1. **Introduction, Software Processes, Requirements Engineering**

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| **Sl. No** | **Question** | **Appeared In VTU QP Month/Year** |
| 1 | Explain the need for requirements elicitation and  analysis? Explain the different process activities involved**.[10M]** | Dec 09/10 |
| 2 | Explain Boehm’s spiral model**[10M]** | Dec 09/10 |
| 3 | With an example, explain the functional and non-  functional requirements **[10M]** | Dec 09/10  May/June 2010 |
| 4 | Explain the requirements engineering process with a neat block diagram. **[4,6,10,12M]** | Dec 10 May/June  2010,12,13 |
| 5 | Describe 4 different types of non-functional requirement, which may be placed, on the systems. Give examples of each of these types of  requirements**[10M]** | Dec 10  July15 |
| 6 | Describe the salient features of spiral model of software process, with an illustration diagram | Dec 10  Jan15 |
| 7 | What is requirement elicitation and analysis?  Explain**[4M]** | Dec 10  July16 |
| 8 | Explain waterfall model**[5M]** | June/July 2010,16 |
| 9 | During the requirements validation process, what are the different types of checks to be carried out on the requirements in the requirements document. Also what are the requirements validation techniques, which can be used in conjunction or  individually.[ **10M**] | June/July 2010 |
| 10 | Why requirements need to be validated? Explain  the check made in requirement validation[**6M**] | May/June 2010 |
| 11 | Explain the requirements elicitation and analysis phase, with spiral diagram. Give reasons why is it difficult phase in requirements engineering process. **[8M]** | May/June 2010 |
| 12 | Explain the IEEE standard format for requirement documentation [ **6,10,8M]** | June/ July 13,16, Dec 2010, Dec 13/  Jan 14, |
| 13 | Explain briefly the requirements discovery[**10M]** | Dec 14/Jan 15 |
| 14 | With appropriate block diagram, explain briefly the requirement engineering process or  software specification activities[**6M**] | Dec 14/Jan 15 |
| 15 | Distinguish between functional and non-functional  requirements with example.[ **4,6M]** | June/July 15,16 |

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| 16 | Explain requirement validation. [**10M]** | Dec 13/ Jan 14 |
| 17 | Write short notes on Ethnography[ **4M ]** | June/ July 2016 |
| 18 | Distinguish between functional and non-functional requirements. With a block diagram  Explain non-functional requirement types.[**10M]** | Dec 2012 |
| 19 | Explain the metrics for specifying non-functional requirements [ **6M]** | June/July 13 |
| 20 | What are professional and ethical responsibility of  software engineering[ **5M ]** | June 2012 |
| 21 | Define software Engineering. Explain the different  types of software products.[**6M]** | June 2012 |
| 22 | Answer the following frequently asked questions about software engineering   1. Difference between software engineering and system engineering 2. What is a software process model 3. What are key challenges facing software engineering **[6M]** | June/July 2014 |
| 23 | What are the attributes of good software. Explain  **[6M]** | Dec 09/ Jan 10, Dec  13/ Jan 14 |

1. **System Models, Design And Implementation**

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| **Sl. No** | **Question** | **Appeared In VTU QP Month/Year** |
| 1 | Explain any 2 types of object models in  detail[**8M]** | June / July 2015 |
| 2 | Explain state machine model of microwave oven[**6M]** | June/ July 2015 |
| 3 | Explain structured methods [**10M]** | Dec 13 / Jan 14 |
| 4 | Give state diagram for weather station[**10M]** | Dec 13 / Jan 14 |
| 5 | Explain data flow model with an example of  insulin pump[ **8M]** | June / July 16 |
| 6 | Define object model and explain object  aggregation[**4M]** | June / July 16 |
| 7 | List the proposals made about how to identify  object classes[**4M]** | June / July 15 |
| 8 | With figure explain the phases of RUP[**5M]** | June / July 15, May  / June 2010 |
| 9 | Write short notes on   1. Context models 2. Structural models [**10M]** | Dec 2012 |
| 10 | Explain the terms:   1. Unified Modeling language 2. Sequence models [**10M]** | Dec 2012 |
| 11 | Describe rational unified process with a block  diagram [**9M ]** | June / July 2013 |
| 12 | List and explain different types of system  models**[10M]** | June / July 2013 |
| 13 | Draw and explain state diagram for a typical weather station[**10M]** | June / July 2013 |
| 14 | Draw the state machine model of a microwave  oven**[6M]** | June / July 2014 |
| 15 | What is object aggregation? Write an example  showing aggregation, with notation[**4M]** | June / July 2014 |
| 16 | What is a sequence model? Write the sequence  model of operations in collecting the data from a weather station and explain [**8M]** | June / July 2014 |

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| 17 | What is data flow model? With an example show  the notations used in data flow model[**10M]** | Dec 09 / Jan 10 |
| 18 | Draw and explain the sequence and state diagram  for a typical weather station[**10M]** | Dec 2010 |
| 19 | Based on your experience with bank ATM, draw a data flow diagram modelling thedata processing involved when a customer withdraws cash from a  machine[**10M]** | June / July 09 |

1. **Software Testing, Software Evolution**

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| **Sl. No** | **Question** | **Appeared In VTU QP Month/Year** |
| 1 | With appropriate block diagram, explain the  system evolution process[**10M]** | Dec 14 /Jan15 |
| 2 | Explain activities involved in reengineering process with figure[**10M]** | June / July 15 |
| 3 | Give Lehman’s laws [**10M]** | Dec 13 /Jan 14, 4m  June / July 16 |
| 4 | Explain interface testing with neat diagram [**8M]** | June / July 16 |
| 5 | Explain component testing [**10M]** | Dec 13 / Jan 14 |
| 6 | List classes of interface errors[**5M]** | June / July 15 |
| 7 | Define “program evolution dynamics”. Describe  the Lehman’s laws for program evolution dynamics[**10M]** | Dec 2012 |
| 8 | Explain the different types of software  maintenance [**6M]** | June 2012 |
| 9 | Explain the software evolution process[**6M]** | June 2012 |
| 10 | Explain the performance testing[**6M]** | June 2012 |
| 11 | Explain general model of testing with the help of a  block diagram [**8M]** | June / July 13 |
| 12 | How software maintenance is carried out? Explain  briefly [**8M ]** | June / July 14 |
| 13 | Distinguish between software inspection and testing. What are the advantages of inspection over testing[**8M]** | Dec 09 / Jan 10 |
| 14 | Explain with illustrations:  (i) Integration testing (ii) release testing [**6M]** | Dec 09 / Jan 10 |
| 15 | What is verification and validation? Explain why  validation is a particularly difficult process [**5M]** | May / June 2010 |
| 16 | Explain briefly software inspection process [**6M]** | Dec 14 / Jan 15 |
| 17 | What is partitioning testing? Briefly explain with  an example[**10M]** | Dec 2012 |

**4. Project Planning**

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| **Sl. No** | **Question** | **Appeared In VTU QP Month/Year** |
| 1 | Name the factors affecting software engineering  productivity and cost estimation technique[**10M]** | Dec 13 / Jan14 |
| 2 | Explain briefly the algorithmic cost modelling and write the difficulties [**6M ]** | June / July 16 |
| 3 | Explain different section of project plan and define  milestones and deliverables[**8M]** | June / July 16 |
| 4 | List and explain various COCOMO2 cost  estimation models[**10M]** | Dec 2012 |
| 5 | Explain the various inspection checklists for  software inspection process[**10M]** | Dec 2012 |
| 6 | Describe the cost estimation techniques with  relevant example[**10M]** | June 2012, 10m  June / July 13 |
| 7 | Write a note on project duration and staffing **[6M]** | June / July 2014 |
| 8 | Name the type of metrics used to estimate  productivity**[2M]** | June / July 2014 |
| 9 | What are the factors affecting software pricing? What are the two types of metrics used?  Explain[**10M]** | Dec 09/ Jan 10 |
| 10 | Differentiate between deliverables and milestones  [**2M ]** | June / July 15 |
| 11 | For the set of tasks shown below, draw the project scheduling using,  (i) Activity chart (ii) staff allocation vs time chart (Assuming start date of project as 01 NOV 2014) [ **10M]** | Dec 14 / Jan 15 |
| 12 | Following table shows number of activities, durations and dependencies and milestones. Draw an activity chart and a bar chart showing the  critical path for the project schedule[**10M]** | June / July 2014 |

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| 13 | Refer table below for task durations and interdependencies:    **(i)** Draw activity network (ii) find and highlight critical path [**8M]** | May / June 2010 |

**5. Agile Software Development**

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| **Sl. No** | **Question** | **Appeared In VTU QP Month/Year** |
| 1 | What is pair programming? Write its advantages  [**4M]** | June / July 15, 6m  Dec 2010 |
| 2 | What is extreme programming? List principles of agile method [ **6M]** | June / July 15, 6m June / July 13 |
| 3 | Explain extreme programming [**10M]** | Dec 13 / Jan 14 |
| 4 | What are agile methods? Describe the principles of agile method[**6M**]] | June / July 16 |
| 5 | List and explain the principles of agile methods.  Also explain the problems with agile methods [**10M]** | Dec 2012 |
| 6 | Explain the difficulties with iterative development  and incremental delivery[ **6M ]** | June / July 14 |
| 7 | Briefly describe the extreme programming release  cycle with a neat diagram [**6M]** | June / July 14 |
| 8 | With a figure, explain the process of prototype development. What are the benefits of using  prototyping? [**7M** ] | May/ June 2010 |
| 9 | What are the practices followed in extreme  programming. [**6M ]** | May/ June 2010 |
| 10 | Explain the structure of software test plan [**7M]** | Dec 2010 |