GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY,
EAST DELHI CAMPUS,
SURAJMAL VIHAR-110092

Paper code : ARD 202	L	T/P	C
Subject : Software Engineering	3	0	3

Marking Scheme

1. Teachers Continuous Evaluation: 25 Marks
2. End Term Theory Examination: 75 Marks

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 75**

1. There should be 9 questions in the end term examination question paper
2. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 15 marks.
3. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 15 marks.
4. The questions are to be framed keeping in view the learning outcomes of course/paper. The standard/ level of the questions to be asked should be at the level of the prescribed textbooks.
5. The requirement of (scientific) calculators/ log-tables/ data-tables may be specified if required

Course Outcomes:

CO1:	Ability of students to understand the concepts of Software Engineering
CO2:	Ability of students to understand the requirement analysis and quality assurance of software system
CO3:	Ability of students to meet understand the metrics of software system
CO4:	Ability of students to understand the object oriented software engineering with UML diagrams

Course Outcomes (CO) to Programme Outcomes (PO) Mapping (Scale 1: Low, 2: Medium, 3: High

CO/PO	PO01	PO02	PO03	PO04	PO05	PO06	PO07	PO08	PO09	PO10	PO11	PO12
CO1	3	3	3	3	2	-	-	-	1	1	1	2
CO2	3	3	3	3	2	-	-	-	1	2	1	2
CO3	3	3	3	3	2	-	-	-	1	1	1	3
CO4	3	3	3	3	3	2	-	-	1	1	1	3

Unit I **[8]**

Introduction: Importance of System Engineering Paradigms for Software Systems; Life Cycle Models- Project scheduling and tracking, System Configuration Management.

Requirement Analysis : Problem Analysis, Data Flow Diagrams, Data Dictionaries, Entity-Relationship diagrams, Software Requirement and Specifications, Behavioral and non-behavioural requirements, Software Prototyping.

Unit II **[10]**

Software Design: Cohesion & Coupling, Classification of Cohesiveness & Coupling, Function Oriented Design, Object Oriented Design, User Interface Design.

Quality Assurance of Software Systems: Testing Techniques for Software Systems, Black box and White box Testing, Regression testing, Reliability Modeling of Software Systems, Quality Assurance and Maintenance

Prof. Ajay S. Singholi
Professor In-charge, USAR
Guru Gobind Singh Indraprastha University
(East Delhi Campus)
Surajmal Vihar, Delhi-110092

Unit III [8]

Measurement of Software Systems : Metrics for Measurement of Software Systems, Direct Measurement, Indirect Measurement: Product Metrics: Product metrics Process Metrics, Project Metrics

Software Configuration Management : Change Requirements, Version control, Change management, scheduling, estimating, etc. Manual and Automatic Test Data Generation for Software Systems/Embedded Systems.

Unit IV [9]

Object Oriented Software Engineering : Introduction to Object-Orientation Identify Objects and Classes, Attributes, Methods, Object Relationships like Association, Aggregation and Composition Inheritance, Polymorphism and Dynamic Binding Interfaces

Unified Modeling Language (UML) : Use Case Diagram, Class diagrams, State transition diagrams, Object diagrams, Interaction diagrams, Activity diagrams, Package diagram, Component diagram, Deployment diagram

Text Books:

1. Pressman, R. S. (2005). *Software engineering*: a practitioner's approach. Palgrave macmillan.
2. Mall, R. (2018). *Fundamentals of software engineering*. PHI Learning Pvt. Ltd..

Reference Books:

1. Sommerville, I. (2011). *Software Engineering*, 9/E. Pearson Education India.
2. Jalote, P. (2012). *An integrated approach to software engineering*. Springer Science & Business Media.
3. Aggarwal, K. K. (2005). *Software engineering*. New Age International.
4. Bruegge, B., & Dutoit, A. H. (2009). *Object–oriented software engineering. using uml, patterns, and java*. Learning, 5(6), 7.
5. Blaha, M., & Rumbaugh, J. (2005). *Object-oriented modeling and design with UML*. Pearson Education India.

Prof. Ajay S. Singholi
Professor In-charge, USAR
Guru Gobind Singh Indraprastha University
(East Delhi Campus)
Surajmal Vihar, Delhi-110092