**CCS356 – OBJECT ORIENTED SOFTWARE ENGINEERING**

**UNIT-1**

**PART – A(2 marks)**

1.Write down the generic process framework that is applicable to any software

project / relationship between work product, task, activity and system

Common process frame work

- Process frame work activities

- Umbrella activities

- Frame work activities

- Task sets

2 List the goals of software engineering?

Satisfy user requirements , High reliability , Low maintenance cost , Delivery on

time , Low production cost , High performance , Ease of reuse.

3 What is the difference between verification and validation?

 Verification refers to the set of activities that ensure that software correctly

implements a specific function. Verification: "Are we building the product

right?"

 Validation refers to a different set of activities that ensure that the software

that has been built is traceable to customer requirements. Validation: "Are

we building the right product?"

4 For the scenario described below, which life cycle model would you choose?

Give the reason why you would choose this model.

You are interacting with the MIS department of a very large oil company with

multiple departments. They have a complex regency system. Migrating the data

from this legacy system is not an easy task and would take a considerable time.

The oil company is very particular about processes, acceptance criteria and legal

contracts.

Spiral model Proactive problem prevention. Each iteration has a risk

analysis, sector that evaluates. Alternatives for proactive problem

avoidance.

5.Give two reasons why system engineers must understand the environment of a

system?

1.The reason for the existence of a system is to make some changes in

its environment.

2.The functioning of a system can be very difficult to predict.

6 .What are the two types of software products?

1. Generic products: these are stand-alone systems that are produced by a

development

Organization and sold in the open market to any customer who wants to buy it.

2. Customized products: these are systems that are commissioned by a specific

customer

and developed specially by some contractor to meet a special need.

7 What is the advantage of adhering to life cycle models for software?

It helps to produce good quality software products without time and cost over

runs.It encourages the development of software in a systematic & disciplined

8 Is it always possible to realize win-win spiral model for software? Justify.

o Must identify stake holder and their win condition

o Developing buy-in to the model is important than the model itself

o Eliminating the clashes between customers is important.

9 What is software process? List its activities.

Software process is defined as the structured set of activities that are

required to develop the software system.

Activities – Specification, design & implementation, validation & evolution.

10 What are the various categories of software?

 System software

 Application software

 Engineering/Scientific software

 Embedded software

 Web Applications

 Artificial Intelligence software

**UNIT – 2**

**PART – A**

1.What is Software Prototyping?

It is a rapid software development for validating the

requirements. It is to help customers & developers to understand the

system requirements.

2 Define functional and non- Functional requirements.

Functional requirements describe all the functionality or

system services. It should be clear how system should react to

particular inputs and how particular systems behave in particular

situation. Non functional requirements define the system properties

and constraints. It is divided in to product, organizational &

external requirements.

3 What is meant by functional requirement?

Functional requirements describe all the functionality or system

services. It should be clear how system should react to particular

inputs and how particular systems behave in particular situation.

4 Name the metrics for specifying Non-functional requirements?

Speed, size, ease of use, reliability, robustness, portability

5. What do requirements processes involve?

It involves feasibility study, discovery, analysis

&validation of system requirements.

6.Define non-functional requirements.

Non functional requirements define the system properties and

constraints. It is divided in to product, organizational &

external requirements

7.Distinguish between the term inception, elicitation, &

elaboration with reference to requirements?

Inception – set of questions are asked to establish basic

understanding of problem.

Elicitation - collaborative requirements gathering &

quality function deployment

Elaboration – It focuses on developing a refined

technical model of software function, features &

constraints.

8.An SRS is traceable ?

An SRS is correct if, and only if, every requirement

stated therein is one that the software shall meet.

Traceability makes this procedure easier and less prone

to error.

10..What is data dictionary?

It is organized collection of all the data elements of the system

with precise and rigorous definition so that user & system

analyst will have a common understanding of inputs, outputs,

components of stores and intermediate calculations.

**UNIT-3**

**PART-A**

1.What are the primary interaction styles and state their

advantages?

1.Direct manipulation - Easiest to grasp with immediate

feedback , Difficult to program

2. Menu selection - User effort and errors minimized, large

numbers and combinations of choices a problem

3. Form fill-in - Ease of use, simple data entry, Tedious, takes

a lot of screen space

4. Command language - Easy to program and process,

Difficult to master for casual users

5. Natural language - Great for casual users, Tedious for

expert users.

2 List the architectural models that can be developed.

Data-centered architectures, Data flow architectures,

Call and return architectures

Object-oriented architectures, Layered architectures.

3 What is meant by real time system design?

A real-time system is a software system where the correct

functioning of the system

depends on the results produced by the system and the time

at which these results are

produced.

4 List four design principles of a good design?

o Process should not suffer from tunnel vision.

o It should be traceable to the analysis model

o It should not reinvent the wheel

o It should exhibit uniformity & integration.

5 List out design methods.

Architectural design , data design , modular design.

6 Define data acquisition

Collect data from sensors for subsequent processing and

analysis.

7 How do you apply modularization criteria for a monolithic

software

Modularity is achieved to various extents by different

modularization approaches. Code based modularity allows

developers to reuse and repair parts of the application, but

development tools are required to perform these maintenance

functions .Object based modularity provides the application as

a collection of separate executable files which may be

independently maintained and replaced without redeploying the

entire application.

8 What is the design quality attributes ‘FURPS’ meant?

FURPS is an acronym representing a model for classifying

software quality attributes (functional and non-

functional requirements)

Functionality, Usability, Reliability, Performance and

Supportability model.

9 Define data abstraction?

Data abstraction is a named collection of data that describes

the data object.

Eg:- Door attribute – door type, swing direction, weight

10 What are the elements of design model?

i. Data design

ii. Architectural design

iii. Interface design

iv. Component-level design

**UNIT-4**

**PART - A**

1.What are the characteristics of good tester?

All tests should be traceable to customer requirements.

Tests should be planned long before testing begins.

The Pareto principle applies to software testing.

2 Define software testing?

Software testing is a critical element of software quality assurance and

represents the ultimate review of specification, design, and coding

3 What are the objectives of testing?

i. Testing is a process of executing a program with the intend of finding

an error. ii. A good test case is one that has high probability of finding

an undiscovered error. iii. A successful test is one that uncovers as an-

yet undiscovered error.

4 What is integration testing?and What are the approaches of

integration testing?

In this testing the individual software modules are combined and tested

as a group. It occurs after unit testing & before system testing.

1. The non-incremental testing.

2. Incremental testing.

5 What is regression testing?

It tends to verify the software application after a change has been made.

It seeks to uncover software errors by partially retesting a modified

program.

6 Distinguish between stress and load testing

Stress testing is subjecting a system to an unreasonable load

while denying it the resources (e.g., RAM, disc, mips, interrupts,

etc.) needed to process that load.

Load testing is subjecting a system to a statistically

representative (usually) load. The two main reasons for using

such loads is in support of software reliability testing and in

performance testing. The term "load testing" by itself is too

vague and imprecise to warrant use.

7 Define black box testing?

A black-box tests are used to demonstrate that software functions

are operational, that input is properly accepted and output is

correctly produced, and that the integrity of external

information.

8 What is boundary condition testing?

It is tested using boundary value analysis. (check BVA – 16 mark

question)

9 How is software testing results related to the reliability of software?

Applying fault avoidance, fault tolerance and fault detection for

the project helps to achieve reliability of software.

10 What is big-bang approach?

Big bang approach talks about testing as the last phase of

development. All the defects are found in the last phase and cost

of rework can be huge.

**UNIT- 5**

**PART – A**

1.What are the processes of risk management?

Risk identification

Risk projection (estimation)

Risk mitigation, monitoring, and management

2 State the need for software configuration review.

The intent of the review is to ensure that all elements of the

software configuration

have been properly developed, cataloged & have necessary detail

to bolster the

supportpfase of the software lifecycle.

3 List any five CASE tools classified by function in the taxonomy of CASE tools

1. project planning tools

2. metrics & management tools

3. prototyping tools

4. Re- engineering tools

5. documentation tools.

4 Define error, fault and failure.

Error – it is a state that can lead to a system behavior that is

unexpected by the System user.

Fault- it is a characteristic of a software system that can lead to

system error.

Failure – it is an event that occurs at some point in time when the

system does not

Deliver a service as per user’s expectation.

5 What is project planning?

The various types of plan is developed to support main software

project plan which is concerned with schedule & budget. Types of

project plan

Quality plan, Validation plan, Configuration mgmt plan, Maintenance

plan, Staff development plan.

6 List the various types of software errors?

Reports detailing bugs in a program are commonly known as bug

reports, defect reports, fault reports, problem reports, trouble reports,

change requests.

7 Differentiatebetween size oriented and function oriented metrics?

Size oriented metrics – it considers the size of the software that has

been produced. The software organization maintains simple records in

tabular form. Table entries are LOC, effort, defects, and project name.

Function oriented metrics – it measures the functionality delivered by

software. Function point based on software information domain and

complexity.

8 Define measure.

Measure is defined as a quantitative indication of the extent,

amount, dimension, or size of some attribute of a product or process.

9 How is productivity and cost related to function points?

Software Productivity = Function Points / Inputs (persons/mnth)

Cost = $ / Function Points (FP)

10 What are the types of metrics?

Direct metrics – It refers to immediately measurable attributes. Example

– Lines of code,execution speed.

Indirect metrics – It refers to the aspects that are not immediately

quantifiable or measurable.

Example – functionality of a program.