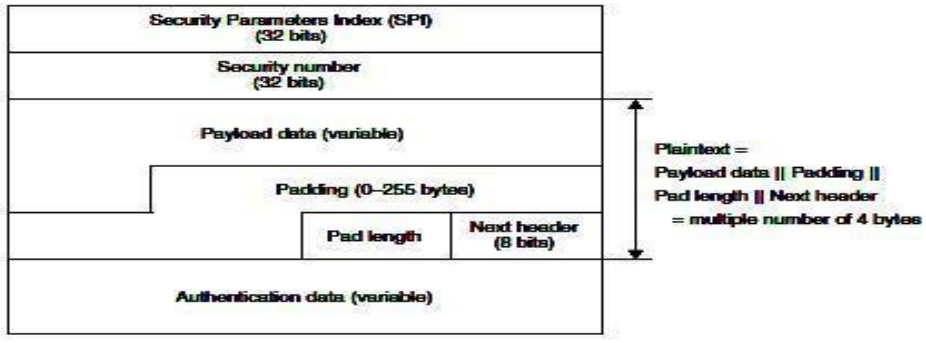
9. List the types of SAs.

There are two types of SAs to be defined: a **Transport Mode SA** and a **Tunnel Mode SA**. A transport mode provides protection primarily for upper-layer protocols. Tunnel mode provides protection to the entire IP packet. A tunnel mode SA is essentially an SA applied to an IP tunnel.

10. What is HMAC?

An HMAC mechanism can be used with any iterative hash functions in combination with a secret key. HMAC uses a secret key for computation and verification of the message authentication values

11. Give the structure of the ESP Packet .



12. What is ISAKMP?

ISAKMP (Internet Security Association and Key Management Protocol) defines a framework for Security Associations management and cryptographic key establishment for the Internet. This framework consists of defined exchange, payloads and processing guidelines.

13. List the Payload Types for ISAKMP.

o Security Association payload
o Proposal Payload
o Transform Payload
o Key Exchange Payload
o Identification Payload
o Certificate Payload
oCertificate Request Payload
o Hash Payload
oSignature Payload
o Nonce Payload
oNotification Payload
o Delete Payload
o Vendor ID Payload

14. What is a SSL Session?

An SSL session is an association between a client and a server. Sessions are created by the Handshake Protocol. Sessions are used to avoid the expensive negotiation of new security parameters for each connection. An SSL session coordinates the states of the client and server.

15. List the elements of a session state.

The session state is defined by the following elements:

- Session identifier
- Peer certificate
- Compression method
- Cipher specification
- Master secret
- Is resumable

16. List the elements of a connection state.

The connection state is defined by the following elements:

- Server and client random
- Server write MAC secret
- Client write MAC secret
- Server writer key
- Client write key
- Initialization vectors
- Sequence number

17.Mention the use of CCS Protocol.

The change cipher spec protocol is used to change the encryption being used by the client and server. It is normally used as part of the handshake process to switch to symmetric key encryption. The CCS protocol is a single message that tells the peer that the sender wants to change to a new set of keys, which are then created from information exchanged by the handshake protocol.

18. What is HMAC?

A Keyed-hashing Message Authentication Code (HMAC) is a secure digest of some data protected by a secret. Forging the HMAC is infeasible without

knowledge of the MAC secret. HMAC can be used with a variety of different hash algorithms, namely MD5 and SHA-1, denoting these as HMAC MD5(secret, data) and HMAC SHA-1(secret, data).

19. State the differences between SSL version 3 and TLS.

SSL	TLS
In SSL the minor version is 0 and major version is 3.	In TLS, the major version is 3 and the minor version is 1.
SSL use HMAC alg., except that the padding bytes concatenation.	TLS makes use of the same alg.
SSL supports 12 various alert codes.	TLS supports all of the alert codes defined in SSL3 with the exception of no _ certificate.

20.Name the SSL Cipher Suites.

- Diffie-Hellmankey exchange
- RSA
- Fortezza
- RC2, RC4, 3DES, DES40

21.What is PRF?

- TLS utilizes a pseudo-random function (PRF) to expand secrets into blocks of data for the purposes of key generation or validation.

- The PRF takes relatively small values such as a secret, a seed and an identifying label as input and generates an output of arbitrary longer blocks of data.

22.State the purpose of alert messages.

Alert messages convey the severity of the message and a description of the alert. Alert messages with a fatal level result in the immediate termination of the connection.

23. What are the parameters for key block computation?

The computation of the key block parameters (MAC secret keys, session encryption keys and IVs) is defined as follows:

key_block = PRF (master_secret,__key
expansion‘‘,SecurityParameters.server_random||
SecurityParameters.client_random)

24.How are errors handled in TLS?

Error handling in the TLS Handshake Protocol is very simple. When an error is detected, the detecting party sends a message to the other party. Upon transmission or receipt of a fatal alert message, both parties immediately close the connection.

Part B

1) i) Explain in detail about IPSec Protocol Documents.
   ii) Explain in detail about HMAC with its Structure and suitable example .

2) Give a brief account of IP ESP with some suitable diagrams.

3) Illustrate briefly about the computation of HMAC using the following methods:-
   (i)HMAC-MD5 computation using the RFC method.
   (ii)HMAC-SHA 1 computation using Alternative method.

4) Analyze how is the Security Association used in the following parameters:-
   (i)Security Policy Database
   (ii)Security Association Database
   (iii)Transport Mode SA
   (iv)Tunnel Mode SA

5) Describe in detail about :-
   (i)Session and Connection State.
   (ii)SSL Record Protocol.

6) Explain in detail about SSL Handshaking Protocol between a Server and Client Connection with an appropriate diagram.

7) Describe TLS Protocol with suitable example.

8) Discuss about Key Management Protocol for IPSec.

9) Describe TLS Protocol with suitable example.

10) Examine a key Generation using Pseudo Random Function to expand secrets into blocl a suitable example

UNIT II

E-MAIL SECURITY & FIREWALLS

1. Define PGP.

PGP stands for **Pretty Good Privacy**.

- o PGP uses a combination of symmetric secret-key and asymmetric public-key encryption to provide security services for electronic mail and data files.
- o It also provides data integrity services for messages and data files by using digital signature, encryption, compression (zip) and radix-64 conversion (ASCII Armor).

2. Define MIME.

- o MIME stands for Multipurpose Internet Mail Extension.
- o MIME is an extension to the RFC 2822 framework which defines a format for text messages being sent using e-mail.

3. Define S/MIME.

- o **Secure/Multipurpose Internet Mail Extension (S/MIME)** is a security enhancement to the MIME Internet e-mail format standard, based on technology from RSA Data Security.

4. What is meant by Huffman compression?

- **Huffman compression** is a statistical data compression technique which reduces the average code length used to represent the symbols of an alphabet.
- Huffman code is an example of a code which is optimal when all symbols probabilities are integral powers of 1/2.
- A technique related to Huffman coding is **Shannon–Fano coding**.

5. What is a Shannon–Fano coding?

- A technique related to Huffman coding is Shannon–Fano coding. This coding divides the set of symbols into two equal or almost equal subsets based on the probability of occurrence of characters in each subset.
- The first subset is assigned a binary 0, the second a binary 1.

6. Define Radix-64 Conversion.

A radix-64 conversion is a wrapper around the binary PGP messages, and is used to protect the binary messages during transmission over non-binary channels, such as Internet e-mail.

7. List out the data fields contained in ASCII Armor Format. o
The data fields contained in ASCII Armor format are

- An Armor head line
- Armor headers
- A blank line,
- ASCII-Armored data
- Armor checksum and
- Armor tail.

8. Define an Armor head line.
An armor head line consists of the appropriate header line text surrounded by five Dashes (_- ‘, 0x2D) on either side of the header line text.

The header line text is chosen based upon the type of data that is being encoded in Armor, and how it is being encoded.

9. List out the strings contained in header line text.

- **BEGIN PGP MESSAGE** – used for signed, encrypted or compressed files.
- **BEGIN PGP PUBLIC KEY BLOCK** – used for armouring public keys.
- **BEGIN PGP PRIVATE KEY BLOCK** – used for armouring private keys.
- **BEGIN PGP MESSAGE, PART X/Y** – used for multipart messages, where the armour is divided amongst Y parts, and this is the X^{th} part out of Y.
- 1 **BEGIN PGP MESSAGE, PART X** – used for multipart messages, where this is the X^{th} part of an unspecified number of parts; requires the MESSAGE-ID Armor header to be used.
- **BEGIN PGP SIGNATURE** – used for detached signatures, PGP/MIME signatures and natures following clear-signed messages.

10. Define Armor headers.

- Armor headers are pairs of strings that can give the user or the receiving PGP implementation some information about how to decode or use the message.
- The Armor headers are a part of the armour, not a part of the message, and hence are not protected by any signatures applied to the message.
- The format of an Armor header is a (key, value) pair. A colon (_:' 0x38) and a single space (0x20) separate the key and value.

11 Define Armor checksum.

- Armor checksum is a 24-bit CRC converted to four characters of radix-64 encoding by the same MIME base 64 transformation, preceded by an equals sign (=).
- The CRC is computed by using the generator 0x864cfb and an initialization of 0xb704ce.
- The accumulation is done on the data before it is converted to radix-64, rather than on the converted data.
- The checksum with its leading equals sign may appear on the first line after the base 64 encoded data.

12. Define packet headers.

- A PGP message is constructed from a number of packets. A packet is a chunk of data which has a tag specifying its meaning.
- Each packet consists of a packet header of variable length, followed by the packet body.

13. Define Attribute certificate.

- An X.509 AC is a separate structure from a subject's PKIX certificate.
- A subject may have multiple X.509 ACs associated with each of its PKIX certificates.
- Each X.509 AC binds one or more attributes with one of the subject's PKIXs.

14. Define Cryptographic Message Syntax (CMS).

- CMS allows for a wide variety of options in content and algorithm support. This

subsection puts forth a number of support requirements and recommendations in order to achieve a base level of interoperability among all S/MIME implementations.

- CMS provides additional details regarding the use of the cryptographic algorithms.

15. Define Digest Algorithm Identifier.

- This type identifies a message digest algorithm which maps the message to the message digest.
- Sending and receiving agents must support SHA-1.
- Receiving agents should support MD5 for the purpose of providing backward compatibility with MD5-digested S/MIME v2 Signed Data objects.

16. Define Signature Algorithm Identifier.

Sending and receiving agents must support id-dsa defined in DSS. Receiving agents should support rsa Encryption, defined in PRCS-1.

17. Define Key Encryption Algorithm Identifier.

This type identifies a key encryption algorithm under which a content encryption key can be encrypted. A key-encryption algorithm supports encryption and decryption operations.

18. What is meant by Enveloped-data content type ?

- An application/prcs7-mime subtype is used for the enveloped-data content type.

- This content type is used to apply privacy protection to a message. The type consists of encrypted content of any type and encrypted-content encryption keys for one or more recipients.

19. Define digital envelope.

- The combination of encrypted content and encrypted content-encryption key for a recipient is called a **digital envelope** for that recipient.

20. What is meant by triple wrapped message?

- A **triple wrapped message** is one that has been signed, then encrypted and then signed again.

- The signers of the inner and outer signatures may be different entities or the same entity.

- The S/MIME specification does not limit the number of nested encapsulations, so there may be more than three wrappings

21. Define firewall.

- A firewall is a device or group of devices that controls access between networks.

- A firewall generally consists of filters and gateway(s), varying from firewall to firewall.

- It is a security gateway that controls access between the public Internet and an intranet (a private internal network) and is a secure computer system placed between a trusted network and an un trusted internet.

22. What are the three main categories of firewalls?

- Firewalls can be classified into three main categories:

- Packet filters,

- Circuit-level gateways and

- Application-level gateways.

23. Define Bastion Host.

- A bastion host is a publicly accessible device for the network‘s security, which has a direct connection to a public network such as the Internet.

- The bastion host serves as a platform for any one of the three types of firewalls. Bastion hosts must check all incoming and outgoing traffic and enforce the rules specified in the security policy.

Part B

1) Explain in detail the basic concepts of

   (i)Confidentiality via. Encryption

   (ii)Authentication via. Digital Signature

2) Formulate the idea behind using the following terms:

   (i)Compression

   (ii)Radix-64 Conversion with an example

3) Briefly explain the types of Firewalls with a neat diagram and examples. (16)

4) Explain in detail about :-

   (i)Role of Firewalls. (8)

   (ii)Firewall Related Terminology (8)

5) Describe the transaction protocols required for secure Payment Processing in SET

6) Explain in detail about S/MIME and the general syntax it uses to support different content types.

7) Explain briefly about the following security mechanisms:-

   (i)Logging and Alarms , VPN

(ii)DMZ and Choke Point

(iii) Key material Packets in PGP

8) Demonstrate the SET system Participants with a diagram

UNIT III

INTRODUCTION TO COMPUTER FORENSICS

1. Define the term "Computer Forensics".

o Computer forensic science, computer forensics, and digital forensics may be defined as the methodological, scientific, and legally sound process of examining computer media and networks for the identification, extraction, authentication, examination, interpretation, preservation, and analysis of evidence. It also involves collection and presentation of computer-related evidence. Computer evidence can be useful in criminal cases, civil disputes, and human resources/employment proceedings.

2. What are the roles of a Computer in a Crime?

- o A computer can play one of three roles in a computer crime.
- o A computer can be the target of the crime,
- o It can be the instrument of the crime, or
- o It can serve as an evidence repository storing valuable information about the crime.

3. State the objectives of Computer Forensics.

o The objective of Computer Forensics is to recover, analyze, and present computer-based material in such a way that it is useable as evidence in a court of law.

4. Who Can Use Computer Forensic Evidence? o Criminal Prosecutors

o Civil

litigations o

Corporations

o Law enforcement officials

5. Mention some problems with Computer Forensic Evidence.

O Computer data changes moment by moment.

o Computer data is invisible to the human eye; it can only be viewed indirectly after appropriate procedures.

o The process of collecting computer data may change it—in significant ways. o The processes of opening a file or printing it out are not always neutral.

o Computer and telecommunications technologies are always changing so that forensic processes can seldom be fixed for very long

6. Define Computer Crime and digital crime.

o Computer crime has been traditionally defined as any criminal act committed via computer.

o Computer-related crime has been defined as any criminal act in which a computer is involved, even peripherally.

o Cybercrime has traditionally encompassed abuses and misuses of computer systems or computers connected to the Internet which result in direct and/or concomitant losses.

o Digital crime, a relatively new term, includes any criminal activity which involves the unauthorized access, dissemination, manipulation, destruction, or corruption of electronically stored data.

7 What Is Phreaking?

o Phreaking involves the manipulation of telecommunications carriers to gain knowledge of telecommunications, and/or theft of applicable services. It is also known as telecommunications fraud, and includes any activity that incorporates

the illegal use or manipulation of access codes, access tones, PBXs, or switches.

8. State the motivations for computer intrusion or theft of information in contemporary society.

o Boredom (informational voyeurism)

o Intellectual challenge (mining for knowledge—pure hackers), o Revenge (insiders, disgruntled employees, etc.),

o Sexual gratification (stalking (nuisance), harassment, etc.), o Economic (criminals), and

o Political (Hacktivists, terrorists, spies, etc.).

9. List some digital forensics tools.

–Drive Spy and Image

–FTK

–X-Ways Forensics

10. What is CMOS?

o CMOS denotes Complementary Metal Oxide Semiconductor. The Computer stores system configuration and date and time information in the CMOS.

11. What methods are available for recovering passwords?

o The three ways to recover passwords:

- Dictionary attacks
- Brute-force attacks
- Rainbows tables

12. Give the hierarchy of Contemporary Cybercriminals

There are five general categories of cybercriminals in today‘s society:

a. Script kiddies,

b. Cyberpunks,

c. Hackers/crackers,

d. Cybercriminal organizations, and Hacktivists

13. State the types of computer records.

Computer records are usually divided into:

–Computer-generated records

–Computer-stored records

14. What is FIOA?

 FOIA: **Freedom of Information Act** , allows citizens to request copies of public documents created by federal agencies.

15. **List the tasks of a Computer Forensics Examination Protocol** o

Perform the investigation with a GUI tool

o Verify your results with a disk editor

o Compare hash values obtained with both tools

PART B

1) Explain in detail about Incident Response Methodology and the six steps associated with it.

2) Analyze briefly about the Forensic Duplication and Investigation

3) Demonstrate how to use Remote Network Acquisition Tools in cyber Forensics.

4)Discuss in detail about the following:-

i) Systematic Approach in Computer Investigations.

ii) Conducting an Investigation in Computer Investigations.

5) Examine the following terms in detail:-

(i) Understanding Storage Formats for Digital Evidence

(ii) Using Acquisition Tools.

6) Discuss in detail about the following:-

7) (i) Systematic Approach in Computer Investigations.

(ii) Conducting an Investigation in Computer Investigations.

UNIT IV

EVIDENCE COLLECTION AND FORENSICS TOOLS

1. List out the disk drive components.

Geometry,

Head,

Tracks,

Cylinders, and
Sectors.

2. What is meant by ZBR?

ZBR stands for Zoned bit recording. In ZBR the platter‘s inner tracks are being shorter than its outer tracks. Grouping tracks by zones ensures that all tracks hold the same amount of data.

3. Define track density.

Track density is the space between each track.

4. List out the properties handled at the drive's hardware.
o Zoned bit recording (ZBR)

o Track density o

Areal density

o Head and cylinder skew

5. Define Master boot record (MBT).

The boot disk contains a file called the Master Boot Record (MBR) which stores information about partitions on a disk and their locations, size and other important items.

6. Define FAT.

File allocation table is a file structure database that Microsoft originally designed for floppy disks. FAT is used on file systems before windows NT and 2000.

7. List out the versions of FAT. o FAT12

o

FAT16

o

FAT32

o

FATX

8. Define VFAT.

Microsoft developed virtual file allocation table (VFAT) to handle long file names when it released Windows 95 and Windows for workgroups.

9. Define data runs.

The MFT record provides cluster addresses where the file is stored on the drive‘s partition.
It is referred to as data runs.

10. What is meant by logical cluster numbers?

When a disk is created as an NTFS file structure, the OS assigns logical clusters to the entire disk partition. These assigned clusters are called logical cluster numbers (LCNs).

11. What is meant by Encrypting File System (EFS)?

EFS were introduced with Windows 2000. It implements a public key and private key method of encrypting files, folders, or disk volumes.

12. Define recovery certificate.

When EFS is used in Windows Vista Business Edition or higher, XP Professional, or 2000, a recovery certificate is generated and sent to the local Windows administrator account. The users can apply EFS to files stored on their local workstations or a remote server.

13. What is meant by trusted platform module?

A Trusted Platform Module (TPM) microchip generates encryption keys and authenticates logins.

14. List out some of the open-source encryption tools.

- TrueCrypt
- CrossCrypt
- FreeOTFE

15. Define Registry.

A database that stores hardware and software configuration information, network connections, user preferences, and setup information.

16. Write down the two modes of Windows 9x Oss.

DOS protected-mode interface (DPMI).
Protected-mode GUI .

17. **Define Virtual machine.**

A virtual machine allows you to create a representation of another computer on an existing physical computer. Virtual machines enable you to run other OSs from a Windows computer.

18. Give examples for Computer crimes.

- Fraud
- Check fraud
- Homicides

19. Write down the Tasks for planning your investigation.

- Identify the case requirements
- Plan your investigation
- Conduct the investigation
- Complete the case report
- Critique the case

20. **What is National Software Reference Library (NSRL) project ?**

NSRL collects all known hash values for commercial software applications and OS files. It uses SHA-1 to generate a known set of digital signatures called the Reference Data Set

(RDS). It helps filtering known information and can use RDS to locate and identify known bad files

21. What is meant by HAZMAT?

HAZMAT stands for hazardous materials. The recovery process includes decontaminating digital components needed for the investigation. It destroys the digital evidence.

22. What is the use of initial response field kit?

The initial response field kit should be a lightweight and easy to transport. With this kit, you can arrive at a scene, acquire the data you need, and return to the lab as quickly as possible.

23. What is meant by sparse acquisition?

The technique for extracting evidence from large systems. It extracts only data related to evidence for your case from allocated files.

24. What are the functions of evidence custody form? o Identifies the evidence

- Identifies who has handled the evidence
- Lists dates and times the evidence was handles.

25. Define CRC.

CRC stands for cyclic redundancy check. It is a mathematical algorithm that determines whether a file‘s contents have changed.

26. Define message digest 5 (MD5).

It is a mathematical formula that translates a file in to a hexadecimal code value, or a hash value. If a bit or byte in the file changes, it alters the digital hash.

27. List out the three rules for forensic hashes.

o You can‘t predict the hash value of a file or device, o

No two hash values can be the same ,

o If anything changes in the file or device, the hash value must change.

28. List out the functions of FTK.

o Extract the image from a bit-stream image file o

Analyze the image

29. List out the types of computer forensics tools. o
Hardware forensic tools
o Software forensic tools

30. Write down the task performed by computer forensics tools.
o Acquisition
o Validation and discrimination
o Extraction
o Reconstruction
o Reporting

31. What is meant by acquisition and list out its functions?

Acquisition means making a copy of the original drive.
Acquisition sub functions are,

o Physical data copy
o Logical data copy
o Data acquisition format
o Command-line acquisition

o GUI acquisition

32. Give the types of data-copying methods used in software acquisitions.

The two types of data-copying methods are used in software

acquisitions: o Physical copying of the entire drive

o Logical copying of a disk partition

33. Distinguish between Validation and discrimination.

- Validation means ensuring the integrity of data being copied.
- Discrimination of data involves sorting and searching through all investigation data.

34. What is meant by reconstruction?

Reconstruction means re-creating a suspect drive to show what happened during a crime or an incident. Its sub functions are,

- Disk-to-disk copy
- Image-to-disk copy
- Partition-to-partition copy
- Image-to-partition copy

35. Define write-blocker.

Write-blocker prevents data writes to a hard disk. It is of two variants

- Software-enabled blockers
- Hardware options

Software write-blockers are OS dependant. Example: PDBlock from Digital Intelligence. Hardware options are ideal for GUI forensic tools. It act as a bridge between the suspect drive and the forensic workstation.

Part B

1) Illustrate how will the processing of an incident or a crime scene takes place in cyber forensics.
2) Explain in detail about about how the understanding of File Systems plays a crucial role in cyber forensics.
3) Explain in detail about the following :-
   (i) Computer Forensics Software Tools
   (ii) Computer Forensics Hardware Tools
4) Explain in detail about the following terms:-
   (i) Disk Partitions
   (ii) Master Boot Record
   (iii) Examining FAT disks
5) Describe the following terms in detail:-

(i) Examining NTFS Disks

(ii) NTFS System Files

(iii) NTFS Compressed Files

6) Describe about how the whole disk encryption is performed in Cyber forensics

7) Examine the MS-DOS Startup Tasks and about other Disk Operating Systems in Detail.

8) Describe about the following mechanisms:

(i) Understanding File Systems

(ii) Whole Disk Encryption

UNIT V

ANALYSIS AND VALIDATION

1. List out the file systems in which FTK can perform forensic analysis.

Microsoft FAT12, FAT 16 and FAT32, Microsoft NTFS (for Windows NT, 2000, XP and Vista) Linux Ext2fs and Ext3fs.

2. Define scope creep.

In the corporate environment, if litigation is involved, the company attorney often directs the investigator to recover as much information as possible. Satisfying this demand becomes a major undertaking with many hours of tedious work. These types of investigations results in scope creep, in which an investigation expands beyond the original description because of unexpected evidence you find, prompting the attorney to ask you to examine other areas to recover more evidence. Scope creep increases the time and resources needed to extract, analyze, and present evidence.

3. What is meant by Known File Filters (KFF)?

Access Data has a separate database called Known File Filters (KFF) which is available only with FTK. The KFF filters known program files from view, such as MSWord.exe, and identifies known illegal files, such as child pornography.

4. What is meant by auto image checksum verification?

Prodiscover‘s .eve files contain metadata that includes the hash value. When an image file is loaded in ProDiscover, it‘s hashed and compared to the hash value in the stored metadata. If the hashes don‘t match, ProDiscover notifies you that the acquisition is corrupt and can‘t be considered to be reliable evidence. This feature is called auto image checksum verification.

5. What is meant by data hiding?

Data hiding involves changing or manipulating a file to conceal information. It includes hiding entire partitions, changing file extensions, setting file attributes to hidden, bit-shifting, using encryption and setting up password protection.

6. List out some of the disk management tools.

The disk management tools are,

Partition Magic,

Partition Master, and

Linux Grand Unified Bootloader (GRUB)

7. What is meant by bit-shifting?

Bit-shifting is a well known technique for hiding data by shifting bit patterns to alter the byte values of data. Bit-shifting changes data from readable code to data that looks like binary executable code.

8. Define steganography.

Steganography comes from the Greek word for ―hidden writing‖. Hiding messages in such a way that only the intended recipient knows the message is there.

9. Define Steganalysis.

Steganalysis is a term for detecting and analyzing steganography files.

10. Define Digital watermarking.

Digital watermarking has been developed as a way to protect file ownership. It is usually not visible when used for steganography.

11. List out the Steganalysis methods.

Stego-only attack
Known cover attack
Known message attack Chosen stego attack Chosen message attack

12. What is meant by key escrow?

Encrypted files are encoded to prevent unauthorized access. To decode an encrypted file, users supply a password or passphrase. Without the passphrase, recovering the contents of encrypted file is difficult. Hence key escrow is a commercial encryption program to recover encrypted data if users forget their passphrases or if the user key is corrupted after a system failure.

13. List out some of the password cracking tools.

- Last Bit
- AccessData PRTK
- ophcrack

- John the Ripper
- Passware

14. Define rainbow table.

A rainbow table is a file containing the hash values for every possible password that can be generated from a computer‘s keyboard. No conversion necessary, so it is faster than a brute-force or dictionary attack.

15. Define salting passwords

A salting password alters hash values and makes cracking passwords more difficult.

16. List out the three ways to recover passwords.

- Dictionary attacks
- Brute-force attacks
- Rainbows tables

17. What is meant by remote acquisition?

Remote acquisitions are useful for making an image of a drive when the computer is far away from your location or when you don‘t want a suspect to be aware of an ongoing investigation.

18. Define network forensics.

Network forensics is a process of collecting and analyzing raw network data and tracking network traffic systematically to ascertain how an attack was carried out or how an event occurred on a network.

Network forensics can also help you to determine whether a network is truly under attack or a user has inadvertently installed an untested patch or custom program.

19. What is the use of network logs?

Network logs can be used in determining what happened on a machine and give clues on what to search for.

20. Define layered network defense network strategy.

A layered network defense network strategy sets up layers of protection to hide the most valuable data at the innermost part of the network. It also ensures that the deeper in to the network an attacker gets, the more difficult access becomes and the more safeguards are in place.

21. Define Defense in Depth (DiD) strategy.

The National security agency (NSA) developed a simple approach called a defense in depth strategy (DiD) which has three modes of protection namely,

- People,
- Technology,
- Operations.

22. Define order of volatility (OOV).

The order of volatility means how long a piece of information lasts on a system. Data such as RAM and running processes might exist for only milliseconds; other data such as files stored on the hard drive might last for years.

23. List out the tools available to capture RAM. o Mantech Memory DD

o Win32dd

o winen.exe from Guidance Software

o BackTrack 3

24. What is the purpose of Tcpdump program?

A common way for examining network traffic is running the Tcpdump program, which can produce hundreds or thousands of lines of records.

25. What is the usage of ethereal network analysis tool?

The ethereal network analysis tool could generate a list of the top 10 websites users in your network are visiting.

26. Define Sysinternals and give examples.

Sysinternals is a collection of free tools for examining Windows products

Examples of the Sysinternals tools:

o RegMon shows Registry data in real time o Process Explorer shows what is loaded

o Handle shows open files and processes using them

o Filemon shows file system activity

27. Define Knoppix Security Tools Distribution (STD).

A Knoppix Security Tools Distribution (STD) is a bootable Linux CD intended computer and network forensics.

Knoppix STD contains several forensically sound tools put together by Klaus Knopper that are maintained and updated by Knoppix users.

28. Define phishing.

Phishing e-mails are in HTML format, which allows creating links to text on a web page. By using this technique, a phishing message could redirect the IRS‘s official address to a website in a foreign country.

29. List out some specialized e-mail forensics tools.

- o AccessData‘s Forensic Toolkit (FTK)
- o ProDiscover Basic
- o FINALeMAIL
- o Sawmill-GroupWise
- o DBXtract
- o Fookes Aid4Mail and MailBag Assistant
- o Paraben E-Mail Examiner
- o Ontrack Easy Recovery EmailRepair
- o R-Tools R-Mail

Part B

1) Discuss how will you validate the forensic data using:

   (i) Validating the hexadecimal Editors

   (ii) Validating with Computer Forensics Programs

2) Examine in detail the techniques used for Addressing Data Hiding.
3) Describe Remote Acquisitions when used with

   (i) Runtime Software

   (ii) Preparing Disk Explorer and HDHOST

   (iii) Remote Connection with Disk Explorer

4) Explain the following terms in detail:-

   (i) Securing a Network

   (ii) Performing Live Acquisitions

5) Briefly generalize the roles of the following term in investigations:-

   (i) E-mail in investigations

   (ii) E-mail in Client and Server

6) Describe in detail about using specialized E-mail Forensics Tools

7) Describe in detail about Understanding E-mail Servers

8) Assess how mobile devices play a crucial role in forensics by :

9) (i) Basics of mobile Forensics

(ii) Inside Mobile Devices

(iii) Inside PDAs

MG6088 SOFTWARE PROJECT MANAGEMENT

UNIT –I: INTRODUCTION TO SOFTWARE PROJECT MANAGEMENT

PART A

1. What is a project?

The dictionary definitions put a clear emphasis on the project being a planned activity. A project is a unique venture with a beginning and an end, conducted by people to meet established goals within parameters of cost, schedule and quality.

2. What are the characteristics of a project? (Nov/Dec2011)(Nov/Dec2012)

- Non-routine tasks are involved
- Planning is required
- Specific objects are to be met or a specified product is to be correct
- The project has a predetermined time span.

3. What is the different software projects and other types of project? (May/June2012)

- Invisibility- Software can't be rep-resented with geometric models
- Complexity- The proposed model is based on the widely known and accepted
- Conformity- The controlling document for a software
- Flexibility- project management performance

4. Why organize an activity or job as a project?

- It allows you to better structure and organize the tasks that need to be performed
- Well-developed approaches and tools are available for managing projects
- Easy-to-use software is available for scheduling and budgeting projects.

5. Define Contract Management. (May/Jun2013)(Apr2014).

Contract management or contract administration is the management of contracts made with

customers, vendors, partners, or employees. Contract management includes negotiating the terms and conditions in contracts and ensuring compliance with the terms and conditions, as well as documenting and agreeing on any changes that may arise during its implementation or execution. It can be summarized as the process of systematically and efficiently managing contract creation, execution, and analysis for the purpose of maximizing financial and operational performance and minimizing risk.

6. What are the Technical Project Planning Methodologies

- Identify different approaches to planning technical projects: rolling wave
- Planning…stage gate process…critical chain project management
- Common construction project life cycle
- Common pharmaceutical project life cycle

7. What are the three successive processes that bring a new system?(Nov/Dec2012)

- The feasibility study- Evaluate the cost of the software development against the Software
- Engineering Planning- outline the structure of the project
- Project Execution- Product Implementation Product implementation activities

8. Define Feasibility Study.

It is based on an outline design of system requirements in terms of Input, Processes, Output, Fields, Programs, and Procedures. This can be quantified in terms of volumes of data, trends, frequency of updating, etc.

9. What is meant by planning?

Planning as a process involves the determination of future course of action, that is, why an action, what action, how to take action, and when to take action. These why, what, how, and when are related with different aspects of planning process.

10. What are the phases in software development life cycle?

- Requirement analysis
- Architecture design
- Detailed design
- Code and test
- Integration
- Qualification testing.
- Installation.
- Acceptance support

11. Define Requirement Analysis.

This investigates what the potential users and their managers and employers require as features and qualities of the new system.

12. What is meant by qualification testing?

The system, including the software components, has to be tested carefully to ensure that all the requirements have been fulfilled.

13. What is the difference between Information systems and embedded systems?

Information systems:-

Information System includes databases that include useful "information". Information Systems is the discipline concerned with the development, use, application and influence of information

systems. An information system, following a definition of Langefors, is a technologically implemented medium for recording, storing, and disseminating linguistic expressions, as well as for drawing conclusions from such expressions.

The technology used for implementing information systems by no means has to be computer technology. A notebook in which one lists certain items of interest is, according to that definition, an information system. Likewise, there are computer applications that do not comply with this definition of information systems. Embedded systems are an example.

Embedded Systems:-

Embedded systems include small computers that make things work, such as the computer in your radio, television or the computer that controls your vehicle engine. An embedded system is a computer system that is part of a larger system.

Examples:

- Washing machine
- Car engine control
- Mobile phone

14. Differentiate Objectives Vs products.

Objectives are goals or aims which the management wishes the organization to achieve. These are the end points or pole-star towards which all business activities like organizing, staffing, directing and controlling are directed.

A project might be to create a **product**, the details of which have been specified by the client. The client has the responsibility for justifying the product.

15. What is management?

Management can be defined as all activities and tasks undertaken by one or more Persons for the purpose of planning and controlling the activities of others in order to achieve objectives or complete an activity that could not be achieved by others acting independently.

16. What are the activities of management?(Apr2014)

- Planning –Deciding what is to be done.
- Organizing – making arrangements.
- Staffing-selecting the right people for the job
- Directing-giving instructions.
- Monitoring – checking on progress
- Controlling- taking action to remedy hold-ups
- Innovating-coming up with new solutions.
- Representing – liaising with clients, users , developers , suppliers

17.What are the problems with software project from manager's point of view?(May/Jun2013)

- Poor estimates and plans.
- Lack of quality standards and measures.
- Lack of techniques to make progress visible.
- Lack of guidance about organizational Decisions.
- Poor role definition. 6.Incorrect success criteria

18. What are the problems with software project from student's point of view?(May/Jun2013)

- Inadequate specification of work.
- Lack of knowledge of application area.
- Lack of standards.
- Narrow scope of technical expertise.

19. What is meant by management control?

The process of setting objectives for a system and then monitoring the systems to see what is true performance, A change is proposed by anyone evaluating the software.

20. What are the steps involved in step wise planning?

- Identify project scope and objectives.
- Identify project infrastructure.
- Analyze project characteristics.

- Identify project products and activities.
- Estimate effort for each activity.
- Identify activity risks.
- Allocate resources.
- Review / publicize plan
- Execute plan/ lower levels of planning.

21. How to identify project infrastructure?

- Establish relationship between project and strategic planning.
- Identify installation standards and procedures.
- Identify project team organization.

22. How to manage activity risks?

- Identify and quantify activity-based risks.
- Plan risk reduction and contingency measures where appropriate
- Adjust plans and estimates to take account of risks.

23. Define project stake holders.

Stakeholders are the people involved in or affected by the project actives **Stake holders power**-Integrate all expectations of several people.

24. How to review and publicize plan?

- Review quality aspects of project plan
- Document plans and obtain agreement.

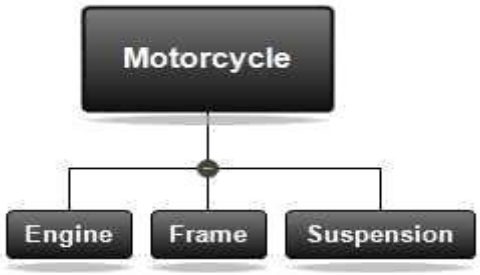
25. Define process. (Nov/Dec2011)

A software process provides the framework from which a comprehensive plan for software development can be established.

26.What is a product breakdown structure (PBS)? show the hierarchical diagram of sample PBS.(May/Jun2012)

A product breakdown structure is an effective tool that details the physical components of a particular product, or system, under consideration. The formal PBS comes in the form of a hierarchy. It begins with the final product at the top of the hierarchy followed by the sub-categorized elements of the product. The product breakdown structure is similar to the work breakdown structure (WBS). Like WBS, a product breakdown structure serves to reduce a complex project, or product, into manageable components. As a result, teams can obtain a clear understanding of a product, its components, and what is required to provide those components. Figure 1 (below) is a sample product breakdown

structure.



27.List out the stages in the software life cycle

- Requirement analysis Specification
- Design Coding
- Verification and validation
- Implementation and installation
- Maintenance and support

28. List out the problems with software projects

- Poor estimates and plan
- Lack of quality standards and measures
- Lack of techniques to make progress
- visible Poor role definition
- Incorrect success criteria

29.Define stakeholders.

These are people who have a stake or interest in the project. They can be internal to the project team or external to the project team but in the same organization or totally external to the organization.

30. List out the requirements types.

- Functional requirements
- Quality requirements
- Resource

31. List out the steps involved in Identifying project scope and objectives

- Identify objectives and practical measures of the effectiveness in Establish a project authority
- Identify all stakeholders in the project and their interests Modify objects in the light of stakeholder analysis.
- Establish methods of communications with all parties.

32. List out the steps involved in Identifying project infrastructure.

- Establish relationship between project and strategic planning
- Identify installation standards and procedures
- Identify project team organization

33. List out the steps involved in Analyzing project characteristics

1. Distinguish the project as either objective or product driven
2. Analyze other project characteristics
3. Identify high level project risks
4. Take into account user requirements concerning implementation
5. Select general lifecycle approach in the light of the above
6. Review overall resource estimates

34. List out the steps involved in Identifying project products and activities

- Identify and describe project products (including quality criteria)
- Document generic product flows
- Recognize product instances
- Produce ideal activity network
- Modify ideal to take in to account need for stages and check points

35. List out the steps involved in Estimating effort for each activity

Carry out bottom up estimates
Revise plan to create controllable activities

36. List out the steps involved in Identifying activity risks.

1. Identify and quantify activity based risks
2. Plan risk reduction and contingency measures where appropriate adjust overall plans and estimates to take account of risks.

37. List out the steps involved in Allocating resources.

- Identify and allocate resources
- Revise plans and estimates to take account of resource constraints.

38. What is product breakdown structure (PBS)?

Product will include a large number of technical products which forms a hierarchy. The main product will have a set of component products which in turn may have sub component products and so on. These relationships can be documented in a Product Breakdown Structure.

39. What is Product Flow Diagram?

Some products will need one or more other products to exist first before they can be created. For example, a program design must be created before the program can be written and the program specification must exist before the design can be commenced. These relationships can be portrayed in a product flow diagram.

40. What is Ideal activity network?

In order to generate one product from another there must be one or more activities that carry out transformation. By identifying these activities we can create an activity network which shows the tasks that have to be carried out and the order in which they have to be executed.

41. List out the steps involved in Review/Publicize plan.

- Review quality aspects of project plan
- Document plans and obtain agreement.

PART B

1) Explain the difference between software projects and other projects in detail.

2) Explain contract management and technical project management.

3) Explain activities covered by the software project management. (Nov/Dec2011)(Nov/Dec2012) (May/Jun2013)(Apr 2014)

4) What is management? Explain the problems with software projects.(Nov/Dec2011)(Nov/Dec2012)

5) Explain stakeholders and business case.

6) Explain management control in detail.

7) Explain the step-wise project planning in detail.(Nov/Dec2011)(May/Jun2012)(Apr2014)

8.How to analyze the project character tics?(May/Jun2012)

9) Explain the steps involved in to identify activity risks.

10) Explain the steps in project planning with case studies example. (Nov/Dec2012)

11) Explain the various SDLC activities as outlined by ISO 12207 with a neat diagram.(may/Jun2012)

12) Explain the typical project life cycle.

13) Draw the activities in project control cycle

UNIT –II : PROJECT EVALUATION

PART-A

1. Define project Evaluation.

Project evaluation is a systematic method for collecting, analyzing, and using information to answer questions about projects, policies and programs, particularly about their effectiveness and efficiency.

2. What is meant by programme?

D.C. Ferns defined a programme as "a group of project that are managed in a coordinated way to gain benefits that would not be possible were the projects to be managed independently".

3. What is the concept of strategic programme?

Several projects together can implement a single strategy. For example the merging of two organizations could involve the creation of unified payroll and accounting applications.

4. Define business cycle programme.

The collection of projects that an organization undertakes within a particular planning cycle is sometimes referring to portfolio. Decisions have to be made about which projects to implement within that budget within the accounting period.

5. Define Infrastructure programme.

Some organizations have very integrated information systems. The distinct activities can be integrated.

6. Define Research and development programme.

Truly innovative companies especially those that are trying to develop new product for the market, are well aware that projects will vary in terms of their risk of failure and the potential returns.

8. Define programme mandate.

- This should include the new services or capabilities the programme should deliver.
- How the organization will be improved by use of the new services or capability.
- How the programme fits with corporate goals and any other initiatives

9. How the programme will brief?

A programme brief is now produced which would be the equivalent of a feasibility study for the programme, used by achievers in all fields.

10. Define vision statement.

A preliminary vision statement which describes the new capacity that the organization seeks. **Significance-**When the project begins, the project **...** The goal of the *vision statement* is to describe what the project is expected.

11. What is meant by blueprint?

The achievement of the improved capability described in the vision statement can only come about when changes have been made to the structure and operations of the organizations. These are detailed in the blueprint.

12. What are things to be considered in the blueprint?

- Business models outlining the new process required.
- Organization structure-The information systems
- Data and information requirements
- Costs, performance and service level requirements.

13. What are the benefits of management?

1) Mandatory compliance

2) Quality of service

3) Productivity

4) More motivated force

5) Internal management benefits

6) Risk reduction

14. Define technical assessment.(may/Jun2013)

Technical assessment of a proposed system consists of evaluating the required functionality against the hardware and software available. Organizational policy aimed at the provision of a uniform and consistent hardware/software infrastructure is likely to place limitations on the nature of technical solutions that might consider.

15. What are the steps in cost-benefit analysis?

Identifying and estimating all of the costs and benefits of carrying out the project and operating

the delivered application. Expressing these costs and benefits in common units.

16. Define development costs.

Development costs include the salaries and other employment costs of the staff involved in the development project and all associated costs.

$TDEV = 3 \cdot (PM)(0.33+0.2*(B-1.01))$

PM is the effort computation and B is the exponent computed as discussed above (B is 1 for

the early prototyping model). This computation predicts the nominal schedule for the project.

17. Define setup costs.

Setup costs include the costs of putting the system into place. These consists of mainly the costs of the new hardware

ESLOC = ASLOC * (1-AT/100) * AAM.

ASLOC and AT as before.

AAM is the adaptation adjustment multiplier computed from the costs of changing the reused code, the costs of understanding how to integrate the code and the costs of reuse Decision making.

18. Define operational costs.

It consists of the costs of operating the system once it has been installed. EAC = AC + ETC. Current variances are seen as a typical and the **...** Fixed *Costs*, *Costs* do not change.

19. What is meant by cost flow forecasting?(Apr 2014)

As important as estimating the overall costs and benefits of a project is the forecasting of the cash flow that will take place and their timing. A cash flow forecast will indicate when expenditure and income will take place.

20. What are the cost-benefit evaluation techniques?

- Net profit- *net profit* and discounted cash flow automatically
- Payback period- projects will provide a true return-on-investment while meeting an acceptable
- Return of investment- successfully complete projects and receive a *return* on *investment*.
- Net present value- Successful Projects Fortunately for *project managers*
- Internal rate of return- delegation of general management authority to the Project Leader

21. Give the formula of Net Present Value (Nov/Dec2011)

NPV = 1 / (1+r) ^{t}

where, r = Return on investment and t = no of times / years

22. Give the formula of payback period.

Payback Period= Investment / Annual Cash Savings

Significance : Creating a project charter to formally initiate projects

23. Define Decision tree.(may/Jun2013)

Decision tree provide tools for evaluating expected outcomes and choosing between alternate strategies.

Advantages

Assistance in upgrading, designing and developing a software.

24. What is IRR? How is it calculated?(Nov/Dec2011)(May/Jun2012)

The internal rate of return on an investment or project is the "annualized effective compounded return rate" or rate of return that makes the net present value(NPV as NET*1/(1+IRR)^year) of all cash flows (both positive and negative) from a particular investment equal to zero . It can also be defined as the discount rate at which the present value of all future cash flow is equal to the initial investment or in other words the rate at which an investment breaks even.

Given a collection of pairs (time, cash flow) involved in a project, the internal rate of return follows from the net present value as a function of the rate of return. A rate of return for which this function is zero is an internal rate of return.

Given the (period, cash flow) pairs (n, C_n) where n is a positive integer, the total number of periods N, and the net present value NPV, the internal rate of return is given by r in:

$$\mathrm{NPV} = \sum_{n=0}^{N} \frac{C_n}{(1+r)^n} = 0$$

The period is usually given in years, but the calculation may be made simpler if r is calculated using the period in which the majority of the problem is defined (e.g., using months if most of the cash flows occur at monthly intervals) and converted to a yearly period thereafter.

Any fixed time can be used in place of the present (e.g., the end of one interval of an annuity); the value obtained is zero if and only if the NPV is zero.

In the case that the cash flows are random variables, such as in expected values are put into the above formula. Often, the value of r this case, numerical methods or graphical methods must be used. the case of a life annuity, the cannot be found analytically.

25. What is the significance of a "project risk matrix"? Give an example (May/Jun2012)

- ❖ Identify the risk and give priority.
- ❖ Could draw up draw a project risk matrix for each project to assess risks
- ❖ Project risk matrix used to identify and rank the risk of the project

• **Example of a project risk matrix**

Risk	*Importance*	*Likelihood*
Software never completed or delivered	H	—
Project cancelled after design stage	H	—
Software delivered late	M	M
Development budget exceeded ≤ 20%	L	M
Development budget exceeded > 20%	M	L
Maintenance costs higher than estimated	L	L
Response time targets not met	L	H

26. Give the significance of cost benefit analysis.(Nov/Dec2012)

A CBA is considered to be a subjective (as opposed to objective) assessment tool because cost and benefit calculations can be influenced by the choice of supporting data and estimation methodologies. Sometimes it's most valuable use when assessing the value of a business proposal is to serve as a vehicle for discussion. Cost-benefit analysis is sometimes called benefit-cost analysis (BCA).

27. When Net present value is calculated for a project.(Nov/Dec2012)

The net present value (NPV) or net present worth (NPW) is defined as the sum of the present values (PVs) of incoming and outgoing cash flows over a period of time. Incoming and outgoing cash flows can also be described as benefit and cost cash flows, respectively.

28. What are the three categories of benefits?

-Direct benefits.
-Assessable indirect benefits.
-Intangible benefits.

29. What are direct benefits?

These occur directly from the operation of the proposed system. These could, for example, include the reduction in salary bills through the introduction of a new, computerized system.

30.What are assessable indirect benefits?

These are generally secondary benefits, such as increased accuracy through the introduction of a more user-friendly screen design where we might be able to estimate the reduction in errors, and hence costs, of the proposed system.

31.What are intangible benefits?

These are generally longer term or benefits that are considered very different to quantity. Enhanced jobs interest can lead to reduced staff turn over and hence lower recruitment costs.

32.What is payback period?

The payback period is the time to taken to break even or payback the initial investment.

33.What is return of investment?

The return on investment (ROI), also known as the accounting rate of return (ARR), provides a way of comparing the net profitability to the investment required.

$$ROI = \frac{\text{Average Annual profit}}{\text{Total Investment}} * 100$$

34. What is Net Present Value?

The calculation of net present value is a project evaluation technique that takes into account the profitability of a project and the timing of the cash flows that are produced. It does so by discounting future cash flows by a percentage known as the discount rate.

35. What is the disadvantage of net present value?

The main difficulty with NPV for deciding between projects is selecting an appropriate discount rate.

36. What is the disadvantage of internal rate of return?

One disadvantage of NPV as a measure of profitability is that, although it may be used to compare projects, it might not be directly comparable with earning from other investments or the costs of borrowing capital.

37. What are the characteristics of an organization?

Model, Maturity, Thickness, Size, Structure.

38. How you can collect internal data and external data?

Internal data are collected with in the organization, usually by transaction proceeding systems, But also through employee and customer surveys. External data is collected from a wide array of sources outside the organization.

39. What is unstructured data?

Unstructured data are the data drawn from meeting discussions, private conversations, textual documents, graphical representations and other ”non-uniform” sources.

40. What is structured data?

Structure data are numbers and facts that can be conveniently stored and retrieved in an orderly manner for operations and decision making.

41. What are the phases in systems development life cycle (SDLC)?

Planning, Analysis, Design, Implementation.

42. Write the goals of project management?

-Complete the project on time
-Complete the project within budget
-Meet requirements
-Meet expectations.

43. Name any four guiding principles for selecting a project term?

Public, Client and employer, Product, Judgment.

44. What is the 3 criteria project evaluation depends?

The project evaluation depends on strategic, technical and economic criteria.

45. Define system.

A system is a group of elements organization and arranged so that the elements can act as a whole toward achieving a common goal, is a collection of inter acting subsystems.

46. Write any 5 competencies of project management skills?

-Documenting plans
-Estimating cost
-Estimating effort
-Managing risks
-Scheduling
-Tracking processes.

PART-B

1. What are the steps involved in project evolution?

2. Write in detail for project management with strategic assessment.(Nov/Dec2011)
3. How to manage the allocation of resources within programmers’ with examples.(Apr2014)
4. What re the steps involves in creating a programme?
5. Explain cost-benefit evaluation techniques.(Nov/Dec2011)(May/Jun2013)(Apr2014)
6. Explain decision trees with examples.

7. Explain risk evaluation.(Nov/Dec2011)(May/Jun2012)(Nov/Dec2012) Risk evaluation

8. What is meant by cash flow forecasting? Explain with example.(May/Jun2012)(Nov/Dec2012)

9. Explain the "internal rate of return "method for measuring the profitability of a project. Also mention its advantage over the NPV method.(May/Jun2012).

10. Consider four project cash flows as bellow

Year	Project1	Project 2	Project 3	Project4
2001	100	200	400	300
2002	300	100	100	200
2003	500	500	500	300
2004	500	100	200	300
2005	500	100	200	300

a) Calculate return on investment

b) Calculate the net present value for each of the project above using each of the discount rate 8% ,10% ,12% and decide which is the best project.

11. Calculate the net present value for each of the project below using 10 % discount rate and decide which is the best project. Calculate ROI?

Year	Project A	Project B	Project C
0	-1000 000	-100,000	-120000
1	200,000	30,000	30,000
2	200,000	30,000	30,000
3	200,000	30,000	30,000
4	200,000	30,000	30,000
5	300,000	30,000	75,000

12. Consider the project cash flow estimates for four projects at your own. Rank the four Projects in order of financial desirability and make a note of your reasons for ranking them in that way.

13. Explain cost- benefit evaluation techniques with example**.** Net profit, Pay back period, Return on investment, Net present value, internal rate of return explain all the above concepts with example For question 1,2,3,4

For Questions 3,4 Use the formulae:

Present value=value in year t / $(1+r)^t$

ROI = (average annual profit/total Investment)*100

14. Explain risk analysis using risk analysis profile and decision tree.
15. Explain cash flow forecasting.

UNIT-III: ACTIVITY PLANNING

PART-A

1. What are the steps involved in Activity Planning?

- Ensure that the appropriate resources will be available precisely when required.
- Avoid different activities competing for the same resources at the same time.
- Produce a detailed schedules showing which staff carry out each activity.
- Produce a timed cash flow forecast.

2. What are the objectives of activity planning?(Nov/Dec2012)(May/Jun2013)

- Feasibility assessment
- Resource allocation
- Detailed costing
- Motivation
- Co-ordination

3. Define resource allocation.

What are the most effective ways of allocating resources to the project. When should the resources be available? The project plan allows us to investigate the relationship between timescales and resource availability.

4. How will define the activities?

- A project is composed of a number of interrelated activities.
- A project may start when at least one of its activities is ready to start.
- A project will be completed when all of the activities it encompasses have been completed.
- If an activity must have a clearly defined start and a clearly defined end-point normally

  marked by the production of tangible deliverable. □

5. What are the three different approaches to identifying the activities?

- Activity-based approach- constraints stemming from the relationships between projects
- Product-based approach- instructor becomes an active member of the project team
- Hybrid approach- Decision support system for *software project management.*

6. Write short notes on WBS.

This involves identifying the main tasks required to complete a project and then breaking each of these down into set of lower-level tasks.

7. Mention the five levels of WBS.

- Project- engineering resources has been developed by TASK
- Deliverables- term for the quantifiable goods or services
- Components- designing the floor plane
- Work-packages- Models for the description of *software* artifacts
- Tasks- Creation and distribution of organizing *software*

8. How will formulate the network model?

The first stage in creating a network model is to represent the activities and their interrelationships as a graph. Then constructing the precedence networks.

9. What are the rules for constructing precedence networks?

- A project network should have only one start node.
- A project network should have only one end node.
- A node has duration. Links normally have no duration.
- Precedents are the immediate preceding activities.
- Times moves from left to right
- A network may not contain loops.
- A network should not contain dangles.

10. Define Hammock activities.

Hammock activities which, in themselves, have zero duration but are assumed to start at the same time as the first 'hammocked' activity and to end at the same time as the last one.

11. What is meant by forward pass?

The forward pass is carried out to calculate the earliest dates on which each activity may be started and completed. Significance - calculation method used in Critical Path Method.

12. What is meant by backward pass?

The second stage in the analysis of a critical path network is to carry out a backward pass to calculate the latest date at which each activity may be started and finished without delaying the end date of the project. The calculating the latest dates, we assume that the latest finish date for the project is the same as the earliest finish date- that is we wish to complete the project as early as possible.

13. What are the rules of activity –on-arrow rules and conventions?(Nov/Dec2011)

- A project network may have only one start node
- A project network may have only one end node
- A link has duration Nodes have no duration
- Times moves from left to right
- Nodes are numbered sequentially
- A network may not contain loops.

14. Define Risk.(Nov/Dec2011)

"An uncertain event or condition that, if it occurs has a positive or negative effect on a project objectives" include transferring the risk to another party, avoiding the risk, reducing the negative effect of the risk, and accepting some or all of the consequences of a particular risk.

14. **What are the risks to business impact?**

- Effect of this product on company revenue?
- Reasonableness of delivery deadline?
- Number of customers who will use this product
- Interoperability constraints
- Sophistication of end users?
- Costs associated with a defective product?

16. What are things to be considered in risk management?(Nov/Dec2012)

- Risk Identification- Organizations and *project* teams
- Risk Analysis- Includes a download demo and other Decision *analysis* tools
- Risk Planning- assessment is an important part
- Risk Monitoring- identifies Development Environment *Risks*.

17. Define Risk Identification.

Risk management begins with analyzing the risks involved in the project. Risk identification is not a One-off initiative since projects are constantly evolving and new risks arise while other risks may dissipate or reduce in importance

.

18. Define risk analysis and risk monitoring.

Risk Analysis considers each identified risk and makes a judgment about the probability and seriousness of it

Risk Monitoring involves regularly assessing each identified risk to Decide whether that risk is

becoming more or less probable and whether the effect of the risk have changed.

19. Define Risk Planning.

This project will develop the high- performance, computational technology infrastructure needed to analyze the past, present, and future geospatial distributions of living components of Earth environments**.**

20. What are the steps in risk planning?

- Risk identification
- Risk analysis and prioritization.
- Risk planning
- Risk monitoring.

21. Define risk assessment.

Using this formula

Risk exposure = (potential damage) * (probability of occurrence)

22. Define Hazard analysis.

A **hazard analysis** is a process used to assess risk. The results of a hazard analysis are the identification of unacceptable risks and the selection of means of controlling or eliminating them. The term is used in several engineering specialties, including avionics, chemical process safety, safety engineering and food safety.

23. What are called "Free floats" and "interfering floats"? how are they calculated?(May/Jun2012)

Total float is the amount of time by which an activity may be delayed without delaying the project Completion Caution: interpret total floats of activities carefully - all cannot be used independently. Free float is that part of total float which can be used without affecting floats of the succeeding activities. The part of total float which is not free is called interfering float Independent float is the amount of time which can be used without affecting the head and the tail events.

Total Float≥ Free Float ≥ Independent Float

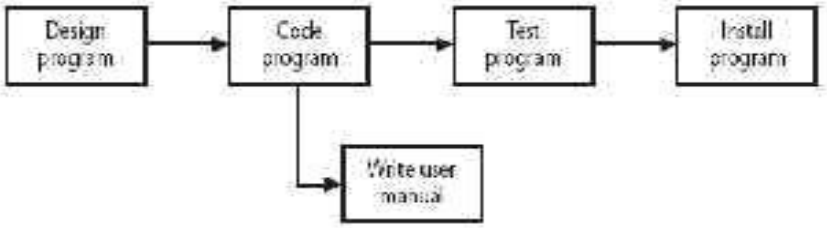
Head event slack = Earliest start time of the next activity – Earliest completion time of the activity

Free float= Total float – Head event slack

Interfering float= Total float – Free float.

24. What is a "Dangle" in an activity Network? show an example?(May/Jun2012)

A dangling activity such as "write user manual" should not exist as it is likely to lead to errors in subsequent analysis.



25. **What is risk management?**

Risk management is the procedure that explains the process of managing risk through analysis. This procedure does not provide solution to perceived risk

26. **Write short notes on Finish-to-Start(FS) Dependency Relationship?**

One activity can start only when the preceding activity finishes

27. **What is Brainstorming?**

Brainstorming refers to the process of a group of colleagues meeting and working collaboratively to generate creative solution and new ideas.

28. **What is knowledge management?**

Knowledge management is the combination of activies involved in gathering, organizing, sharing, analyzing and disseminating knowledge to improve and organization performance.

29. **Write some ways to collect information for system requirements?**

- Interview
- Questionnaires
- Examination of documents
- On-the-job observation

30. **Differentiate product view and project view?**

Product view->hierarchies' relationship among product element
Project ->hierarchies' relationship among work activities.

31. **What is Activity-on-Arrow (AOA)?**

One representation of network diagram put the activity information on the arrow between the notes are called an activity-on-arrow representation (AOA).

32. **What is Activity-on-Node(AON)?**

One representation of network diagram puts the activity information on nodes and is called an Activity-on-Node representation (AON).

33. **Name the three forms of presenting a project schedule?** o Table

- Gantt chart
- Network diagram

34. **Write any three network diagram methods?**

- PERT-Program Evaluation and Review Technique.

- CPM-Critical Path Method
- ADM-Arrow Diagramming Method

35. **What is start-to-start relationship? (BS)**

It means that one activity can start if and only if another activity starts

36. **What are the uses of nominal group techniques?**

Problem solving

Creative decision making Ideas generating situations

37. **Differentiate earliest start and earliest finish?**

The earliest time period that the activity can start. The earliest finish means that earliest time period that the activity can finish.

38. **What is critical path?**

A path with zero flexibility is called the critical path because it fill have zero float between all of its activities.

39. **List the objectives of activity planning?**

- Feasibility assessment
- Resource allocation
- Detailed costing
- Motivation
- Co-ordination

40. **When to plan for the project?**

Planning is an ongoing process of refinement, each iteration becoming more detailed and more accurate than the lack Throughout project, until the final deliverable, until reach the customer, monitoring and re planning must continue to correct any drift that might prevent meeting time are cost targets.

41. **What is project schedule?**

Once the plan has been refined to detail level, then it's called a project schedule.

42. **What do you mean by an ideal activity plan?**

A plan of when each activity would ideally be undertaken where resources not a constraint is termed as an ideal activity plan.

43. **What are the four main stages of project schedule?**

- Ideal activity plan
- Risk analysis
- Resource allocation
- Schedule production

44. **What do you mean by precedence requirements?**

Some activity might require that others are completed before they can begin. These are known as precedence requirements.

45. **List the approaches for identifying activities/tasks that produce a project?**

- Activity-based approach
- Product-based approach
- Hybrid approach

46. **What do you mean by activity based approach?**

The activity based approach consists of creating a list of all the activities that the project is thought to evolve.

47. **What is work Breakdown structure?**

This identifies main tasks required to complete a project and then breaking each of these down into a set of lower-level tasks

48. **What is product flow diagram (PFD)?**

The PFD indicates, for each product, which other products are required as inputs. The PFD can therefore be easily transformed in to an ordered list of activities by identifying that turn some product into others

49. **What are the different possible categories of WBS?**

- Product-based
- Cost –centre-based
- Task-based
- Function-based

50. **What is task catalogue?**

A complete task catalogue will normally include task definitions along with task input and output products and other task-related information.

51. **What are the five levels of work break down structure?**

- Level1:Project
- Level2:Deliverable
- Level3:Componets
- Level4:workpackages
- Level5:Tasks

52. **List some of the rules for constructing critical path method(CPM) network?**

a. A project network may have only one start node.
b. A project network may have only one end node a line has duration
c. Nodes have no duration
d. Time nodes from left to right
e. Nodes are numbered sequentially
f. A network may not contain loops
g. A network may not contain dangles
h. Precedents are the immediate preceding activities

53. **What is forward pass?**

The network analyzed by carrying forward pass is, to calculate the earlier dates as which activities may commence and the project are completed.

54. **What is backward pass?**

It calculates the latest start dates for activities and the critical path.

55. **State backward pass rule?**

The latest date for an event is the latest start date for all activities that may commence from that event. Where more than one activity commences at a common event we take the earliest of latest start dates for those activities.

56. **State forward pass rule?**

The earliest date for an event is the earliest finish date for all the activities terminating at that event-where more than one activity terminates at a common event we take the latest of the earliest finish dates for those activities.

57. What is the two-fold significance of the critical path?

a. In managing the product, we must pay particular attention to monitoring activities on the critical path so that the effects of any delay or resource unavailability are detected and corrected at the earliest opportunity.

b. In planning the project, it is the critical path that we must shorten if we are to reduce the overall duration of the project.

58. What do you mean by activity float?

The difference between an activities earliest start date and its latest start date (or equally, The difference between its earliest and latest finish dates).It is a measure of how much the start or completion of an activity may be delayed without affecting the end date of the project. Any activity with a float of zero is critical.

59. What are the two types of activity float?

- Free float
- Interfering float

60. What is free float?

It is the time by which an activity may be delayed with out affecting any subsequent activity. It is calculated as the difference between the earliest completion date for the activity and the earliest start date of the succeeding activity.

61. **What is interfering float?**

It is the difference between total float and free float.

62. **What are the three types of risks?**

- Those caused by the inherent difficulties of estimation.
- Those due to assumptions made during the planning process
- Those of unforeseen (or at least unplanned) events occurring.

63. What are two main components of risks management?

- Risk identification
- Risk management

64. What is risk identification?

It consists of listing all of the risks that can adversely affect the successful execution of the project.

65. **What is risk estimation?**

It consists of assessing the likelihood and impact of each hazard.

66. **What is risk evaluation?**

It consists of ranking the risks and determining risk a version strategies.

67. **What is risk control?**

It concerns the main functions of the risk manager in minimizing and reacting to problem through out the project.

68. **What is hazard?**

A hazard is an event that might occur and will, if it does occur, create a problem for the successful completion of the project.

69. **What are generic risks?**

Some hazards are generic risks; they are relevant to all software projects and standard. Checklist can be used and augmented from an analysis of past projects to identify them.

70. **What are specific risks?**

They are relevant to an individual project and these are likely to bo more difficult to identify without an involvement of the members of the project team and working environment that encourages risk assessment.

71. **What is risk value?**

Risk value (risk exposure) = risk likelihood*risk impact.

72. **What are two strategies for managing risks?**

- Reducing the risk exposure by reducing the likelihood or impact.
- Drawing up contingency plans to deal with the risk should it occur.

73. List some of the factors for risk identification?

- Application factors
- Staff factors
- Project factors
- Hardware/software factors
- Environment factors
- Health and safety factors
- Changeover factors
- Supplies factors

74. What are two strategies for managing risks?

- Reducing the risk exposure by reducing the likelihood or impact.
- Drawing up contingency plans to deal with the risk should it occur.

75. **What are five strategies of reducing the risks?**

- Hazard Prevention Likelihood reduction
- Risk Avoidance Risk transfer

- Contingency planning

76. What are the three-step methods of PERT?

Calculate the std deviation of each project event

77. What is activity span?

This is the difference between the earliest start date and the latest finish date and is the measure of the maximum time allowable for the activity.

PART-B

1. What are the objectives of activity planning? Feasibility assessment
2. Write the steps involved in project schedule.
3. Explain the approaches for identifying the activities.
4. Explain in detail formulating a network model.(May/Jun2012)(Nov/Dec2012) Formulating a network model
5. What is the difference forward pass and backward pass explain with example. Forward Pass
6. Explain activity-on-arrow networks.(May/Jun2013) Or Explain activity on arrow network with example. Or Explain slack with example. Or Explain critical path with example OR
7. Explain the categories of risk.
8. What are the approaches in risk identification?
9. Explain the risk planning.(May/Jun2012)(Nov/Dec2012)(Apr2014)
10. How to evaluate the pert techniques. (Nov/Dec2011)(Apr2014)
11. Explain with an example how critical path can be identified in precedence networks?
12. Explain about networking planning models
13. Construct a CPM network for the following project specification with estimated Activity duration and precedence requirements.

Explain all the activity on arrow networks points mentioned above and solve the problem

Activity	Duration(weeks)	Precedence
A-Hardware selection	6	
B-System configuration	4	
C-Install hardware	3	A
D-Data migration	4	B
E-Draft procedure	3	B
F-Recruit staff	10	
G-user training	3	E,F
H-Install and test	2	C,D

14.Explain precedence network? Or Activity-on-Node (AON) network or explain activity Float with example, or Explain forward pass and backward pass with example.

15.Explain sequencing & scheduling.

16.Explain risk management and risk planning

UNIT – IV: MONITORING AND CONTROL

PART-A

1.Write short notes on monitoring.(Apr2014)

Monitoring is collecting and reporting information concerning previously defined project Performance elements.

2 Write short notes on control.

Control uses the information supplied by the monitoring techniques in order to bring project actual results in line with stated project performance standards.

3 What are the three steps in project control?(May/Jun2013)

- Measuring & Monitoring
- Identifying/tracking key performance metrics
- Evaluating
- Analyzing causes of problems and potential corrective actions
- Correcting
- Taking corrective actions to bring project performance back in line with goals

4. Define slip chart.

A slip chart is a very alternative favored by some project managers who believe it provides a more Striking visual indication of those activities that are not progressing to schedule the more the slip line bends, the greater variation from the plan.

5. Write short notes on Earned Value Analysis.(Nov/Dec2011)

- It is a measure of progress
- It enables us to assess the "percent of completeness" of a project using quantitative analysis rather than rely on a gut feeling
- "Provides accurate and reliable readings of performance from as early as 15 percent into the project."
- A technique used to help determine and manage project progress and the magnitude of any variations from the planned values concerning cost, schedule, and performance.

6.Define Scheduled variance.

The schedule variance is measured in cost terms as EV-PV and indicates the degree to which the value of completed work differs from that planned.

9 What are the deciding levels of monitoring?(May/Jun2013)

Critical path activities

Activities with no free float

Activities with less than a specified float4)Activities using critical resources

High risk activities.

10 What are the steps in change control procedures?(Apr2014)

- One or more users might perceive a need for a modification to a system and ask for change request to be passed to the development staff.
- The user management consider the change request and, if they approve it , Pass it to the development management.

11 Define managing contracts.

Contract management or **contract administration** is the management of contracts made with customers, vendors, partners, or employees. Contract management includes negotiating the terms and conditions in contracts and ensuring compliance with the terms and conditions, as well as documenting and agreeing on any changes that may arise during its implementation or execution. It can be summarized as the process of systematically and efficiently managing contract creation, execution, and analysis for the purpose of maximizing financial and operational performance and minimizing risk.

12 What are the different types of contract?

- Fixed price contracts.
- Time and materials contracts.
- Fixed price per delivered unit contracts.

13.What is meant by fixed price contracts?

It involve a fixed total price for a well-defined product or service may include incentives for meeting certain performance objectives or penalties if those objectives are not met.

14.Mention the advantages and disadvantages of fixed price contracts.

Advantages

- Known customer expenditure
- Supply motivation

- Higher prices to allow for contingency

Disadvantages

- Difficulties in modifying requirements
- Upward pressure on the cost of changes
- Threat to system quality.

15.Define time and materials contracts.

hybrid of both fixed price and cost reimbursable, often used by consultants the buyer pays the seller for both the time and materials required to complete the work resembles a cost-reimbursable contract because it is open-ended and full cost of project is not predetermined but can resemble a fixed-price contract if unit rates are set

16.What are the advantages and disadvantages are time and materials contracts?

Advantages

- ❖ Ease of changing requirements.
- ❖ Lack of price pressure

Disadvantages

- ❖ Customer liability
- ❖ Lack of incentives for supplier

17. Define fixed per unit delivered contracts.

require the buyer to pay the seller a predetermined amount per unit of service

Detailed requirements analysis done and frozen before starting the contract

Any change after then, need renegotiating

18.**What the advantages and disadvantages are of fixed per unit delivered contracts?**

Advantages

- Customer understanding
- Comparability
- Emerging functionality
- Supplier efficiency
- Life-cycle range

Disadvantages

- Difficulties with software size measurements
- Changing requirements.

19.What are the processes of evaluation need?

- Security of the proposal documents
- Interviewing supplier's representatives.
- Demonstrations.
- Practical tests.

20.What are the services to be provided in contracts?

- Training
- Documentation
- Installation
- Conversion of existing files
- Maintenance agreements
- Transitional insurance agreements.

21.Define Acceptance.

When the work has been completed, the customer needs to take action to carry out acceptance testing. The contract may put a time limit on how long acceptance testing can take, so the customer must be organized to carry out this testing before the time for requesting correction expires.

22.Write any two advantages of function point analysis(Nov/Dec2011)

Improved project estimating;

Understanding project and maintenance productivity;

Managing changing project requirements;

Gathering user requirements**.**

23.List the important roles of the configuration librarian (May/Jun2012).

A configuration librarian is the owner of the configuration library and manager of all master copies of configuration items (CIs). In a multi-customer environment, a configuration librarian is a super user for the accounts he or she is assigned to.

A configuration librarian has the following responsibilities:

Make sure the CIs registered in the database are correct and up to date

Configure discovery

Create CIs

Update a CI instance

Delete a CI

Register a new CI

Transfer ownership of a CI

Transition a CI state

Assign or remove CIs to or from an organization

Create extended attributes for a CI type

View CIs

Generate a configuration management report

24 Name the popular visual tools used for monitoring and tracking the project progress.(may/Jun2012).

PERT &CPM

25. What are the different types of reporting?

Partial completion reporting

Red/amber/green (RAG) reporting

26. What is meant by BCWS and BCWP? BCWS:

The price that might be agreed by a contractor to do the unit of work is known as the ***planned value*** **or**

budgeted cost of work scheduled (BCWS).

BCWP:

The total value credited to a project at any point is known as the ***earned value(EV)*** or **budgeted cost of work performed(BCWP).**

27. What is meant by cost variance (CV)?

This is calculated as EV-AC and indicates the difference between the earned value or budgeted cost and the

actual cost of completed work.

CV=EV-AV

A negative CV means that the project is over cost.

28. What is meant by schedule variance (SV), Time variance (TV)?

Schedule variance (SV):

The schedule variance is measured in cost terms as EV-PV and indicates the degree to which the value of completed work differs from that planned.

SV=EV-PV

A negative SV means that the project is behind the schedule.

Time variance (TV):

This is the difference between the time when the achievement of current earned value was planned to occur and the now.

29. What is meant by CPI and SPI?

CPI: Cost Performance Index CPI=EV/AC **SPI:** Schedule Performance Index SPI=EV/PV

30. What is EAC?

EAC:CPI can be used to produce a revised cost estimate for the project or ***estimate at completion*** (**EAC**). EAC is calculated as follows.

EAC=BAC/CPI

Where BAC (budget at completion) is the current projected budget for the project.

31. What is TEAC:

A time estimate at completion (TEAC) can be calculated as follows,

TEAC=SAC/SPI

Where SAC is the schedule at completion.

32. What is Red/Amber/Green (RAG) Reporting?

One popular way of overcoming the objections to partial completion reporting is to ask for the team members, estimates of the likelihood of meeting the planned target date. The RAG consists of the following on the scale:

Green for 'on target'

Amber for 'not on target but recoverable'

Red for 'not on target and recoverable only with difficulty'.

33. What is meant by cost monitoring?

Expenditure monitoring is an important component of project control, not only in itself, but also because it provides an indication of the effort that has gone into a project. A project might be on time but only because more money has been spent on activities than originally budgeted.

34. What is EVA?

Earned value analysis is based on assigning a 'value' to each task or work package based on the original expenditure forecasts.

Earned value analysis is also known as **budgeted cost of work performed(BCWP)** that is the total value credited to a project at any point.

35. Mention the techniques to assign earned value.

- The 0/100 technique
- The 50/50 technique
- The 75/25 technique
- The milestone technique
- Percentage complete

36. What are the Types of contract?

Types of contract:

Fixed price contracts

Time and materials contracts

Fixed price per unit delivered contracts

37. What are the Methods of Visualizing progress?

Methods of visualizing progress:

The Gantt Chart

The Slip Chart

The Timeline Chart

38. What are the ways of shortening critical path?

Ways of shortening critical path: Adding resources

Increase the use of current resources

Reallocate staff to critical activities

Reduce the scope

Reduce the quality

39. What is Contract Management?

At certain decision points the customer might wish to examine work already done and make decisions about the future direction of the project. The project requires representatives of the supplier and customers to interact at key points in the development cycle.

40. Explain Configuration Librarian's role.

Configuration Librarian's role:

- The identification of all items that are subject to change control.
- The establishment and maintenance of a central repository of the master copies of all Project documentation and software products.
- The setting up and running of a formal set of procedures to deal with changes.
- The maintenance of records of who has access to which library items and the status of each library item.

41. What are the Stages in contract placement :

Stages in contract placement

Requirements analysis

Evaluation Plan

Invitation to tender

Evaluation to proposals

42. What are the Steps in evaluation of proposal?

Steps in evaluation of proposal

Scrutiny of the proposal documents

Interviewing suppliers' representatives Demonstrations

Site visits

Practical tests

43. Explain Advantages of Fixed price per unit delivered contract. Advantages:

- Customer understanding - The customer can see how the price is calculated and how it will vary with changed requirements.

- Comparability – Pricing schedules can be compared.
- Emerging functionality – The supplier still has an incentive to deliver the required functionality.
- Supplier efficiency
- Life-cycle range

44. Explain Disadvantages of Fixed price per unit delivered contract

a. Difficulties with software size measurement.
b. Changing requirements, some requested changes may affect existing code.

45. State Advantages of Time and Material contracts.

- Ease of changing requirements.
- Lack of price pressure.

46. State disadvantages of Time and Material contracts

- Customer liability.
- Lack of incentives for supplier.

47. State Advantages of Fixed price contracts:

- Known customer expenditure.
- Supplier motivation.

48. State Disadvantages of Fixed price contracts.

- Higher prices to allow for contingency.
- Difficulties in modifying requirements.
- Upward pressure on the cost of changes.

PART-B

1. Explain project control cycle in detail.

2. Explain the method Earned value Analysis.(Nov/Dec2011)(Apr2014)

3. Explain the change in control procedures.(Nov/Dec2011)(May/Jun2012)

4. Explain the different types of contract in detail.(May/Jun2012)(May/Jun2013) (Apr2014)

5. Explain fixed price contracts with advantages and disadvantages.(May/Jun2012)

6. Explain time and material contract with advantages and disadvantages

7. What are the stages in contract management?(Nov/Dec2011)(May 2013) (Apr2014)

8. Explain fixed price per deliver unit with advantages and disadvantages

9. Describe the various ways in visualizing the progress of the project.(Nov/Dec2012)(may/Jun2013)

10. Explain the process of prioritizing monitoring. Give example.(Nov/Dec2012)(may/Jun2013)

11. Explain different way of getting the project back to target

UNIT – V: MANAGING PEOPLE AND ORGANISING TEAMS

PART-A

1.What are the objectives of managing people and organizing teams?(Apr2014)

- Identify some of the factors that influence people's behavior in project.
- Select and induct new staff into a project.
- Increase staff motivation.
- Improve group working.
- Use the most appropriate leadership styles.

2.What are the three basic objectives of organizational behavior.(Apr2014)

- To select the best people for the job.
- To instruct them in the best methods.
- To give instructions in the form of higher wages to the best workers.

3.What are the factors consider in X theory?(May/June2013)

- The average human has an innate dislike of work.
- There is a need therefore for correction, direction and control.
- People tend to avoid responsibility.

4. Define Motivation.

Motivation is a general term applying to the entire class of drives, desires, needs, wishes, and similar forces. Managers, as a part of motivating their staff, do all such things which they hope will satisfy these drives and desires and induce the subordinates to act in a desired manner.

5. What are the needs in Maslow's hierarchy theory?(May/Jun2012)

- Physiological Needs - attention turns to safety and security
- Security or Safety Needs- Calculation, Domain, Consulting,
- Affiliation or Social Needs - Developing New Programs
- Esteem Needs- needs for esteem can become dominant
- Self-actualization Needs - include symmetry

6. Write short notes on Herzberg's motivation-hygiene theory

HERZBERG'S MOTIVATION-HYGIENE THEORY

Maslow's need approach has been considerably modified by Frederick Herzberg. His research purports to find a two-factor theory of motivation. In one group of needs are such things as company policy and administration, supervision, working conditions, interpersonal relations, salary, status, and job security. These were found by Herzberg and his associates to be only *dissatisfies* and not motivators. Their existence does not motivate in the sense of yielding satisfaction; their lack of existence would, however, result in dissatisfaction. Herzberg called them maintenance, hygiene or job context factors**.**

7.Write short notes on vroom's expectancy theory.

Force = valence x expectancy

Where **force** is the strength of a person motivation, **valence** is the strength of an individual's preference for an outcome, and **expectancy** is the probability that a particular action will lead to a desired outcome.

8.What are the factors to be considered in the Oldham-Hackman job characteristic model?

- Skill variety- one or more of the offerings available from a *variety* of organizations
- Task variety- enhance Key words
- Task significance- autonomy, and feedback from the job
- Autonomy- for Consulting & *Software* Companies
- Feedback- submit your comments and suggestions

9.Mention the methods of improving motivation.

Set specific tasks, provide feedback, and consider job design.

10. How to becoming a team?

- Forming- The members of the groups get to know each other and try to set up some ground rules about behaviour
- Storming- one nice packaging, all for publishing need
- Norming- Asset Management is a powerful and complete asset management solution
- Performing- Optimize project delivery across the *software*
- Adjourning - added a final stage

11 Define Forming.

The members of the groups get to know each other and try to set up some ground rules about behavior.

12 Define team worker.

Skilled at creating a good working environment to manage all the people who are Developing Projects, team proposed to extend these concepts.

13 What are the two categorized for Decision making?

Stuctured- generally relatively simple, routine Decisions where rules can be applied in a fairly straightforward way

Unstructured- more complex and often requiring a degree of creativity.

14.Mention some mental obstacles to good decision making.(May/Jun2013)

- Faculty heuristics- is an innovative effort by students and members of staff
- escalation of commitment- behavior, sunk cost, risk propensity, risk perception,

- information overhead- developers analyze, design, and develop *software*

15 What are the measures to reduce the disadvantages of group Decision making?

- The cooperation of a number of experts.
- The problem is presented to the experts.
- The experts record their recommendations.
- These recommendations are collated and reproduced.
- The collect responses are recirculated.

16 Define Leadership.

The ability of a superior to influence the behavior of his subordinates and persuades them to follow a particular course of action, do suggest here is that any analysis of project management.

17. What are the functions of leader?

- Goal-setter
- Planner,
- Executive,
- Expert,
- Spokesman,
- Controller of internal relationships,
- Administrator of rewards and punishments,
- Arbitrator and mediator,
- Role model,
- Symbol of the group, and
- Father figure.

18 What are the leadership models/theories?

- Trait theory,
- Leadership styles based on authority,
- Managerial grid,
- Continuum approach,
- Feidler's contingency model, and
- Path-goal theory.

19 What are the leadership styles?

- Directive autocrat,- This manager makes all the Decisions unilaterally and manages Learning to Lead
- permissive autocrat- Concepts using simple and precise free downloadable

- directive democrat- Management Styles Permissive Democrat Directive Autocrat document
- permissive democrat- Makes decisions participative subordinates have latitude

20 Define Stress.(Nov/Dec2011)(Nov/Dec2012)

Projects are about overcoming obstacles and achieving objectives. Almost by definition both the project manager and team members will be under pressure. Once a project gets rolling, you should expect members to be putting in at least 60 hours a week. The project must except to put in as many hours as possible.

21 Define Departmentation

The process of grouping activities is commonly known as departmentation. This is the first real task in designing an organization Project Methods staff provided courseware development and training on office automation *software* trying to escape poverty, and engaging in *democratic* reforms

22 What do you understand by "Egoless Programming". (May/Jun2012)

Egoless programming is a style of computer programming in which personal factors are minimized so that quality may be improved.

23 What is bespoke system.(Nov/Dec2012)

Bespoke is a term used in the United Kingdom and elsewhere for an individually- or custom-made product or service. Traditionally applied to custom-tailored clothing, the term has been extended to information technology, especially for software consulting services. Typically, software consulting company's offer packaged (already invented and generally applicable) software and bespoke software for client needs that can't be satisfied by packaged software. In the U.S., bespoke software is often called customer custom-designed software.

24.What is the use of checkpoints in monitoring.(Nov/Dec2012)

- Based on regular time intervals
- Can be weekly or monthly or quarterly
- Depend on what to check and how to
- Based on a particular event
- At the end of each activity
- In the middle of a critical activity
- Should be set before the plan was published
- Make sure everyone knows when and what the check points are

25. What is tailor's objective?

- To select best people for the job
- To instruct them in best method
- To give incentives in the form of higher wages to the best workers

26. Write the recruitment process.

- Create a job specification
- Create a job holder's profile
- Obtain applicants
- Examine CV's
- Interview and other procedures

27. What are motivation models

- The tailorist model
- Maslow's hierarchy of needs
- Herzberg's two factor theory
- The expectancy theory of motivation
- The oldham-hackman job characteristics model

28.State the oldham-hackman job characteristics model

oldham-hackman suggest that a satisfaction that a job gives is based on 5 factors namely Skill variety, task identity, Task significance, autonomy, feed back

29. What is Monte-carlo simulation?

As an alternative to the pert technique and to provide a greater degree of flexibility in specifying likely activity durations, we can use mante carlo simulation techniques to evaluate the risk of not achieving deadlines

30. List out the methods of improving motivation.

- Set specific goals
- Provide feedback
- Consider job design
-

31. List the methods to enhance job design

- Job enlargement
- Job enrichment

32. Give position power types.

- Co-ercive power
- Connection power.
- Legitimate power
- Reward power

33. Give the personal power types.

- Expert power
- Information power
- Referent power

34. Give the leadership styles.

- Directive autocrat Directive democrat
- Permittive autocrat Permissive democrat

35. What are the stages of team formation?

Forming, storming, norming, performing, adjourning

36. Name the different people of a team?

The chair, the plant, the monitor evaluator, the shaper, the team worker, the resource investigator, the completer, the company worker

37. What are the categories of group task?

Additive task, compensatory task, disjunctive tasks, conjunctive tasks

38. What are the types of decision?

Structured-relatively simple, routine decisions where rules can be applied in a fairly straight –forward way

Unstructured, more complex and often requiring a degree of creativity

39. What is coercive power?

The ability to force someone to do something by threatening punishment

40. What is reward power?

It means the holder can give rewards to those who carry out tasks to his/her satisfaction.

41. Define tort.

A tort is defined as a wrongful act other than a breach of contract that injures another and for which the law imposes civil liability.

42. Write the legal issues for project Management skills.

Alternative Dispute Resolution, arbitration, Negotiation and mediation

43. Name any four selection criteria for SCM tools.

Multi user support, Scalability, Easy to setup, Process management

44. Difference b/w personal and organizational stress.

Personal stress include apathy low productivity, irritability, frequent complaints and health disorders Organizational stress include misunderstandings of work expectations, product quality and customer service problems

45. What is Critical path?

The path with Zero flexibility is called the critical path, because it will have zero float b/w all of its activities.

46. What are three kinds of interfaces?

Personal, organizational, and system

47. What are the types of process communication model?

Dreamer, Rector, Rebel, workaholic

48. What are the uses of Nominal group techniques?

Problem solving, Creative decision making, ideas generating situations

49. Give any two examples for Computer attributes.

Execution time constraint (TIME), Main storage constraint (STOR)

PART-B

1. Explain the stepwise framework where staffing concerns are important.

2.Explain X theory and Y –theory in detail.

3. Explain the recruitment process.(Nov/Dec2011)(Nov/Dec2012)(May/June2013) (Apr2014) Selecting the

4. Define motivation. Explain Maslow's hierarchy of needs.

5. Explain the expectancy theory of motivation.

6. What the methods involved in motivation?(Nov/Dec2011)(May/Jun2013)
7. What are the steps needed to become a team?(Nov/Dec2012)
8. Explain the leadership style in detail.(Nov/Dec2011)
9. Explain the organizational structures.(May/Jun2012)(Nov/Dec2012)(May/Jun2013)
10. How to improve group performance?(Nov/Dec2011)
11. Oldham-Hackman job characteristic model.(May/Jun2012)
12. Stress and its significance in IT Projects.(May/Jun2012)
13. Explain the different ways of Decision making.(Nov/Dec2012)(May/Jun2013)(Apr2014)
14. Explain different motivation techniques.
15. Explain decision making
16. Comment on selecting the right person for the right job
17. Organizational structures
18. Leadership and styles.