Mid Semester Examination

October – 2017

Synoptic

Max. Marks: 30

Class: F.Y.

Course Code: **MCA12**

Name of the Course: **Software Engineering**

Duration: 1.5 Hrs

Semester: I

Branch: M.C.A.

Q.1) List down and explain the major characteristics of software. Illustrate with the help of diagram. (5 Marks)
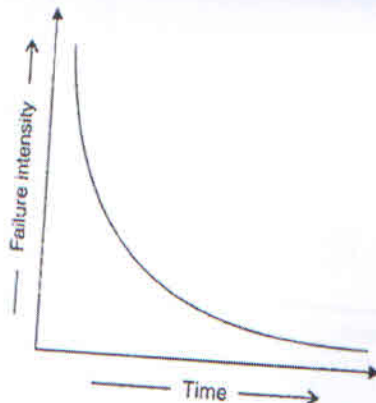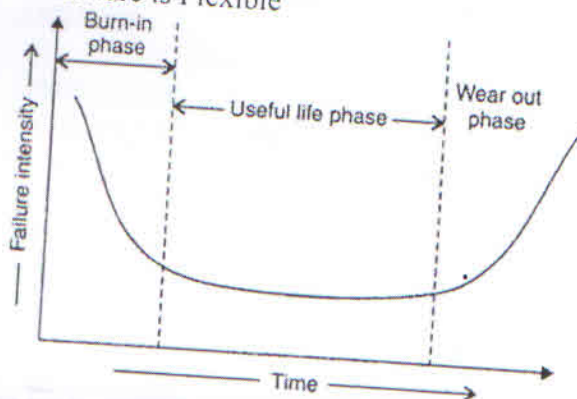
ANSWER:

Characteristics

Diagram

Characteristics: ----------- 3 marks

                                                           --------- 2marks

1.Software is developed or engineered; it is not manufactured in the classical sense.

2. Software doesn't "wear out."

3. Although the industry is moving toward component-based construction, most software continues to be custom built.

4.Software is Flexible

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OR

Q.1) Justify "Software myths affect software process" Explain with the help of examples. (5 Marks)

ANSWER:

Myths
                                                                    ---------- 3 marks
Management myths.

We already have a book that's full of standards and procedures for building software. Won't that provide my people with everything they need to know?

Customer myths.

A general statement of objectives is sufficient to begin writing programs—we can fill in the details later.

Practitioner's myths.

Once we write the program and get it to work, our job is done.

Examples
                                                                    ---------- 2marks

Q.2) Identify and explain the process model used when staffing is unavailable for a complete implementation by the business deadline. (6 Marks)

ANSWER:

Identification
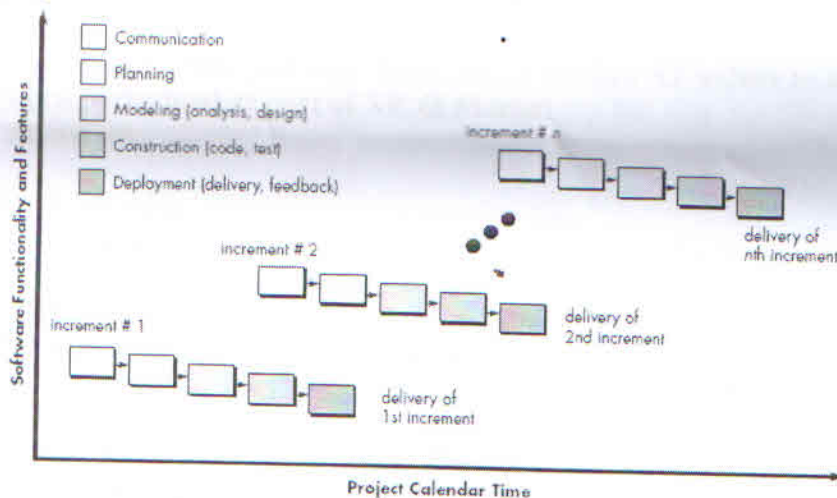   ------ 1Mark
Process model explanation
                                                                    ------4 Marks
Diagram
                                                                    -------1Mark

Incremental development is particularly useful when staffing is unavailable for a complete implementation by the business deadline that has been established for the project.

OR

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Q.2) Identify and explain the process model used where the developer may be unsure of the efficiency of an algorithm, the adaptability of an operating system, or the form that human-machine interaction should take. (6 Marks)

ANSWER:

|	
Identification	------ 1Mark
Process model explanation	-------4 Marks
Diagram	------ 1Mark

Prototyping. Often, a customer defines a set of general objectives for software, but does not identify detailed requirements for functions and features. In other cases, the developer may be unsure of the efficiency of an algorithm, the adaptability of an operating system, or the form that human-machine interaction should take.
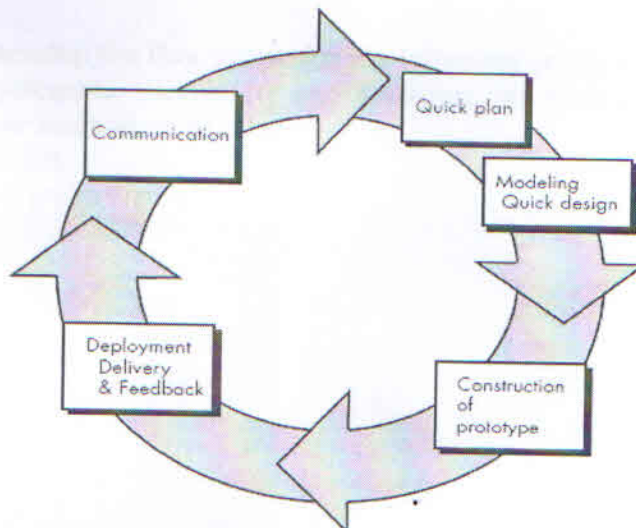
Q.3) Explain how you will make use of the five XP values to establish a foundation for all work performed as part of XP. (5 Marks)
ANSWER:

Each XP value   -------1*5 Marks

defines a set of five values that establish a foundation for all work performed as part of XP—communication-effective communication between software engineers and other stakeholders (e.g., to establish required features and functions for the software), XP emphasizes close, yet informal (verbal) collaboration between customers and developers,

simplicity-To achieve simplicity, design only for immediate needs, rather than consider future needs. The intent is to create a simple design that can be easily implemented in code). If the design must be improved, it can be refactored4 at a later time.

Feedback-Feedback is derived from three sources: the implemented software itself, the customer, and other software team members.

Courage and respect.

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Q.4) Elaborate the term "requirements elicitation". Elaborate any two requirement elicitation techniques? (5 Marks)
ANSWER:

Definition of requirements elicitation.   -------2 Marks
Two requirement elicitation techniques-   ------ 3Marks
Interviews- Selection of stake holders, Types of questions
BrainStroming session-
Fast Facilitated Application specification Technique
 Fast session preparations and Activities of Fast
Quality function deployment
Use case approach

Q5. Develop the flow graph for the following graph matrix. Determine the ways to compute the cyclomatic complexity and Compute the cyclomatic complexity for flow graph using any one method. (4 Marks)
ANSWER:
I) Flow graph Figure   --------1 Mark
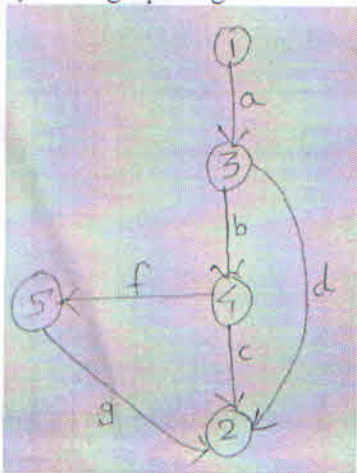

Figure: Flow Graph
II) Cyclomatic Complexity is computed in one of the three ways: ----- 2 marks
1. The number of regions corresponds to the cyclomatic complexity
2. Cyclomatic complexity, V(G) for a flow graph, G is defined as
         $V(G) = E - N + 2$
         Where E is the number of flow graph edges, and N is the number of flow graph nodes.
3. Cyclomatic complexity, V(G) for a flow graph, G is also defined as
         $V(G) = P + 1$
         Where P is the number of predicate nodes contained in the flow graph G.
III) Compute the cyclomatic complexity for flow graph using any one method.   ------- 1 mark
   Answer :
   Method 1: $V(G) = 2$ Inner Region + 1 outer region = 3
       Method 2: $V(G) = 6 - 5 + 2 = 3$
       Method 3 : $V(G) = 2 + 1 = 3$

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OR

Q5. Compare the following (4 Marks)
   i)   **Verification and Validation**
   ii)   **Alpha testing and Beta Testing**
ANSWER:

   i)   Verification and Validation   ----- **2 Marks** (Each valid comparison has ½ mark)

Verification	Validation
Definition	Definition
Are we building the product right?	Are we building the right product?
Verification ensures the product being developed is Acc. to design specifications	Validation ensures the product under development is as per the user requirements.
Verification concentrates on the design & system specifications.	Validation emphasizes on user requirements
It is carried out in many phases of SDLC	It is carried out at the end of SDLC

   Ii)   Alpha testing and Beta Testing   ----- **2 Marks** (Each valid comparison has ½ mark)

Alpha Testing	Beta Testing
It is conducted at developer's site by end users.	It is conducted at end – users sites.
It is carried out by end- users along with developer	It is carried out by end- users. Developer is not present
It is carried out in controlled environment.	Here is no controlled environment (As no developer)
Errors also solved immediately	Errors & problems are reported to developer.

Q6. To create a risk item checklist, which of the subcategories of risk are focused and draw a sample risk table. (5 marks)
ANSWER:

I) One method for identifying risks is to create a risk item checklist. The checklist can be used for risk identification and focuses on some subset of known and predictable risks in the following generic subcategories: ----- **3 Marks**
1. Product size—risks associated with the overall size of the software to be built or modified.
2. Business impact—risks associated with constraints imposed by management or the marketplace
3. Stakeholder characteristics—risks associated with the sophistication of the stakeholders and the developer's ability to communicate with stakeholders in a timely manner.
4. Process definition—risks associated with the degree to which the software process has been defined and is followed by the development organization.

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5. Development environment—risks associated with the availability and quality of the tools to be used to build the product.

6. Technology to be built—risks associated with the complexity of the system to be built and the "newness" of the technology that is packaged by the system.

7. Staff size and experience—risks associated with the overall technical and project experience of the software engineers who will do the work.

The risk item checklist can be organized in different ways. Questions relevant to each of the topics can be answered for each software project. The answers to these questions allow you to estimate the impact of risk. A different risk item checklist format simply lists characteristics that are relevant to each generic subcategory.

II) Sample risk Table   ----- 2 Marks

Risks	Category	Probability	Impact	RMMM
Size estimate may be significantly low	PS	60%	2	
Larger number of users than planned	PS	30%	3	
Less reuse than planned	PS	70%	2	
End-users resist system	BU	40%	3	
Delivery deadline will be tightened	BU	50%	2	
Funding will be lost	CU	40%	1	
Customer will change requirements	PS	80%	2	
Technology will not meet expectations	TE	30%	1	
Lack of training on tools	DE	80%	3	
Staff inexperienced	ST	30%	2	
Staff turnover will be high	ST	60%	2	
Σ Σ Σ				

Impact values:
1—catastrophic
2—critical
3—marginal
4—negligible

PS – Risk associated with Project Size
BU – Risk associated with Business
CU – Risk associated with Customer
DE – Risk associated with Development Environment
TE – Risk associated with Technology to be built
ST – Risk associated with staff size & experience