Software Engineering Question Bank

Unit -1

INDICATE ASSIGNMENT QUESTIONS

Short Answer Questions (SAQ):(2,3, and 5 marks questions)

1) Define Software Engineering. What is its importance? Ans: See Page 53 **(IMP)**
2) What is Legacy Software? Ans: Page 42
3) Give a representation of process framework? (or)
   What is process framework? What is its application? Ans: Page 54-55 **(V. IMP)**
4) What is an Agile Process? List its Advantages. Ans: Page 106 **(IMP)**
5) Why is software engineering said to be a layered technology? Ans: Page 53 **(IMP)**
6) Distinguish between Incremental &Evolutionary Process models? Ans: Page 80, 83
7) What are Prescriptive process models? Ans: Page 78 **(IMP)**
8) How are process and product related? Ans: Page 72-73**(IMP)**
9) What is Extreme Programming? How it is useful? (or)
   What is XP agile process model? Ans: Page 110-113 **(IMP)**
10) Explain Capability Maturity Model (CMM)? (or) Ans: Page 59,74
    What is Software Process Capability? How is CMM framework useful for it? **(IMP)**
11) Briefly explain the Software Types and its application domains. Ans: Page 40-41
12) Describe the Basic Phases of Software Development. (or)
    What are the five generic framework activities? Ans: Page 56
13) What is Agility? Ans: Page 105
14) Define Use-Case? Ans: Page 96,191,218,367 **(IMP)**
15) Define the following terms
    a) Engineer b) Engineering c) S/W Engineering
16) Name various S/W Process models with Example projects.
    Ans: See side headings of chapter 3&4 process models
17) What is Agile Modeling? Ans: Page 121
18) What is the difference between a unified process phase and unified process workflow?

Ans: Page 96,98

19) As you are more outward along the process flow path of the spiral model, what can you say about the S/W that is being developed or maintained? Ans: Page 86,87

20) What are the three fundamental problems that S/W Engineering faces?
Ans: Page 106 section 4.2

21) What are the basic advantages of Spiral model? Ans: Page 87

22) How do process models differ from one another? Ans: Page 58

23) What is a Process Pattern? Ans: Page 63 **(IMP)**

24) What is Process Assessment? Ans: Page 66

25) What formal techniques are available for assessing the S/W process? Ans: Page 66-67

26) What framework activities are used during PSP? Ans: Page 69 **(IMP)**

27) Explain PSP & TSP? Ans: Page 68,70 **(IMP)**

28) What is Process Technology? Ans: Page 71

29) What are the disadvantages of Waterfall Model? Ans: Page 79,80

30) What is formal methods model? Why they are not widely used? Ans: Page 92

31) What is Unified Process? Ans: Page 94

32) What is Pair Programming? Ans: Page 112

33) What are the characteristics of ASD adaptive cycles? Ans: Page 114,115

34) What is an Agile Process? How it is different from traditional sequential process?
Ans: Page 106 **(IMP)**

Long Answer Questions (LAQ):

1) Discuss the traditional Waterfall model in detail? Ans: Page 79-80 **(IMP)**

2) What is the importance of Process Framework? What are the SEA's that are populated in each Framework Activity? (or)
Explain the S/W Engineering process and its activities? Ans: Page 54-58**(V.IMP)**

3) What is Unified Process? Explain the various phases in it? Ans: Page 94-99 **(IMP)**

4) What do various levels of CMM represent? What are the key Process Areas associated with each level of CMM? Ans: Page 59-63

5) What is Spiral and Win-Win Spiral Model? Ans: Page 86-88 and page 158(book2)

6) Briefly discuss any three S/W development lifecycle models & bring out their advantages and disadvantages. Ans: Page 79-99 any three

7) Discuss Prototyping –Based development Model by bringing out its advantages and disadvantages. Ans: Page 83-85

8) Explain various Specialized Process Models with example? Ans: Page 91-93

9) Discuss any three Agile Process Models? Ans: Page 109-122 any three **(V.IMP)**

10) Explain about

i) RAD Ans: Page 81-83 ii) Concurrent Development Model Ans: Page88-89

- All Ans from SE Roger Pressmann six edition

Software Engineering Question Bank

Unit -2

INDICATE ASSIGNMENT QUESTIONS

Short Answer Questions (SAQ): (2,3 and 5 Marks Questions)

1) What is software engineering practice? Why it is important?
2) Outline the essence of software engineering practice?
3) List the core principles of software engineering practice?
4) What questions must be asked and answered to develop a realistic project plan? (or) Explain about W5HH principle?
5) What are the design principles?
6) What are the Analysis principles?
7) What are the coding principles?
8) What are the testing principles?
9) What are the objectives of software testing?
10) What are the deployment principles?
11) What are the elements of a computer based system
12) What is system engineering? Why is it important?
13) What does a system engineering model accomplish?
14) What architectures are defined and developed as part of business process engineering?
15) Why is Requirements Elicitation said to be difficult? Ans: Page 177 **(IMP)**
    (or) Write short notes on elicitation (or) What do you mean by Requirements Elicitation? What techniques are used by the engineers in this phase?
16) What is Quality Function Deployment (QFD)? Ans: Page 188 **(V.IMP)**
17) What is the importance of Validating Requirements? Ans: Page 203
18) What is Collaborative Requirements Gathering? Enlist the guidelines for it? **(IMP)**
    Ans: Page 185
19) What are the basic questions that must be asked to develop a realistic project plan?
    Ans: Page 183
20) What information is produced as a consequence of Requirements Gathering?
    Ans: Page 190
21) What are the basic sets of questions to be asked in order to develop an effective Use-Case? Ans: Page 192
22) What is Analysis Patterns? Explain its standard template? Ans: Page200
23) How to Negotiate Requirements? Mention its various activities? Ans: Page 201-202
24) List the various tasks of Requirement Engineering? **(V.IMP)**
    Ans: Page 176-180 (7.2.1 to 7.2.7 Names)
25) Specifically bring out the difference between Analysis and Design? **(V.IMP)**

Ans: Page 208-209

26) Why do we use CPM (Critical Path Method)? **(IMP)**
27) What does the requirements engineer do in the requirements elaboration phase? **(IMP)**
28) Derive the relation between people and lines of communication in a project.**(IMP)** Ans: Page 123(Book2)
29) What is Requirements Management?

Long Answer Questions (LAQ):

1) List the various tasks involved in Requirement Engineering. Explain about each task in short. (Or)
   List and explain the activities related to Requirement Engineering? Ans: Page 176-181 **(V.IMP)**
   What are requirements engineering tasks? Explain validating requirements.
2) What are the seven core principles that focus on software engineering practice as a whole? Briefly explain (or) Explain the core principles of Software engineering practice. (V.IMP)
3) Discuss any five principles of communication.
4) Explain the various principles to be used for planning practice.
5) Explain the various principles to be used for modeling practice.
6) Explain the various principles to be used for design practice.
7) Discuss any five principles of coding. What are the various things that have to be kept in mind before writing the code?
8) Explain about the various testing principles
9) Explain about the various Deployment principles
10) Explain the system engineering process and its activities? (or) Explain the system engineering hierarchy**(IMP)**
11) Explain the Business process Engineering hierarchy
12) Explain the Product engineering hierarchy
13) Explain Hatley-Pirbhai modeling with an example.
14) How to initiate the Requirement Engineering Process? Ans: Page 181-184
15) List various requirements engineering tasks. Explain about inception in detail.
16) What is requirements engineering? Explain about elicitation in detail.

- All Ans from SE Roger Pressmann six edition

Software Engineering Question Bank

Unit -3

INDICATE ASSIGNMENT QUESTIONS

Short Answer Questions (SAQ):(2,3, and 5 marks questions)

1) List the elements of Class Diagram? Ans: Page212 & 234 Name, attributes and Operations**(V.IMP)**
2) What do you understand by the term 'Design Quality'? Ans: Page 262 **(IMP)**
3) How do analysis classes manifest themselves as elements of the solution space? Ans: Page 234 **(IMP)**
4) What are the characteristics of a good design? (or) In an interactive system being designed, what types of characteristics should it show.
   (or) List the goals of good design Ans: Page 262 **(V.IMP)**
5) Are stepwise refinement and refactoring the same thing? If not, how do they differ? Ans: Page 269-270**(IMP)**
6) What is the importance of pattern and framework? Ans: Page 280-281 **(IMP)**
7) Describe the difference between an Association and a Dependency for an analysis class? Ans: Page 246-247 **(IMP)**
8) Differentiate between analysis model and design model? Ans: Page 208-209 **(IMP)**
9) Write short notes on i) modularity Ans: Page 267 ii) Functional independence iii) information hiding?Ans: Page 268-269 **(IMP)**
10) Give an example of Use-Case Diagram. Ans: Page 170 & 195
11) Give an example of Swim-lane Diagram. Ans: Page 225
12) Write short notes on i) Cardinality ii) Modality (or) Differentiate between cardinality and modality. Ans: Page 215-216 **(IMP)**
13) How do you determine whether a potential class should become an analysis class? Ans: Page 235 **(IMP)**
14) Write short notes on CRC modeling. Ans: Page 240 **(V.IMP)**
15) What is a stereotype? Ans: Page 246

16) What guidelines can be applied for allocating responsibilities to classes?

Ans: Page 241-242

17) What type of classes does the designer create? Ans: Page 271 **(IMP)**

18) What is a well formed Design Class? Ans: Page 272 **(V.IMP)**

19) What is data modeling? What is its importance Ans: Page 281 **(V.IMP)**

20) What is a Context Level DFD? Ans: Page 226-227

21) What are the design principles?

22) How do module and sub-system related to product design?

23) What does a state diagram represent?**(IMP)**

24) Differentiate analysis and design classes using an example. **(IMP)**

25) Define abstraction**.(IMP)**

Long Answer Questions (LAQ):

1) Discuss the various Analysis Modeling approaches in detail? Ans: Page 211-252 **(V.IMP)**

(or)

What are analysis modeling approaches? Explain flow oriented modeling.

2) What are Design Classes? What are the four characteristics of a well formed Design class? Ans: Page 271 & 272 **(V.IMP)**
3) What does Behavioral model indicate? What are the steps that analyst must perform to create the model? (or) How to create a behavioural model? Explain about the state representations.Ans: Page 248-252 **(IMP)**
4) Briefly explain the guidelines for Flow oriented modeling with a simple example? Ans: Page 226-232 **(V.IMP)**
5) What are the Quality attributes and Quality guidelines of a good design?

Ans: Page 263-264& 262 **(IMP)**

6) Briefly discuss about Design process and Design Quality. Ans: Page 261-264
7) What is Pattern based software design? Describe any two patterns known to you in addition to a General pattern template? Ans: Page 280-282
8) What are the activities and objectives of a design process? Ans: Page 261-264

9) Discuss Class based modeling with an example. Ans: Page 233-248 **(V.IMP)**

10) Briefly discuss each of the elements of an analysis model. Indicate what each contributes to the model, how each is unique & what general information is presented by each? Ans: Page 212 & explain about each

11) Explain the process of translating the analysis model into design model? Ans: Page 259-261 **(IMP)**

12) Explain the design model.

13) Explain Scenario- Based modeling concepts with an example? Ans: Page 218-225 **(V.IMP)**

14) Discuss Class based modeling and behavioral modeling concepts.

15) Explain in detail about the CRC modeling.

16) Explain design concepts.(or) Discuss the following design concepts i) modularity ii)refinement iii)Refactoring **(IMP)**

- All Ans from SE Roger Pressmann six edition

Software Engineering Question Bank

Unit -IV

INDICATE ASSIGNMENT QUESTIONS

Short Answer Questions (SAQ):(2,3, and 5 marks questions)

1) What is Software Architecture? Ans: Page 287-288**(IMP)**
2) List the Golden Rules of User Interface Design? Ans: Page 357-361**(V.IMP)**
3) What is the importance of Coupling in Component Level Design? (or) Define coupling. List various types of coupling. Ans: Page 337-338**(V.IMP)**
4) What are the mechanisms that can be used to learn what the user wants from the user interface? Ans: Page 365-366
5) What are the uses of Transform Mapping and Transaction Mapping? **(IMP)**
   Ans: Page 309,315-316
6) What is the importance of identifying cohesion between the modules in Component Level Design? Ans: Page 335-336**(V.IMP)**
7) What are the User Interface Design rules? Discuss the techniques for evaluation of User Interface? Ans: Page 357,381-382
8) Differentiate between Cohesion and Coupling? Ans: Page 335-338**(V.IMP)**
9) Differentiate between Software Architecture and Software Design?
   Ans: Page 259-260,287-288
10) What is OCL (Object Constraint Language)? Ans: Page 345-346
11) Why are control components necessary in Conventional software & generally not required in Object Oriented Software? Ans: Page326-328
12) What are the characteristics of good error message have? Ans: Page 379**(IMP)**
13) Differentiate between the terms Architectural Style, Architectural Pattern & Framework? Ans: Page 291,292& 281**(IMP)**
14) Briefly explain about Decision Table? Ans: Page 349-350
15) Discuss the importance of Software Architecture? Ans: Page 288**(IMP)**
16) What is an Architectural Style? Ans: Page 291-292 **(IMP)**
17) Explain how systems interoperate with each other? Ans: Page 299**(IMP)**
18) Define Archetype? Ans: Page 300**(IMP)**
19) Explain about Transform flow and Transaction Flow?(or) What is transform mapping? Ans: Page 308 **(IMP)**
20) Explain about PDL (Program Design Language)? Ans: Page 350-351
21) What do we need to know about the environment as we begin UI design?
    Ans: Page 364

22) How do we determine the format and aesthetics of content display as part of the UI? Ans: Page 372
23) What is a Component? Explain the various views of Component Level Design? Ans: Page 325-330
24) Write Short notes on i) Graphical Design Notation ii) Tabular Design Notation Ans: Page 348-349
25) Discuss mapping data flow into software Architecture.
26) What is the purpose of Data design? **(IMP)**
27) Write short notes on call and return architectural style. **(IMP).**

Long Answer Questions (LAQ):

1) Explain the various Architectural Styles in Detail? (or) Explain various architectural styles and patterns in detail. Ans: Page 291-295**(V.IMP)**
2) How can the various mechanisms for assessment be used in identifying the most suitable Architectural Design? Ans: Page 304-307**(IMP)** or
   What are the approaches useful for assessment of alternative Architectural Design? Ans: Page 304-307
3) Distinguish between the following architectural styles with examples
   i) Data Centered Architecture ii) Data Flow Architecture iii) Layered Architecture
   Ans: Page 291-295
4) Explain the process of converting or mapping Data Flow (Diagrams) into Software Architecture? Ans: Page 307-319**(V.IMP)**
5) Explain the difference between cohesion and coupling? Also discuss their different types with examples. Ans: Page 335-338**(IMP)**
6) Explain the concept of Layered Architecture with an example? Ans: Page 294-295
7) Write short notes on i) Data design at architectural level ii) Data Design at Component level. Ans: Page 289-291
8) i) Define Archetypes? And how to refine architecture into components? Ans: Page 300-302**(IMP)**
   ii) With the help of a diagram explain how instantiation of the architecture can be developed Ans: Page 303**(IMP)**
9) Describe the steps involved in conducting Component Level Design with an example? Ans: Page 339-345
10) Explain in detail the Interface Analysis & Design Models? Also discuss the phases of User Interface Design process? Ans: Page 362-365
11) What are the steps involved in Interface Design & how to implement these steps? Ans: Page 373-375

12) Explain in detail the various design issues associated with User Interface Design? Ans: Page 377-380**(IMP)**

13) Elaborate the Design Evaluation life cycle with a neat diagram? Ans: Page 381-382

14) Explain the various methods of designing conventional components?
Ans: Page 347-352

15) List and explain in short the steps in architectural design process.**(IMP)**

16) Explain the Golden rules performed in user interface design.

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Software Engineering Question Bank

Unit -5

INDICATE ASSIGNMENT QUESTIONS

Short Answer Questions (SAQ):

1) What is software testing? Ans: Page 386-387 **(IMP)**
2) List the metrics for source code. Ans: Page 471 **(IMP)**
3) What are the errors that are commonly found during Unit Testing? Ans: Page 395 **(IMP)**
4) How is Debugging different from Testing? What are the specific goals of debugging? Ans: Page 411-412 **(V.IMP)**
5) What characteristics a good software metric exhibit? Ans: Page 470
6) What is the use of Software Maturity Index (SMI)? Ans: Page 492-493
7) Is Integration testing necessary when all modules have been Unit Tested? Ans: Page 397
8) What is the importance of Black-Box testing? Ans: Page 424,434-435**(V.IMP)**
9) With an example explain Glass Box testing? Ans: Page 424-425**(IMP)**
10) How are verification and validation important individually? (or) Differentiate verification and validation. Ans: Page 388**(V.IMP)**
11) What is Boundary Value Analysis? Ans: Page 438 **(V.IMP)**
12) Why is highly coupled module difficult to unit test? Ans: Page 395-396 & 338
13) What is Unit Testing? Discuss in brief the various issues to be considered in this part of testing strategy? Ans: Page 394-395
14) What do you mean by Quality Software? Discuss a few attributes of quality? Ans: Page 462-463
15) Discuss the Quality factors as proposed by McCall? Ans: Page 463-464**(IMP)**
16) Explain the difference between a Test Stub and a Driver? Ans: Page 396 **(V.IMP)**
17) Define Software Reliability, Maintainability, and Availability? Ans: Page 463-465
18) What is Function Point? How do you compute Function points? Ans: Page 472-475**(IMP)**
19) What is Equivalence Partitioning? Ans: Page 437**(IMP)**
20) What is metric? List/Explain the metrics for Design Model? Ans: Page 471**(IMP)**
21) What is Smoke Testing? Ans: Page 401**(IMP)**
22) Write short notes on OO Design Metrics? Ans: Page 480-481
23) Give specific examples of some metrics that can be used to manage & improve the Software Process? Ans: Page 470-471
24) What is Regression Testing? Ans: Page 401**(V.IMP)**
25) Distinguish between Top-Down and Bottom-Up design approaches for Testing?

Ans: Page 398-400

26) What is the necessity of different levels of Testing? Ans: Page 390

27) Write short notes on Integration Testing? Ans: Page 397

28) What is Stress Testing? Ans: Page 409

29) What is Recovery Testing? Ans: Page 409

30) What is Performance Testing? Ans: Page 410

31) List out ISO 9126 Quality Factors? Ans: Page 464**(IMP)**

32) Describe the various consequences of correcting the error? Ans: Page 416

33) What is the overall strategy for S/W testing? Ans: Page 390**(V.IMP)**

34) What are the guidelines for a good S/W testing strategy? Ans: Page 393

35) What is Sandwich Testing? Ans: Page 403

36) What are the characteristics of Testability? Ans: Page 421-422

37) What are the characteristics for a good test? Ans: Page 422-423

38) What is Cyclomatic Complexity? How to compute it? Ans: Page 427-428**(V.IMP)**

39) What is Flow Graph? Ans: Page 425-426

40) What is a Graph Matrix? How it is useful? Ans: Page 431

41) What questions does Black-Box testing answer? Ans: Page435

42) How do you define Equivalence Classes for testing? Ans: Page 437

43) Explain Fault-Based Testing and Scenario-Based Testing? Ans: Page 443-444**(IMP)**

44) What Testing options are available at the Class level? Ans: Page 447-448

45) What types of tests are conducted for Client/Server Systems? Ans: Page 453

46) How should we assess the Quality of proposed S/W metric? Ans: Page 470

47) What characteristics are measured when assessing an OO Design? Ans: Page 480

48) What is the advantage of Function Point software metric? Ans: Page 472

49) Explain about Alpha & Beta Testing? Ans: Page 407**(V.IMP)**

50) What is a Critical Module? Why should we identify it? Ans: Page 403**(IMP)**

51) What is equivalence testing?

52) What are the different size metrics?

53) "Software maintenance is very essential". Justify.

54) Write short notes on debugging.**(IMP)**

55) What metrics can be used for source code evaluation?

56) There exist various metrics for software? What characteristics should a good software metric exhibit.

57) Write short notes on basis path testing.

58) When is software said to be testable? **(IMP)**

59) Define software Quality **(IMP)**

60) Write short notes on Metrics for Analysis model.**(IMP)**

61) Write short notes on Metrics for maintenance.

62) Define measure and metric.

63) Write short notes on system testing.

Long Answer Questions (LAQ):

1) Write Short notes on a) Black-Box Testing (or) Behavioral Testing b) White-Box (or) Glass –Box testing. Ans: Page 423-441**(V.IMP)**
2) Explain the Framework Elements of Product Metrics? Ans: Page 466-471**(IMP)**
3) Explain a suitable overall strategy for S/W testing for conventional S/W architectures? Ans: Page 394-403**(V.IMP)**
4) What is an effective strategy for testing a Real-Time system? Ans: Page 454-455
5) What do Regression and Smoke Testing try to uncover? Explain? Ans: Page 401-402**(IMP)**
6) Briefly explain the different kinds of metrics that are useful for testing? Ans: Page 470-493**(V.IMP)**
7) Explain about the testing methods applicable at the Class level? 447-448
8) What is meant by structural complexity of a program? Write a metric for measuring the structural complexity of a program? 477-478
9) Distinguish between S/W testing methods Black Box & White Box testing with Example? 423-441**(IMP)**
10) Describe various methods devised for Object-Oriented testing? (or) List few testing strategies for object-oriented software. Ans: Page 442-446
11) Write & explain various metrics used for the Design Model? Ans: Page 477-489
12) Explain the concept of Basis Path testing in detail with the help of an example? Ans: Page 425-430**(V.IMP)**
13) a) Discuss the concept of Goal-Oriented S/W Measurement? Ans: Page 468-469
    b) Discuss the concept of Halstead Metrics applicable to testing? Ans: Page 491
14) List and Explain the metrics used for Testing & Maintenance? Ans: Page 491-493
15) Explain the difference between Conventional and Object-Oriented testing strategies? Ans: Page 390-392
16) What are the different levels of testing? What are the advantages of having such different levels of testing? Explain with examples? Ans: Page 390-391**(IMP)**
17) Explain about testing for Specialized Environments, Architectures & Applications? Ans: Page 452-455**(IMP)**
18) Explain testing methods used for Inter Class test case design? Ans: Page 449-451
19) Explain various Debugging Tactics? Ans: Page 414-415

20) Consider an ATM with the following Banking Capabilities: Deposit, Withdraw, and Payment for credit card mortgage payments and transfer of funds. Estimate the Function Points needed for implementation of such an ATM with Average Complexity?
Ans: See Page 472-475 for help in solving

21) Discuss size oriented metrics and also explain about software reliability and availability.

22) Explain in detail incremental integration testing and its kinds. (or) Briefly write about top-down and bottom-up integration testing. **(IMP)**

23) Explain in detail about white box testing along with a Flow Graph Notation example.**(IMP)**

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