









## FAST TRACK REVISION

# Software Engineering

सभी महत्वपूर्ण topic को कवर करें एक ही वीडियो में..







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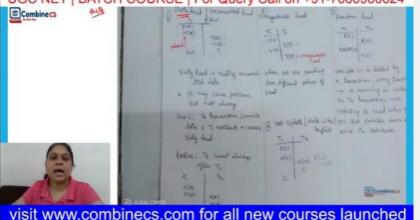
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Last Week

S-3-1-1

Not









volutebox testing

Precedence craph

Ptl e-n+2

Testing – intent to find error.

Validation & verification PR

Types

Black box > names

White box - BCD Structural Ispic

1. Statement coverage – every statement must be executed at least once. Cover all branched, so guaranteed 100%.

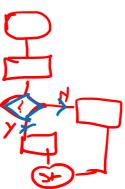
Branch Coverage – decision making conditions, hence

least once. Co
Branch Covera,
can't be 100%

TRICL

flowchout

branche





2018



pyomanie 3

developer

Which of

Which of the following is/are behavioral testing technique(s)?

- (A) Equivalence Partitioning
- (B) Graph-Based Teating Method
- (C) Boundery Value Analysis
- (D) Data flow Testing
- (E) Loop Testing

Choose the correct answer from the options given below:

(1) (B) and (D) only

(2) (A), (B) and (C) only

(3) (D) and (E) only

(4) (A), (C) and (E) only





Which of the following is/are behavioral testing technique(s)?

whitebox

Equivalence Partitioning

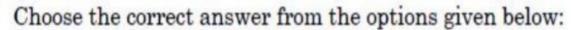
TRICK

Graph-Based Teating Method

Boundery Value Analysis

Data flow Testing







(B) and (D) only



(A), (B) and (C) only



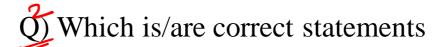
(D) and (E) only

(A), (C) and (E) only





My Codice
Milite
BCD



- S1: Statement coverage cannot guarantee execution of loops in a program under test.
- S2: Use of independent path testing criterion guarantees execution of each loop in a program under test more than once.
- Only 1
- Only 2
- Both are true
- None of the above





Q) Which is/are correct statements

Pys dec 2018

Branch

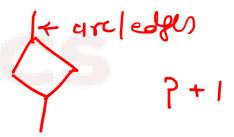
- S1: Statement coverage cannot guarantee execution of loops in a program under test.
- 2. S2: Use of independent path testing criterion guarantees execution of each loop in a program under test more than once.



only 2



d) None of the above









- Corrective Maintenance initiated by defects in the software, rectify some bugs. emor
  - 2. Adaptive Maintenance ever-changing environment, modifications and updations. when the customers need the product to run on new platforms, on new operating systems, or when they need the product to interface with new hardware and software.
  - 3. Perfective Maintenance improving processing efficiency or performance, or restructuring the software to improve changeability. This may include enhancement of existing system functionality, improvement in computational efficiency etc.

4. Preventive Maintenance - This type of maintenance includes modifications and updations to prevent future **problems** of the software.







Modifying the software by restructuring is called

(1) Adaptive maintenance

(2) Corrective maintenance

(3) Perfective maintenance

(4) Preventive maintenance





Modifying the software by restructuring is called

- (1) Adaptive maintenance new palform
- (2) Corrective maintenance

(3) Perfective maintenance

(4) Preventive maintenance

improvenent







Q) Software products need perfective maintenance for which of the following reasons?

- 1. To rectify bugs observed while the system is in use
- 2. When the customers need the product to run on new platforms
- 3. To support the new features that users want it to support
- 4. To overcome wear and tear caused by the repeated use of the software





Q) Software products need perfective maintenance for which of the following reasons?

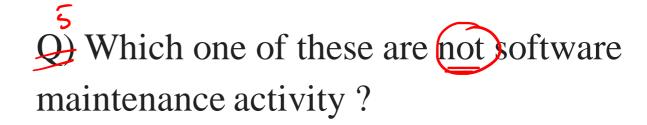
### corrective

- 1. To rectify bugs observed while the system is in use
- 2. When the customers need the product to run on new platforms

  Adaptative
- To support the new features that users want it to support
- To overcome wear and tear caused by the repeated use of the software



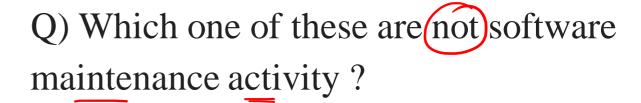




- A. Error correction
- B. Adaptation
- c. Implementation of Enhancement
- D. Establishing scope







- A. Error correction
- **Adaptation**
- c. Implementation of Enhancement
- D. Establishing scope





Software Design - Cohesion & Coupling

Framework 1. Abstraction - 2020

Refinement

Toodi Traditional Information hiding ERD, Use Case, DFD, DD-Adisity 5. Top-down approach Coding (not included) Activity diagram – not used at this phase UML BUG





School me FIRST Stage of learning, exam me

likeycle

COPY kar lete ho, ye

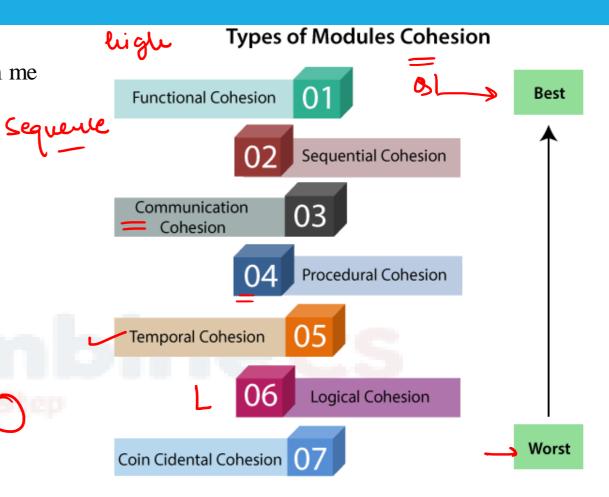
PROCEDURE chalta rehta hai, pass hokar aap College me campus selection

milta h as a TEAM Leader, But kuch bhi

accidental (Coincidental) nahi h

TRICK explain







functional - modules will peyson 1 fu. 2) sequential -> sequence orderdoeignt motter. Procodural sequetion 3) Communications Oslane-O order of execution 5) T > Jeripooch T -> Time 6) L > logical s all modules perform similar operation coincidental > loosely associated (worst) MCB



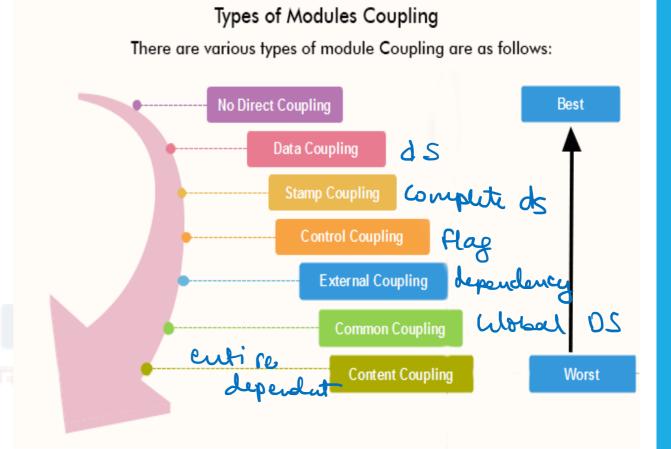
IT company me selection ke liye DS

ka knowledge hona chahye,

# CONTROL & EXTERNAL Variables

hote hai, Faq jo ki **Common** &

Content pe focus karna hai.







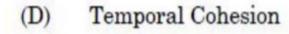




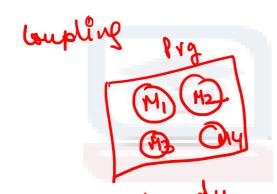
Arrange the following types of Cohesion from best to worst type.

lequence Lo A suial

- Logical Cohesion (A)
- Sequential Cohesion Communication Cohesion



Procedural Cohesion  $(\mathbf{E})$ 



Choose the correct answer from the options given below:

$$(1) A \to D \to E \to C \to B$$

(2) 
$$A \rightarrow E \rightarrow D \rightarrow C \rightarrow B$$

$$(3) B \to E \to C \to D \to A$$

$$(4) \quad B \to C \to E \to D \to A$$

Strongly (3)  $B \rightarrow E \rightarrow C \rightarrow D \rightarrow A$  (4) B coupled of dependently without - Green — strongly  $\longrightarrow$  10 year — Weatly



School me FIRST Stage of learning, exam me COmmunicate kar lete ho, ye PROCEDURE chalta rehta hai, pass hokar aap College me campus selection milta h as a TEAM Leader, But kuch bhi accidental (Coincidental) nahi h

Arrange the following types of Cohesion from best to worst type.

- (A) Logical Cohesion
- (B) Sequential Cohesion
- (C) Communication Cohesion
- (D) Temporal Cohesion
- (E) Procedural Cohesion

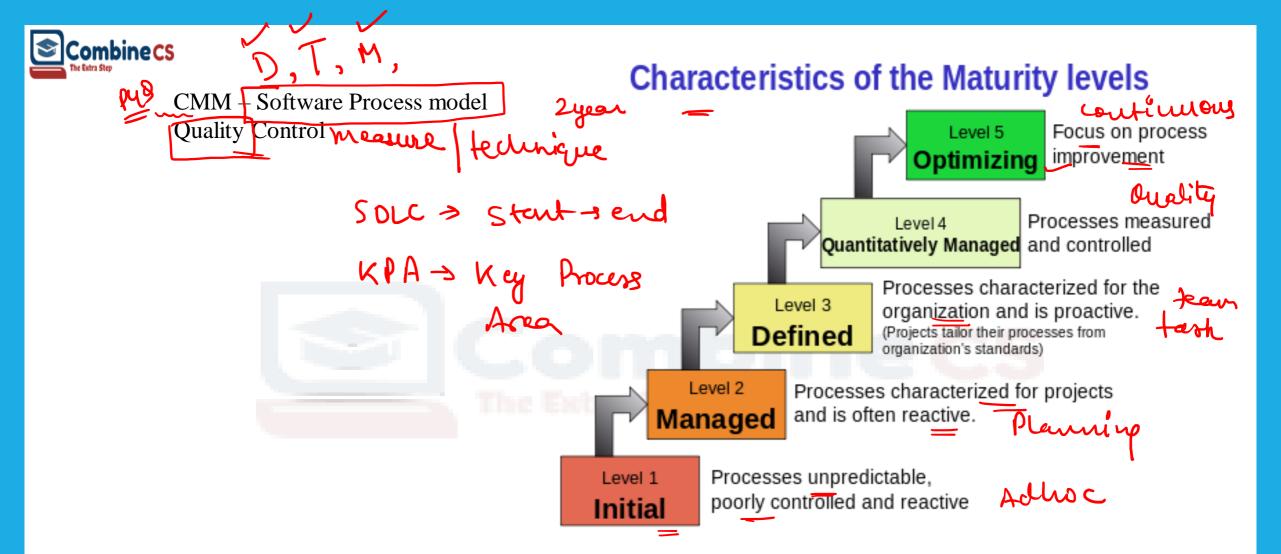
Choose the correct answer from the options given below:

$$(1) A \to D \to E \to C \to B$$

$$(3) B \to E \to C \to D \to A$$

$$(2) \quad A \to E \to D \to C \to E$$

$$(4) \quad B \to C \to E \to D \to A$$





## Q5) Match the 5 CMM Maturity levels/CMMI staged representations in List-I with their characterizations in List-II

codes:

List - I List - II

(i)Processes are improved quantitatively and continually.

(ii) The plan for a project comes from a template for plans.

(c)Defined plan uses processes that can be measured quantitatively.

(iv)There may not exist a plan or it may be abandoned.

**३**(v)There's a plan and people stick to it.

(d)Managed

(e)Optimizing





## Q5) Match the 5 CMM Maturity levels/CMMI staged representations in List-I with their characterizations in List-II

List - I

codes:

Adhoc (a) <u>Initial</u>

(b)Repeatable

O recuize (c) Defined

Oky Oy (d) Managed

(e)Optimizing

List - II

- (i)Processes are improved quantitatively and continually.
- (ii) The plan for a project comes from a template for plans.
- (iii)The plan uses processes that can be measured quantitatively.
- (iv)There may not exist a plan or it may be abandoned.
- (v)There's a plan and people stick to it.







#### Match List I with List II

With reference to CMM developed by Software Engineering Institute (SEI)



#### List I

List II

Process measurement

- (A) INITIAL
- (B) REPEATABLE
- (C) DEFINED
- (D) MANAGED

- (II) Process definition
- (III) Project management
- (IV) ADHOC

Choose the correct answer from the options given below:

- (1) A-III, B-IV, C-II, D-I
- (2) A-IV, B-III, C-I, D-II
- (3) A-IV, B-III, C-II, D-I
- (4) A-III, B-IV, C-I, D-II







Match List I with List II

2020

With reference to CMM developed by Software Engineering Institute (SEI)

List I

- A) INITIAL
- (B) REPEATABLE
- (C) DEFINED
- (D) MANAGED

Process measurement

List II

Process definition

(III) Project management

(IV) ADHOC

Choose the correct answer from the options given below:

- (1) A-III, B-IV, C-II, D-I
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- (3) A-IV, B-III, C-II, D-I
- (4) A-III, B-IV, C-I, D-II



Sys duality
Re-engineering – legacy, poor documented software.

- <u>5 steps</u> 3 949
- Source code translation L



- Program Structure Implementation
- Program modular
- Data-Reengineer







## McCall Software Metrics

- 1. Audit
- 2. Accuracy  $\checkmark$
- 3. Conciseness
- 4. Completeness  $\smile$
- 5. Consistency

6. RTO (Revision, Transition, Operation)





SLO Metric SCM Loufignation

40 Reliability 1. Version / change control

- Audit
- Report
- Synchronize
- Project Forking
- 6. Syntax highlighting (not included)







Q Given below are two statements:

Statement I: Quality control involves the series of inspections, reviews and tests used throughout the software process, to ensure each work product meets the requirements placed upon it.

Statement II: Quality assurance consists of auditing and reporting functions of management.

In the light of the above statements, choose the correct answer from the options given below

- (1) Both Statement I and Statement II are true
- (2) Both Statement I and Statement II are false
- (3) Statement I is correct but Statement II is false
- (4) Statement I is incorrect but Statement II is true.





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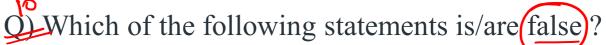
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P: The clean-room strategy to software engineering is based on the incremental software process model.

Q: The clean-room strategy to software engineering is one of the ways to overcome "unconscious" copying of copyrighted code.



- Neither P & Q
- Only P
- Only Q







P: The clean-room strategy to software engineering is based on the incremental software process model. T

Q: The clean-room strategy to software engineering is one of the ways to overcome "unconscious" copying of copyrighted code.

- 1. Both P & Q
- 2. Neither P & Q
- 3. Only P
- 4. Only Q







The cleanroom software engineering process is a software development process intended to produce software with a certifiable level of reliability.



The focus of the cleanroom process is on defect prevention, rather than defect removal.

The Cleanroom approach to software development is based on five key strategies:

- 1. Formal specification,
- 2. Incremental development,
- 3. Structured programming,
- 4. Static verification, and
- 5. Statistical testing of the system.

So, none given statements are false.









Q)Which of the following is not a key strategy followed by the clean room approach to software development?

- 1. Formal Specification
- 2. Dynamic Verification
- 3. Incremental Development
- 4. Statistical testing of the system





Q)Which of the following is not a key strategy followed by the clean room approach to software development?

FIS

- 1. Formal Specification
- 2. Dynamic Verification
- 3. Incremental Development
- 4. Statistical testing of the system





### **Models**



- 1. Classical Waterfall Model: No Feedback, also called as free fall approach, cannot be used in practical project development / complex situations / real time environment.
- 2. Iterative Waterfall Model: (Waterfall + Feedback), suitable only for well-understood problems and is not suitable for the development of very large projects and projects that suffer from a large number of risks. (Till now NO customer involvement).
- 3. Prototyping Model: Customer involvement + Risk factor (but Risk must be identified before the project starts)
- 4 Incremental Linea<u>r S</u>equential + Prototype
- 5. The first increment is often a core product where the basic requirements are addressed, & supplementary features are added in next iteration.
- Evolutionary Model: widely used in object-oriented development projects, suitable for large projects which can be decomposed into a set of modules for incremental development and delivery. This model is only used if incremental delivery of the system is acceptable to the customer.
  - Continuous refinement & most suitable when requirements are not clear. Immediate feedback to developers from customer
  - **Disadvantage** difficult to plan how long time it will take in development.





1. Spiral Model: meta-model (waterfall + iterative + prototype + evolution), Flexibility and Risk, suitable for the development of technically challenging and large software that is prone to various risks that are difficult to anticipate at the start of the project. But this model is more complex than the other models.

2. Provide early & frequent feedback.

PUB

3. Not suitable for small projects.4. Risk analysis requires highly skilled expertise.

**5.** RAD Model is Rapid Application Development model. It is a type of incremental model. In RAD model the components or functions are developed in parallel as if they were mini projects. The developments are time boxed, delivered and then assembled into a working prototype.

6. RAD model enables rapid delivery as it reduces the overall development time due to the reusability of the components and parallel development. RAD works well only if high skilled engineers are available and the customer is also committed to achieve the targeted prototype in the given time frame. (Drawback)

**Agile model adopts (Iterative + incremental) development.** 

Must 2020





O) The \_\_\_\_ model is preferred for software development when the requirements are not clear. (UGCNET June 2016) Recut

- A. Rapid Application Development
- **B.** Rational Unified Process
- c. Evolutionary Model
- D. Waterfall Model





Customer

increment

- Q) The \_\_\_\_ model is preferred for software development when the requirements are not clear. (UGCNET June 2016)
- x Rapid Application Development (Used Req. clear)
- **B.** Rational Unified Process
- Evolutionary Model
- \* Waterfall Model \_ ( User reg. complete)

Option A & D:--RAD & Waterfall model is used when the requirement are crystal clear.

C. Evolutionary Model:-When the requirements are not fully clear. i.e. spiral model.





## Types of Agile Process Model

- 1) Agile Scrum Methodology.
- 2) Lean Software Development.
- 3) Kanban
- **Extreme Programming (XP)**
- 5) Crystal clear
- Dynamic Systems Development Method (DSDM)
- 7) Feature Driven Development (FDD)
- **ASD** (Adaptive Software Development)







SE3 Playlist

auile

) - \ (O a A

Scrum – Sprint, backlog, product owner, week

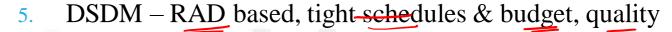
2. XP - CRC (Class-responsibility-collaboration) Condy

Steps – Code review > Testing > Incremental Development > Design > Testing • 0 •



3. FDD - <action> < result> < object> feature

ASD – CLS (Collaboration, Learning, Speculation)



- 6. Kanban sticky notes (work in progress)
- 7. Lean Just in time
- 8. Crystal chartering, cyclic delivery



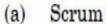




Match the Agile Process models with the task performed during the model:

#### List I

List II



i) CRC cards

- (b) Adaptive software development
- (ii) Sprint backlog

(c) Extreme programming

(iii) <action> the <result> <by/for/of/to> a(n) <object>

(d) Feature-driven development

(iv) Time box release plan

Choose the correct option from those given below:

- (1) (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii)
- (2) (a)-(i), (b)-(iii), (c)-(ii), (d)-(iv)
- (3) (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii)
- (4) (a)-(i), (b)-(iv), (c)-(ii), (d)-(iii)





Match the Agile Process models with the task performed during the model:

#### List I

- Scrum (i) CRC cards
- b) Adaptive software development (ii) Sp
- (c) Extreme programming

(a)

- (ii) Sprint backlog
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List II

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04

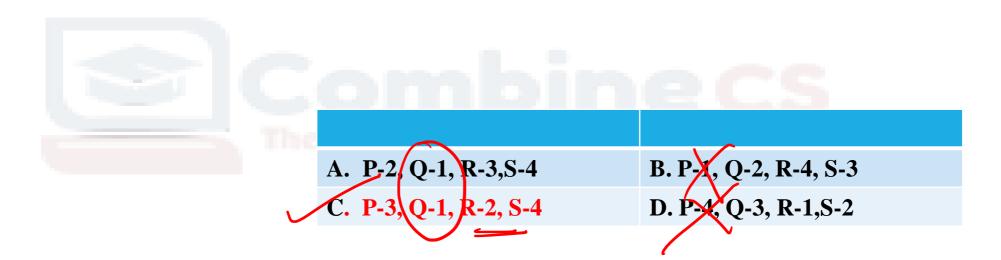
(P) Cleanroom software engineering	(1)Uses CRC Cards
(Q) Extreme Programming	(2) Speculation, Collaboration, learning
(R) Adaptive Software Development	(3) Variation of Formal Methods Model
(S)Dynamic Systems Development Method	(4)Meet tight time constraints







(P) Cleanroom software engineering	(1)Uses CRC Cards
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(R) Adaptive Software Development	(3)Variation of Formal Methods Model
(S)Dynamic Systems Development Method	(4)Meet tight time constraints







fealtre

assignment

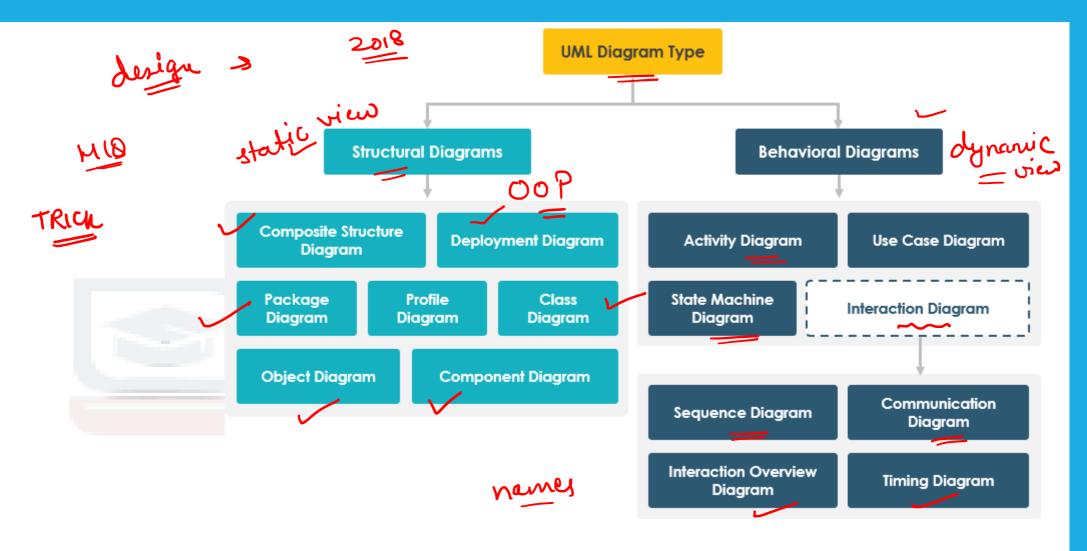
types

Drawback of Agile process model















**Behavioral UML diagrams** 

Class diagram
Package diagram
Object diagram
Component diagram
Composite structure diagram
Deployment diagram

Activity diagram
Sequence diagram
Use case diagram
State diagram
Communication diagram
Interaction overview
diagram
Timing diagram





916

Match each UML diagram in List I to its appropriate description in List II.

#### List I

#### List II

- (a) State Diagram
- Describes how the external entities (people, devices) can interact with the system.
- (b) Use-Case Diagram (ii) Used to describe the static or structural view of a system.
- (c) Class Diagram
- (iii) Used to show the flow of a business process, the steps of a use-case or the logic of an object behaviour.
- (d) Activity Diagram
- (iv) Used to describe the dynamic behaviour of objects and could also be used to describe the entire system behaviour.

Code:

$$(a)$$
- $(iv)$ ,  $(b)$ - $(i)$ ,  $(c)$ - $(ii)$ ,  $(d)$ - $(iii)$ 





Match each UML diagram in List I to its appropriate description in List II.

List I

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Code:

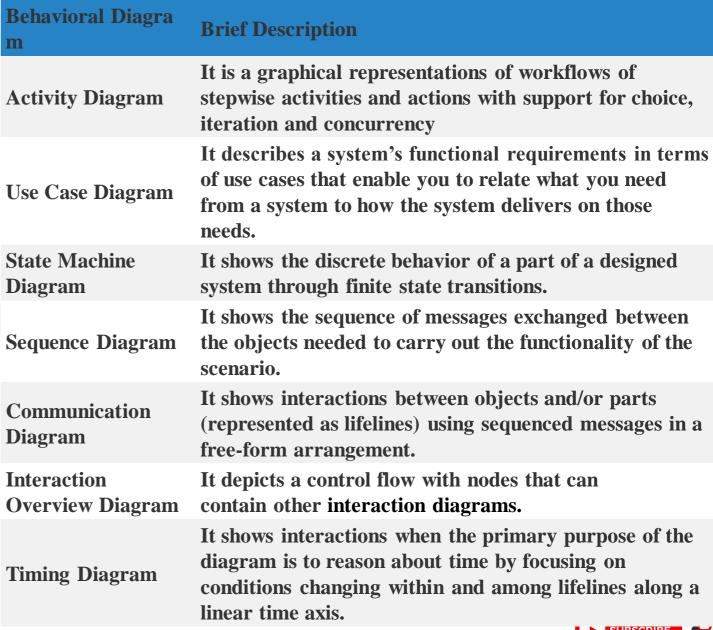




<b>Structural Diagram</b>	<b>Brief Description</b>
Composite Structure Diagram	It shows the internal structure of a classifier, classifier interactions with the environment through ports, or behavior of a collaboration.
Deployment Diagram	It shows a set of nodes and their relationships that illustrates the static deployment view of an architecture.
Package Diagram	It groups related UML elements into a collection of logically related UML structure.
<b>Profile Diagram</b>	
Class Diagram	It shows a set of classes, interfaces, and collaborations and their relationships, typically, found in modeling object-oriented systems.
Object Diagram	It shows a set of objects and their relationships, which is the static snapshots of instances of the things found in class diagrams.
Component Diagram	It shows a set of components and their relationships that illustrates the static implementation view of a system.













Which of the following UML diagrams has a static view?

- (1) Collaboration diagram Duanic (2) Use-Case diagram
- (3) State chart diagram fyranic (4) Activity diagram fyranic







Which of the following UML diagrams has a static view?

- (1) Collaboration diagram
- (3) State chart diagram

- (2) Use-Case diagram
- (4) Activity diagram







**A-1**, B-4, C-3, D-2

ii. A-4, B-2, C-1, D-3

iii.A-4, B-1, C-2, D-3 iv.A-1, B-4, C-2, D-3

1	_	List-I		List-II
	(a)	State	i	Describes how the external entities (people, devices) can
		Diagram		interect with the System
	(b)	Use Case	ii	Used to describe the static or structural view of a system
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i. A-1, B-4, C-3, D-2
ii. A-4, B-2, C-1, D-3
iii. A-4, B-1, C-2, D-3
iv. A-1, B-4, C-2, D-3

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	Diagram		could also be used to describe the entire system behaviour





To create an object-behavioral model, the analyst performs the following steps:

new

(A) Evaluates all use-cases

Lowept

- (B) Builds state transition diagram for the system.
- (C) Reviews the object behaviour model to verify accuracy and consistency
- (D) Identifies events that do not derive the interaction sequence.

Choose the correct answer from the options given below:

(1) (A), (B) and (C) only

(2) (A), (B) and (D) only

(3) (B), (C) and (D) only

(4) (A), (C) and (D) only



Concept To create an object-behavioral model, the analyst performs the following steps:

Complex, Real

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FP - Size measure

VAF - 14

omasa)





















FAST TRACK REVISIO

Artificial Intelligence

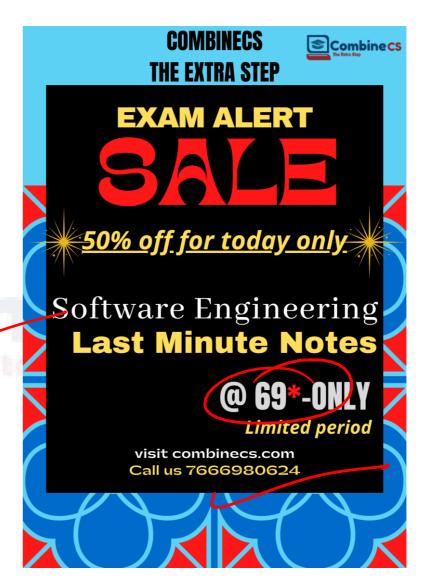
महत्वपूर्ण MCQ will boost your performance...







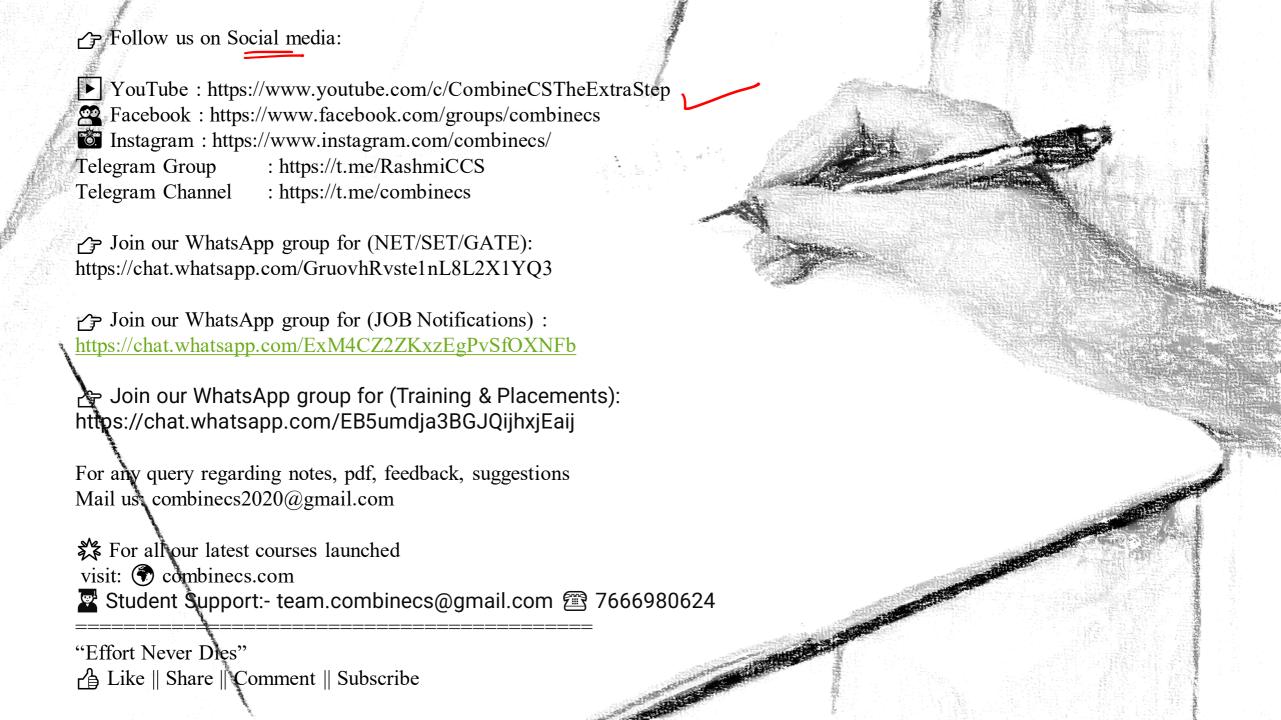
AI LMN
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# Thankyou

Post your doubts in comment section.

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any doubt