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INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

MODEL QUESTION PAPER - I

B.Tech VI Semester End Examinations (Regular), December – 2019

Regulations: R16

SOFTWARE DEVELOPMENT METHODOLOGY

(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

UNIT – I

1. a) Discuss about software Engineering? Explain the layered technology of software engineering. [7M]
- b) Describe are the advantages of iterative development? Compare iterative development with Incremental delivery approach. [7M]
2. a) Elaborate the concept of earned value analysis with effect to project scheduling. Discuss the importance of project scheduling with its merits. [7M]
- b) What is scheduling? Explain the importance of scheduling in software development. [7M]

UNIT – II

3. a) Explain the software requirement analysis and the importance of software specification of requirements. [7M]
- b) Discuss how requirements are elucidated and validated in software project. [7M]
4. a) Define Data dictionary. Give the importance of data dictionary with an suitable example. [7M]
- b) Define cohesion and coupling and discuss different levels of coupling. Explain the importance of petri nets in software development. [7M]

UNIT – III

5. a) What are the characteristics of a good design? Describe different types of coupling and cohesion. [7M]
- b) Explain about the various design concepts considered during design phase of SDLC. [7M]
6. a) Discuss in detail about user interface design patterns with an example. [7M]
- b) Explain the examples of three data abstractions and the procedural abstractions that can be used to manipulate them. [7M]

UNIT – IV

7. a) What is testing? Discuss in detail about Black-Box testing. [7M]
- b) Discuss software failures and faults? What are test coverage criteria? Discuss testing issues. [7M]

8. a) Who should perform the validation test the software developer or the software user? Justify your answer. [7M]
- b) Explain the integration testing process and system testing process and discuss their outcomes. [7M]

UNIT – V

9. a) What is scheduling? Explain the importance of scheduling in the project management. [7M]
- b) Explain in detail about software measurement and discuss various metrics. [7M]
10. a) Describe five software application areas in which software safety and hazard analysis would be a major concern. [7M]
- b) Explain in detail about Reactive versus Proactive Risk Strategies. [7M]



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COURSE OBJECTIVES:

The course should enable the students to:

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| I. | Learn how to elicitate requirements and develop software life cycles. |
| II. | Understand the design considerations for enterprise integration and deployment. |
| III. | Analyze quality assurance techniques and testing methodologies. |
| IV. | Understand implementation issues such as modularity and coding standards. |
| V. | Prepare a project plan for a software project that includes estimates of size and effort, a schedule, resource allocation, configuration control, and project risk. |

COURSE OUTCOMES (COs):

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| I | Identify the approach to risks management through risk identification, risk measurement and risk mitigation. |
| II | Use the concept of classical analysis to determine the acceptance criteria part of specification |
| III | Understand the principles of graphical user interface design. |
| IV | Identify the major differences between white box testing and black box testing. |
| V | Identify the importance of earned value analysis related to project scheduling and also understand the Various process and project metric used to improve the quality of software. |

COURSE LEARNING OUTCOMES (CLOs):

| Sl. No. | Description |
|-----------|---|
| AIT508.01 | Understand the key concerns that are common to all software development processes. |
| AIT508.02 | Identify the appropriate process models, approaches and techniques to manage a given software development process. |
| AIT508.03 | Identify the approach to risks management through risk identification, risk measurement and risk mitigation. |
| AIT508.04 | Use the concept of Earned Value Analysis (EVA) to measure the projects progress at any given point in time, forecasting its completion date and final cost, and analyzing variances in the schedule and budget as the project proceeds. |
| AIT508.05 | Memorize project planning activities that accurately help in selection and initiation of individual projects and of portfolios of projects in the enterprise. |
| AIT508.06 | Identify dependability and security issues that affect a given software product. |
| AIT508.07 | Use the concept of classical analysis to determine the acceptance criteria as part of specification. |
| AIT508.08 | Memorize the importance of eliciting the requirements for a software product and translate these into a documented design. |
| AIT508.09 | Understand the concept of data dictionary in order to manage the details in large-scale systems, to locate errors and omissions in the system. |
| AIT508.10 | Understand the concept of petri nets that exhibit concurrency, synchronization and used as a visual communication aid to model the system behavior. |
| AIT508.11 | Memorize the design of object oriented software using with the aid of a formal system modelling notation. |
| AIT508.12 | Learn to model the structure and behavior of a software system. |
| AIT508.13 | Memorize different architectural styles, patterns and architectural mapping using data flow. |

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| AIT508.14 | Understand the principles of graphical user interface design. |
| AIT508.15 | Understand the concept of component-level design used to define interface characteristics and communication mechanisms for each software component identified in the architectural design. |
| AIT508.16 | Understand the importance of testing with the performance of root cause analysis. |
| AIT508.17 | Memorize the concepts of software testing approaches such as unit testing and integration testing. |
| AIT508.18 | Understand the approaches to verification and validation including static analysis and reviews. |
| AIT508.19 | Identify the major differences between white box testing and black box testing. |
| AIT508.20 | Understand the importance of refactoring which improves the performance of non-functional attributes of the software. |
| AIT508.21 | Learn to manage time, processes and resources effectively by prioritizing competing demands to achieve personal and team goals. |
| AIT508.22 | Understand the concept of risk management through risk identification, risk measurement and mitigation. |
| AIT508.23 | Memorize the relationship between people and effort. |
| AIT508.24 | Identify the importance of earned value analysis related to project scheduling. |
| AIT508.25 | Use a proactive, structured risk assessment and analysis activity to identify and analyze root causes. |
| AIT508.26 | Possess the knowledge and skills for employability and to succeed in national and international level competitive exams. |

MAPPING OF SEMESTER END EXAMINATION TO COURSE LEARNING OUTCOMES:

| SEE Question Number | | Course Learning Outcomes | | Course Outcomes | Blooms Taxonomy Level |
|---------------------|---|--------------------------|--|-----------------|-----------------------|
| 1 | a | AIT508.01 | Understand the key concerns that are common to all software development processes. | CO 1 | Understand |
| | b | AIT508.02 | Identify the appropriate process models, approaches and techniques to manage a given software development process. | CO 1 | Remember |
| 2 | a | AIT508.03 | Identify the approach to risks management through risk identification, risk measurement and risk mitigation. | CO 1 | Remember |
| | b | AIT508.04 | Use the concept of Earned Value Analysis (EVA) to measure the projects progress at any given point in time, forecasting its completion date and final cost, and | CO 1 | Understand |
| 3 | a | AIT508.08 | Memorize project planning activities that accurately help in selection and initiation of individual projects and of portfolios of projects in the enterprise. | CO 2 | Remember |
| | b | AIT508.07 | Use the concept of classical analysis to determine the acceptance criteria as part of specification. | CO 2 | Remember |
| 4 | a | AIT508.08 | Memorize the importance of eliciting the requirements for a software product and translate these into a documented design. | CO 2 | Understand |
| | b | AIT508.10 | Understand the concept of petri nets that exhibit concurrency, synchronization and used as a visual communication aid to model the system behavior. | CO 2 | Remember |
| 5 | a | AIT508.11 | Memorize the design of object oriented software using with the aid of a formal system modelling notation. | CO 3 | Remember |
| | b | AIT508.14 | Understand the principles of graphical user interface design. | CO 3 | Understand |
| 6 | a | AIT508.15 | Understand the concept of component-level design used to define interface characteristics and communication mechanisms for each software component identified in the architectural design. | CO 3 | Remember |

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| | b | AIT508.13 | Memorize different architectural styles, patterns and architectural mapping using data flow. | CO 3 | Understand |
| 7 | a | AIT508.16 | Understand the importance of testing with the performance of root cause analysis. | CO 4 | Remember |
| | b | AIT508.17 | Memorize the concepts of software testing approaches such as unit testing and integration testing. | CO 4 | Remember |
| 8 | a | AIT508.20 | Understand the importance of refactoring which improves the performance of non-functional attributes of the software. | CO 4 | Understand |
| | b | AIT508.18 | Understand the approaches to verification and validation including static analysis and reviews. | CO 4 | Understand |
| 9 | a | AIT508.22 | Understand the concept of risk management through risk identification, risk measurement and mitigation. | CO 5 | Understand |
| | b | AIT508.25 | Use a proactive, structured risk assessment and analysis activity to identify and analyze root causes. | CO 5 | Remember |
| 10 | a | AIT508.21 | Learn to manage time, processes and resources effectively by prioritizing competing demands to achieve personal and team goals. | CO 5 | Understand |
| | b | AIT508.23 | Memorize the relationship between people and effort. | CO 5 | Remember |

Signature of Course Coordinator

HOD, CSE